SAS® GLOBAL FORUM 2018

USERS PROGRAM

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

Taylor S. Blaetz

Western Kentucky University

Office of Institutional Research

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ABSTRACT

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

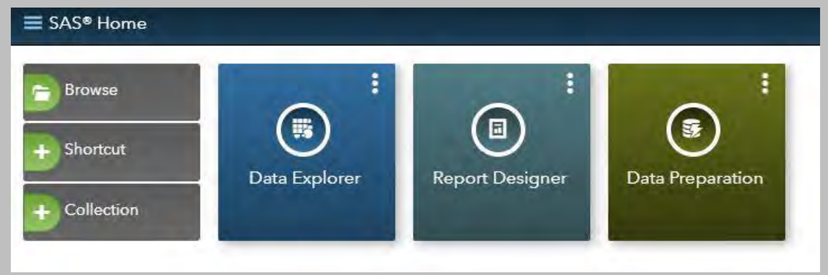
- "…the field of study that analyzes people's opinions, sentiments, evaluations, appraisals, attitudes, and emotions towards entities such as products, services, organizations, individuals, issues, events, topics, and their attributes." (Liu, 2012)

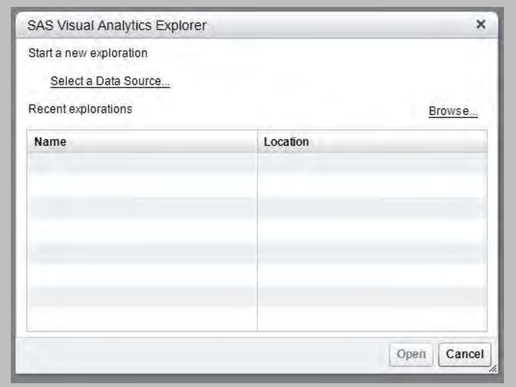
THE BIG PICTURE

- What are people saying about Western Kentucky University on Twitter?

METHODOLOGY

1. SAS® Visual Analytics → Data Explorer → Select New Data Source → Twitter:





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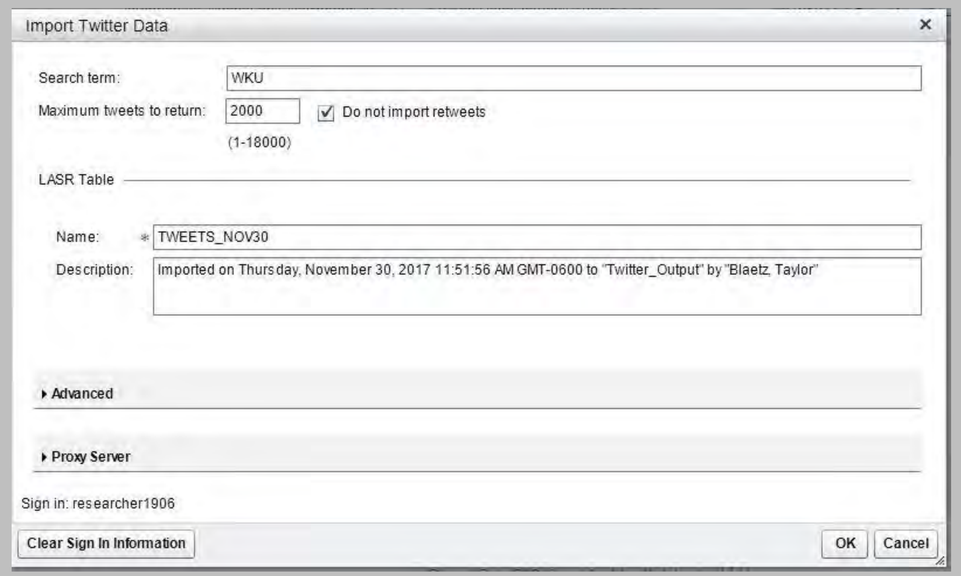
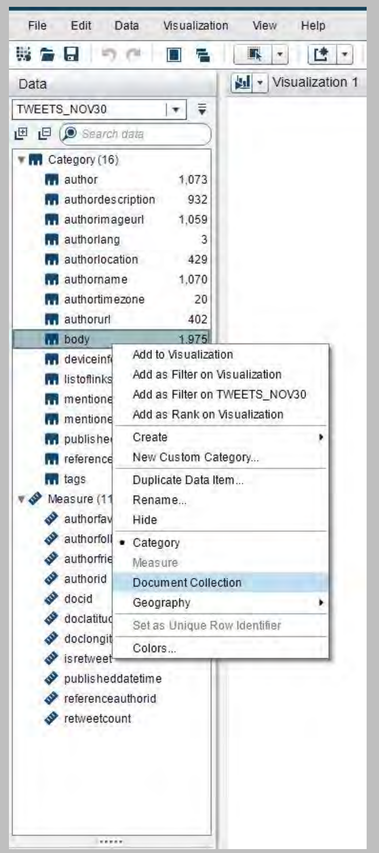
METHODOLOGY

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



3. Create 'Document Collection' from the body of Tweets:



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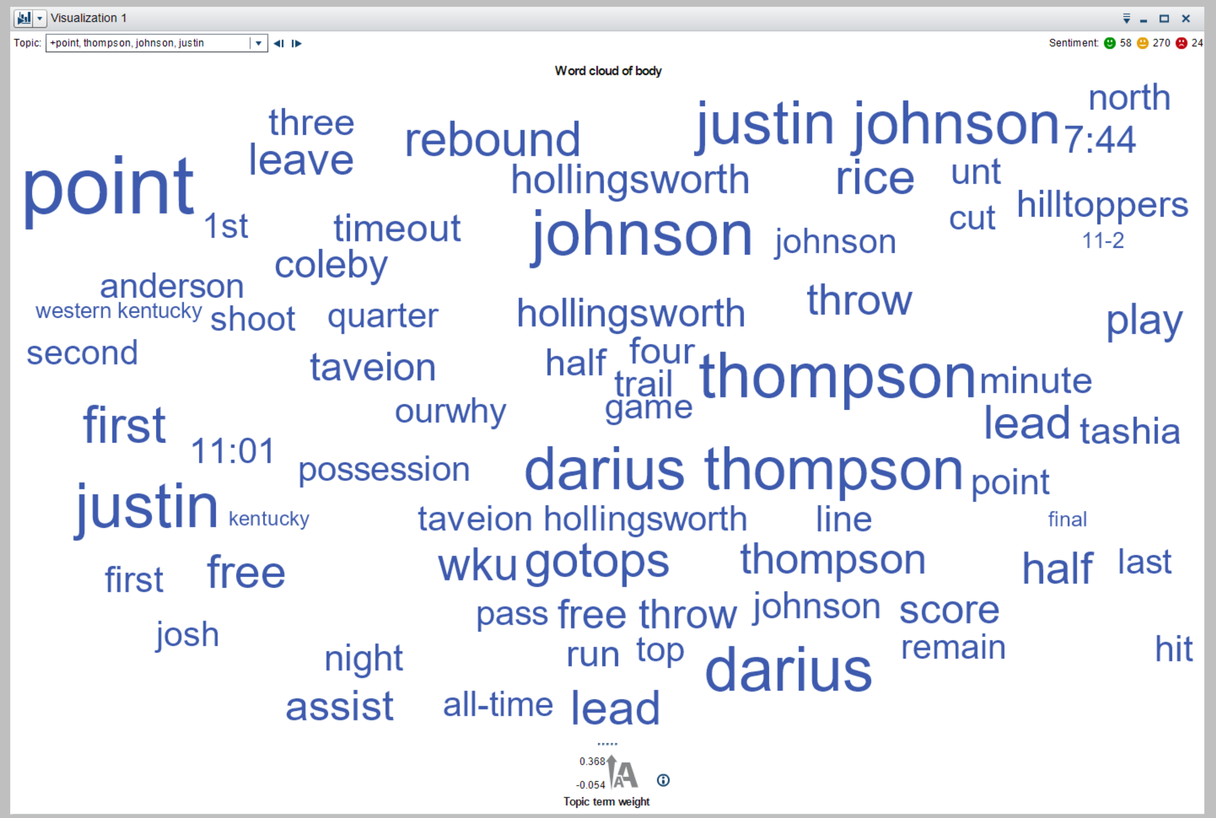
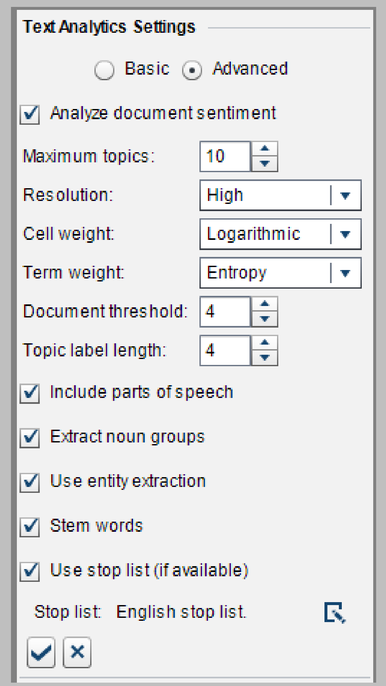
4. Word cloud visualization:



5. Properties → Text analytics: Advanced → Analyze document sentiment:



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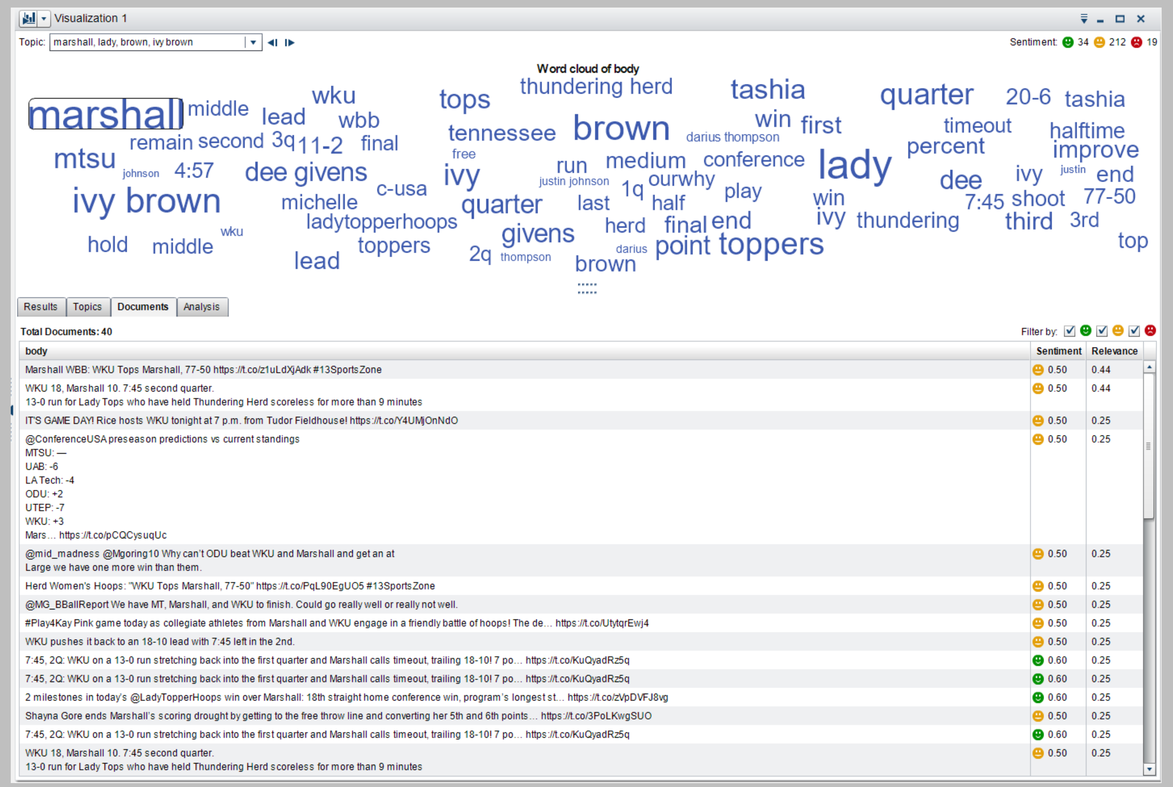
6. Select topic of interest → View Tweets and sentiment ratings:



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

Results | Topics | Documents | Analysis

Topic	Positive	Neutral	Negative	Total Documents
+point, johnson, thompson, +lead	35	339	38	412
's, +day, today, college	151	219	25	395
+win, +game, +final, +season	95	247	26	368
marshall, +lady, quarter, ivy	36	224	25	285
texas, north, half, first	33	207	23	263
gotigersgo, memphis, +lead, +inning	25	191	33	249
free, +throw, hollingsworth, +free throw	68	145	24	237
+rain, +chance, evening, low	61	146	23	230
+wind, +mile, +hour, wind speed	5	183	3	191
+versus, mt_wbb, 6:30, tip	33	122	12	167

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

Week #	Date Range	Search Term	Topics
40	2/19/18 - 2/23/18	WKU	wku, wku, day
			point, thompson, johnson, justin
			marshall, lady, brown, ivy brown
			wku etown, ec3, etown, ec3
			gotigersgo, memphis, lead, inning
			texas, north texas, north, north
			versus, mt_wbb, 6:30, wgnssports
			wind speed, speed, brisk, wind
			rain, chance, evening, low
			squirrel weather, white, sunrise, sunset

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

Week #	Date Range	Search Term	Topics	Total # of Tweets	Positive	Neutral	Negative	Positive (%)	Neutral (%)	Negative (%)
40	2/19/18 - 2/23/18	WKU	wku, wku, day	535	189	299	47	35.33%	55.89%	8.79%
			point, thompson, johnson, justin	352	58	270	24	16.48%	76.70%	6.82%
			marshall, lady, brown, ivy brown	265	34	212	19	12.83%	80.00%	7.17%
			wku etown, ec3, etown, ec3	263	55	196	12	20.91%	74.52%	4.56%
			gotigersgo, memphis, lead, inning	233	26	175	32	11.16%	75.11%	13.73%
			texas, north texas, north, north	191	24	154	13	12.57%	80.63%	6.81%
			versus, mt_wbb, 6:30, wgnssports	159	34	117	8	21.38%	73.58%	5.03%
			wind speed, speed, brisk, wind	133	4	127	2	3.01%	95.49%	1.50%
			rain, chance, evening, low	117	40	64	16	34.19%	54.70%	13.68%
			squirrel weather, white, sunrise, sunset	79	3	74	2	3.80%	93.67%	2.53%
				2327	467	1688	175	17.16%	76.03%	7.06%

9. Record the average sentiment across topics and import into a SAS data set:

```
3  DATA DATASETS.RAW_PCT;
4     INPUT WEEK POS NEU NEG;
5     DATALINES;
6  1 21.83 65.89 12.28
7  2 20.93 64.29 13.03
8  3 21.95 69.17 8.88
9  ...
10 38  17.94 68.28 11.06
11 39  22.6  66.92 10.48
12 40  17.16 76.03 7.06
13 ;
14 RUN;
```

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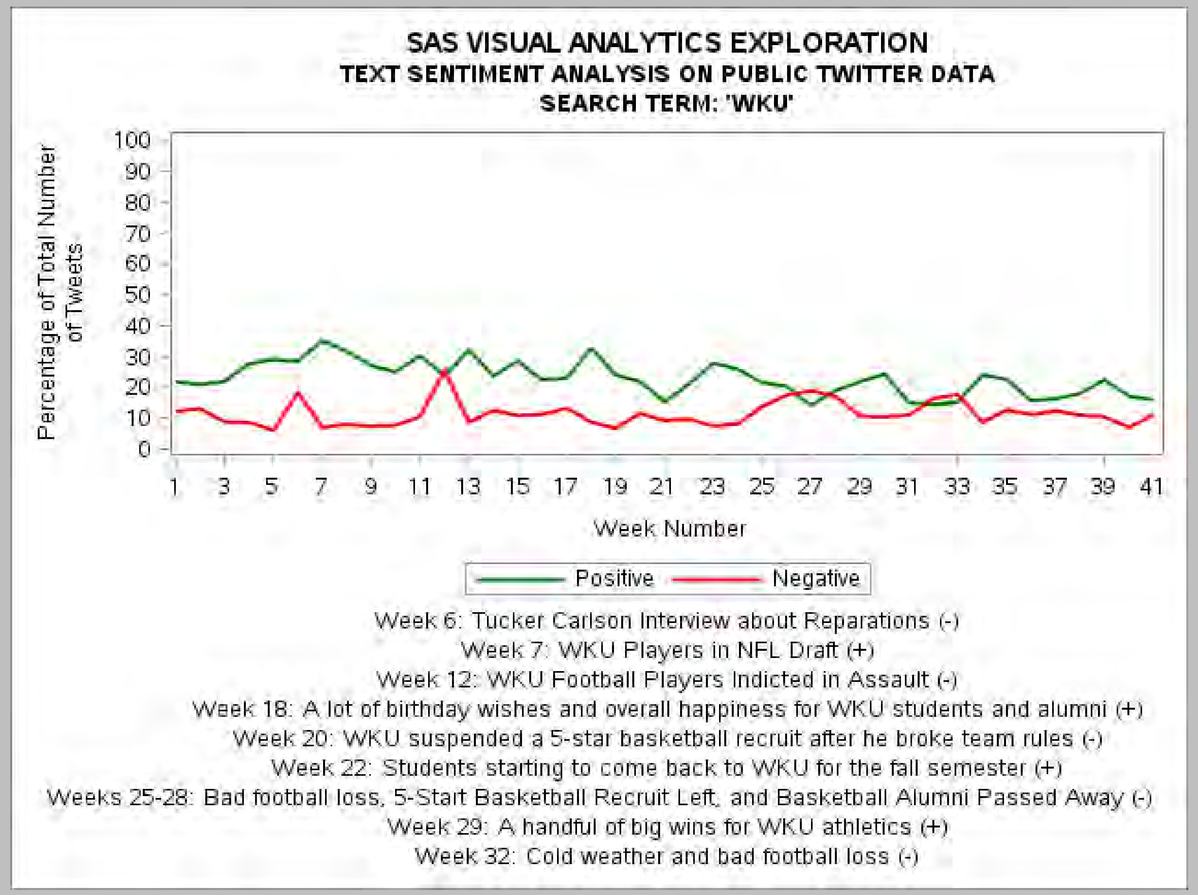
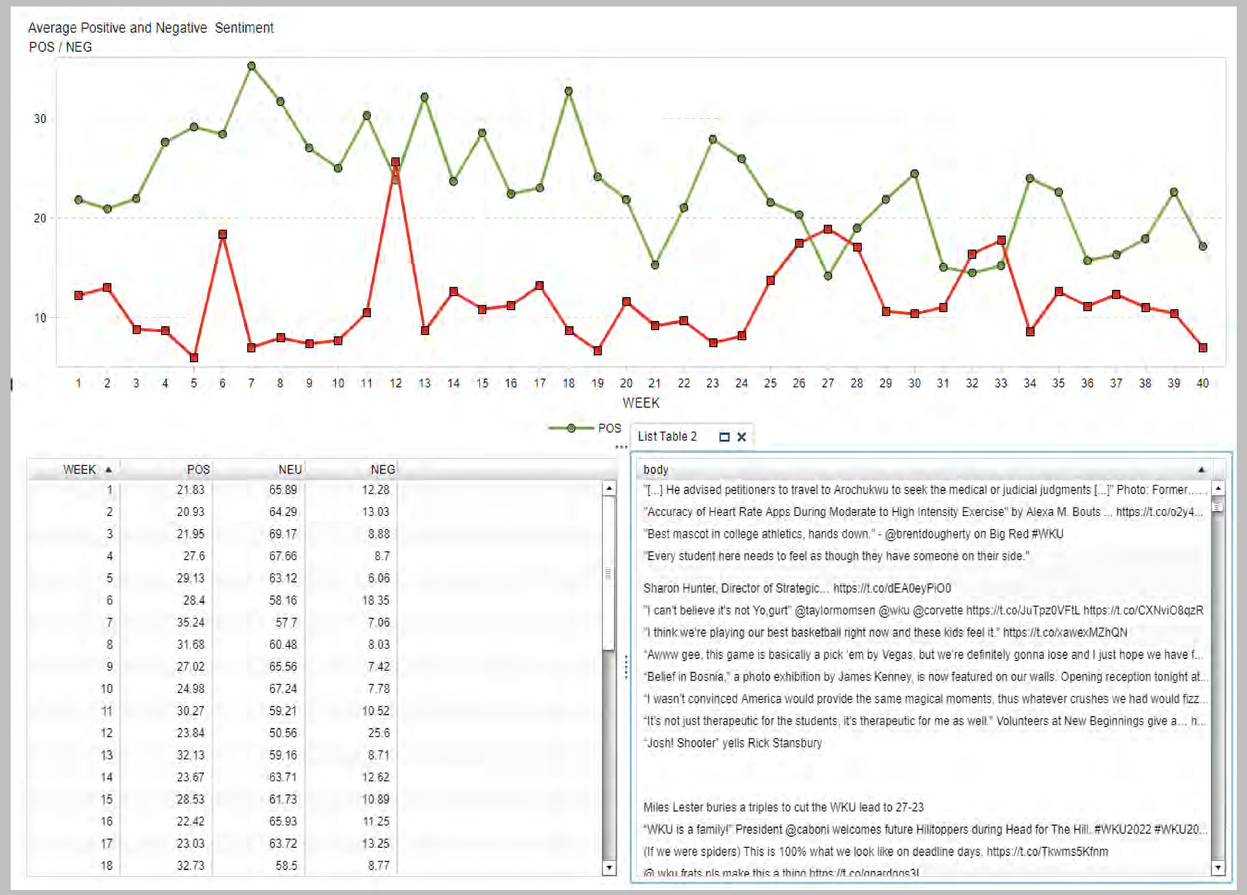
10. Visualize using PROC SGPLOT or upload to Visual Analytics and generate a new report:





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11. View common devices and number of retweets:

retweetcount	body
91	Fun Fact: Only 11 out of 351 schools in the NCAA have both their men's and woman's basketball teams with 20 or more… https://t.co/znlFjeGRpo
60	Teams with more 20-win seasons than WKU: Kentucky, North Carolina, Duke, Louisville, UCLA and Kansas. #GoTops https://t.co/F4yi3Wzo3L
55	WKU has a better record than UK & UofL ? #Tops ??? https://t.co/q3Wn0x5ajg
49	Great team win for the Tops! WKU was in control from the outset on its way to claiming the 44th 20-win season in pr… https://t.co/9qEjs3AuMk
43	Tomorrow's the day— vote Austin Perkins for WKU Coming Home King 2018, representing Phi Mu & FIJI! Check your TopNe… https://t.co/Q1ylW2anwx
39	Taveion Hollingsworth's 30 points tonight are the most by a WKU freshman since at least 1986. #GoTops
39	Dropping ??? @evanbell_9! Memphis leads WKU 7-0 going to the fourth. #GoTigersGo https://t.co/JsVrai4cLB
31	.@WKUBasketball and @LadyTopperHoops make WKU one of just 14 schools in the nation with men's and women's hoops pro… https://t.co/2WTYz4MHBG
30	Be sure to get on Topnet and vote Nathan Roush for Coming Home King?????? https://t.co/OnlwrlcbQH
29	GAMEDAY AT NORTH TEXAS

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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

Bing Liu. *Sentiment Analysis and Opinion Mining*, Morgan & Claypool Publishers, May 2012.

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