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# Developing a LIWC Dictionary: The lyrical poetry of 2PAC, Frank Waln, Litefoot, and Nataanii Means

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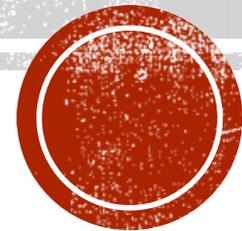
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# **NDLC'16**

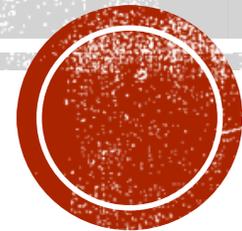
**National Diversity in Libraries Conference**

**August 10-13, 2016, UCLA Libraries, Los Angeles, California**



# ~~FROM "MY BLOCK" TO "BORN ON THE REZ"~~

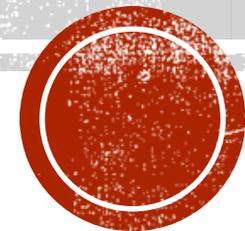
~~A linguistic analysis of lyrics by 2PAC, Frank Waln, Litefoot,  
Nataanii Means, and Night Shield~~



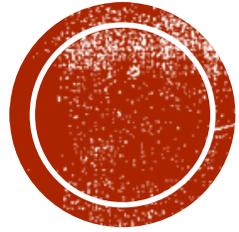
Friday, August 12, 2016

# DEVELOPING A LIWC DICTIONARY

The lyrical poetry of 2PAC, Frank Waln, Litefoot, and  
Nataanii Means



Friday, August 12, 2016



# RESEARCHERS @ UNIVERSITY OF NEW MEXICO

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# ABOUT THIS PROJECT - NOW

- Phase 1
  - Identify Artists and Corpus Criteria
  - Categorize each song in corpus in one of the following Lyric Categories
    - My Block (2Pac) and Born on the Rez (FW)
    - Thug Life (Out on Bail; Is there Heaven for a G?; When We Ride) (2Pac) and Rez Affiliated (LF)
  - Present Findings in March 2016 and August 2016 (if proposals are accepted)
- ~~Phase 2~~
  - ~~Complete dataset with (8) Night Shield albums, (1) Litefoot album, and the forthcoming (1) Frank Waln album.~~
  - ~~Present findings from remaining categories at National Diversity in Libraries Conference in Los Angeles, CA, August 10-13, 2016~~
    - ~~Mama's Just a Little Girl (2Pac) and My Ancestors (LF)~~
    - ~~Me and My Girlfriend (Thug Passion; and Skandalouz) (2Pac) and A Song for Her (NM)~~
- NEW Phase 2
  - Develop a Linguistic Inquiry and Word Count (LIWC) Dictionary for rap and hip hop lyrics, Tupac Shakur-Litefoot-Nataanii Means-Frank Waln-Speak, Native American rappers, African American rappers, indigenous peoples, and young men in general
- Phase 3
  - Prepare and submit all research findings on all categories for publication in a peer-reviewed journal



**P A R E N T A L**

**A D V I S O R Y**

**E X P L I C I T   C O N T E N T**



Police Department

August 04, 2014 | ALYSA LANDRY



**WHY ARE WE DOING THIS?**

# 11-Year-Old Girl Kidnapped From Navajo Nation Found Dead



Tuesday, 3 May 2016



JUST IN

FBI GIVES UPDATE ON DEADLY AMBER ALERT GIRL, BROTHER ABDUCTED BY MAN IN VAN



## Mayor Richard J. Berry: Albuquerque Is Dangerous for Homeless Natives

Natives living on Albuquerque streets experience violence at a higher rate than non-Natives. According to a 2011 study published by the University of New Mexico, 71 percent of homeless Natives in Albuquerque reported experiencing violence.



OCT 20 2014 09:57:33PM



PEOPLE KILLED IN 2016



RACE & ETHNICITY PER MILLION TOTAL



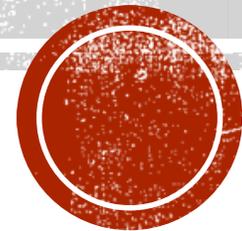
STATE NAME PER CAPITA TOTAL

STATE	NAME	PER CAPITA	TOTAL
NM	AK SD DC OK HI AZ AL MT CO		NEW MEXICO
WY	LA KY NV AR MS NE WI OR MO		Total killed: 17
CA	SC WV FL VA UT NC TN TX GA		Population: 2,085,109
RI	WA ID KS MD IN VT MN IL MA		Rank (per capita): 1 / 51
ND	OH MI DE PA IA NY CT NJ ME		Rank (total): 11 / 51
NH			

# RESEARCH QUESTIONS

Do Native American male rappers address socioeconomic issues in their lyrics?

How does the lyrical content of Native American male rappers compare Tupac Shakur's lyrical content written before 1996?

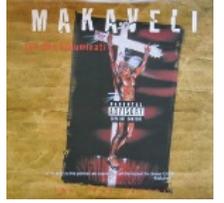


# THE ARTISTS

- Tupac Shakur

- “Above all else, Tupac was an artist who represented a generation and a culture” (Hall, 2015)

White Man’z World, *Don Killuminati: 7 Day Theory*, 1996



- Nataanii Means

- “. . . For my generation, I can reach them through my music, through this hip hop, tell them of our people, because they never taught us in school about any of that.” (PowWows.com, 2014)

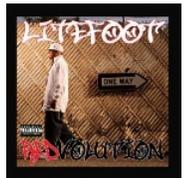
Genocide, *2 Worlds*, 2013



- Litefoot

- “Litefoot, the Cherokee rapper who grew up in Oklahoma... is perhaps the best known Native hip-hop artist working today... Litefoot is on a mission. He sees his music as a tool for fighting ignorance about Native culture rather than a way to get rich.” (Chicago Tribune, 2004)

Redvolution, *Redvolution*, 2003



- Frank Waln

- “I have a platform now, and I have the responsibility to use it to try to help solve some of these problems. If we as Natives don’t talk about this, who will?” (Walker, 2014)

AbOriginal, 2013





# METHODOLOGY – TEXT ANALYSIS AND VISUALIZATION

- Text Analysis
  - **LIWC (Linguistic Inquiry and Word Count) 2015** – \$\$ - Computerized text analysis that uses everyday words to reveal “thoughts, feelings, personality, and motivations.”
  - Categories: Function Words, Biological Processes, Time Orientation, Affect, Social, Personal Concerns, Cognitive Processes, Informal Language
- Visualization
  - **Wordle** - FREE- generates word clouds from user provided text
  - **Voyant Tools** – FREE – visualizes text, # of words, word frequency
- Software not chosen
  - NVivo-\$\$, popular, steep learning curve
  - ATLAS-\$\$, popular, steep learning curve
  - Docuburst – FREE, user friendly, required to share uploaded data



# LIWC DICTIONARY

- **LIWC 2015 has 3 dictionaries included - LIWC2015, LIWC2007, LIWC2001**
  - Spanish2007, French2007, Russian2007, Italian2007, Dutch2007, German2007 available for download on LIWC site.
  - Has 125 categories including dimensions and an undetermined number of words.
- **Develop Your Own dictionary and upload it to the LIWC site for sharing with others.**
  - Political Issues, Turkish, Regulatory, Geography, Football Clubs, Security, Hashtags from 2016 Presidential Elections
- **Review of the Literature**
  - Developing simplified Chinese psychological linguistic analysis dictionary for microblog (2013)
  - Privacy dictionary: A linguistic taxonomy of privacy for content analysis (2011)
  - Developing a Tagalog LIWC 'disaster' dictionary for understanding mixed language social media (2014)
  - Development and evaluation of Tagalog LIWC dictionaries for negative and positive emotion (2014)
  - The Romanian version of the LIWC2001 dictionary and its application for text analysis with Yoshikoder (2012)
  - Construction and initial validation of a dictionary for global citizen linguistic markers (2014)



# USING LIWC TO ANALYZE LYRICS

- Like a rolling stone: A mixed-methods approach to linguistic analysis of Bob Dylan's lyrics (2016)
- We will rock you: A diachronic corpus-based analysis of linguistic features in rock lyrics (2016)
- Word usage and thematic content of song lyric analyses (2016)
- Gone country: An investigation of Billboard country songs of the year across social and economic conditions in the United States (2015)
- Lyrics, music, and emotions (2012)
- Lyrics of national anthems and suicide rates (2011)
- Tuning in to psychological change: Linguistic markers of psychological traits and emotions over time in popular U.S. song lyrics (2011)
- Psychological effects of music with lyrics: A methodological study (2011)
- Touched by music: Attachment-related differences in music-induced crying and lyrics (2009)
- The language of lyrics: An analysis of popular Billboard songs across conditions of social and economic threat (2009)
- Things we said today: A linguistic analysis of the Beatles (2008)
- Using computational text analysis tools to compare the lyrics of suicidal and non-suicidal songwriters (2007)



# LINGUISTIC INQUIRY AND WORD COUNT (LIWC) ANALYSIS

- LIWC Analysis
  - Percentage of Total Words within text
  - Summary Variables
    - **Analytical Thinking** – based on 8 function word dimensions – captures the degree to which people use words that suggest formal, logical, and hierarchical thinking patterns. Low analytical thinking – use language that is more narrative, focusing on the here-and-now, and personal experiences; higher analytical thinking – perform better in college and have higher college board scores.
    - **Clout** – refers to the relative social status, confidence, or leadership that people display through their writing or talking.
    - **Authenticity** – when people reveal themselves in an authentic or honest way, they are more personal, humble and vulnerable.
    - **Emotional Tone** – includes both positive and negative emotion dimensions both in a single summary variable. The higher the number, the more positive the tone. Numbers below 50 suggest a more negative emotional tone.



# WHY LIWC DIDN'T WORK FOR US

- Inadequate dictionary coverage
- Missing categories
- LIWC combined categories
- Places (California), proper names (Geronimo/Geronimo Pratt), ethnic groups (Passamaquoddy), languages (Sicangu Che), regional colloquialisms (M.O.B./off the chain), singular (Playa Haters) words vs. phrases (PlayaHaters), broad categories (social, verb, negative emotion, positive emotion), multiple categories for the same words





# Born On The Rez, Color Coded LIWC Dictionary

born on the Rez hoka

raised on the Rez

born on the Rez hoka

raised on the Rez

braids on my head hoka

hot days on the Rez

my heart stays on the Rez

ugh

my Lakota che

my Sicangu che

my people

my Lakota che

my Sicangu che

buckle up

I'll take you to a place you might've been

call it Rez

I call it evil

cause it's killing all my friends

looking back

is probably where it begins

the government kills us

for the land that you live in

White people win

Indian lose





# DKL-MN2016 CATEGORIES

- Categories were created based on the way the words were used in the lyrics.
  - Categories were not pre-determined
- Has 103 categories and more than 2700 words.
- 3 combined categories (not dimensions)
  - 70WhiteManzLand – 1, 6, 9, 11, 12, 14, 15, 25, 27, 28, 30, 32, 33, 47, 54, 59, 64, 77, 86, 88, 91, 92, 94, 95, 98
  - 71Disruption – 3, 31, 40, 52, 53, 68, 73, 76, 90, 93
  - 72Casualties – 17, 49, 50, 83, 86, 94, 97, 100, 102



### Intro:

Ahh, Now, everybody ready? Everybody ready?  
Alright, alright, alright. Check this. Here we go.  
To the Tribes, Reservations, all my Nations, check, check

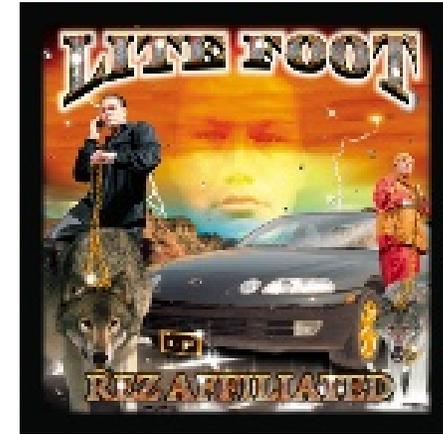
### Chorus:

Where my Natives with the bomb at? Heya, Heya  
Who them Natives love these bomb tracks? Oh-wa, Oh-wa  
You love hanging with these warriors? Hell yeah  
Do these goddesses ignore you? Hell no  
Where you at got the fat sounds? Heya, Heya  
Where your Rez with the bomb town? Oh-wa, Oh-wa  
You love them dimes with the bomb thighs? Hell yeah  
You betray us for them land guys? Hell no

### Verse 1:

I got a pride that burns me in me, Only Natives and Indians ever really heard of me  
Burning me, surgery, what I got to do thoroughly, Who the next Indian turn on me  
Big ups to those who recognize, Chin up turn your gaze to the skies  
Gone bring it back, raps tracks, facts cracks, rap going stacks  
Never give the new millennium, A lot of cat's man I ain't feeling 'em  
Same old thang, same old game, Talking loud but how many discs do you sing?  
Shut 'em up quick, get the ducks sick, shoot the dice trick, Flip the wrist with the hit, damn  
Got bucked, stuck, stupid, screaming mad as fuck, what?

# Let's get coding!



Litefoot "Native Pride 2K" (Rez Affiliated, 1999)



## Intro:

Ahh, Now, everybody ready? Everybody ready?

Alright, alright, alright. Check this. Here we go.

To the Tribes [20], Reservations [19], all my Nations [20], check, check

## Chorus:

Where my Natives [19] with the bomb [34] at? Heya [21], Heya [21]

Who them Natives [19] love [73] these bomb [34] tracks [56]? Ohwa [21], Ohwa [21]

You love [73] hanging with these warriors [35, 36]? Hell [65, 74] yeah

Do these goddesses [35] ignore you? Hell [65, 74] no

Where you at got the fatsounds [56]? Heya [21], Heya [21]

Where your Rez [19] with the bombtown [51]? Ohwa [21], Ohwa [21]

You love them dimes [39] with the bombthighs [35]? Hell [65, 74] yeah

You betray [25, 70] us for them landguys [1, 70]? Hell [65, 74] no

## Verse 1:

I got a pride [53, 71] that burns me in me, Only Natives [19] and Indians [19] ever really heard of me

Burning me, surgery, what I got to do thoroughly, Who the next Indian [19] turn on me|

Bigups [54, 72] to those who recognize, Chinup [53, 68, 71] turn your gazetothies [53, 68, 71]

Gone bring it back, rap [56] tracks [56], facts cracks, rap [56] going stacks [56]

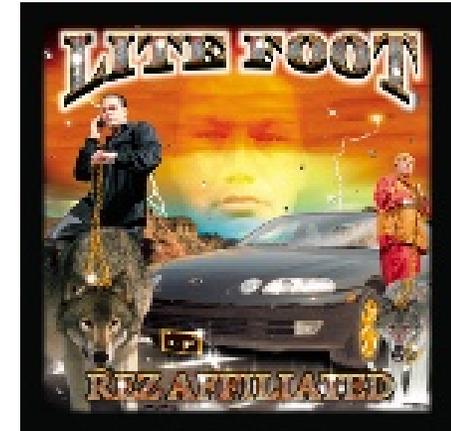
Never give the newmillennium [79], A lot of cats [16, 29], man [38] I ain't feeling them

Same old thang, same old game, Talking loud but how many discs [56], do you sing [56]?

Shut them up quick, get the ducks [29] sick [100, 72], shoot [1, 70] the dicetrick [18], Flipthewristwiththehit [18], damn [65]

Got bucked, stuck, stupid, screamingmad [91, 70], as fuck [65, 80], what?

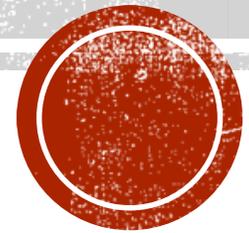
# Coding Done!



Litefoot "Native Pride 2K" (Rez Affiliated, 1999)



# ABOUT THE CORPUS



# ORIGINAL DATASET SUMMARY

- **4 Artists:** **2Pac, Frank Waln, Litefoot, Nataanii Means**
- **Albums: 27** **Total Tracks: 421**
- **Unique Tracks: 315**

Phase 1 Project Summary

	2Pac	%	Litefoot	%	Nataanii Means	%	Frank Waln	%	Night Shield	Totals
Albums	19		7		1					27
Total Tracks	326		76		13		6			421
Unique Tracks	220	67.48466	76	100	13	100	6	100		315
My Block	54	24.54545	0	0	0	0	0	0		54
Born on the Rez	0	0	7	9.210526	3	23.07692308	3	50		13
Thug Life	105	47.72727	0	0	0	0	0	0		105
Out on Bail	0	0	0	0	0	0	0	0		0
Is There Heaven for a G?	13	5.909091	0	0	0	0	0	0		13
When We Ride	11	5	0	0	0	0	0	0		11
Rez Affiliated	0	0	48	63.15789	7	53.84615385	1	16.6666667		56
Mama's Just a Little Girl	4	1.818182	0	0	0	0	0	0		4
My Ancestors	0	0	13	17.10526	0	0	2	33.3333333		15
Me and My Girlfriend	8	3.636364	0	0	0	0	0	0		8
Thug Passion	16	2	0	0	0	0	0	0		16
Skandalouz	9	4.090909	1	1.315789	0	0	0	0		10
A Song For Her	0	0	7	9.210526	1	7.692307692	0	0		8



# DICTIONARY DATASET



# METHODOLOGY – INITIAL SONG TITLE CATEGORIZATION

## Tupac Shakur Categories

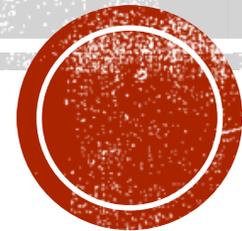
- **My Block (Better Dayz disc 2)**
  - 54 titles
- **Thug Life**
  - When We Ride (All Eyez on Me disc 2)
  - Out on Bail (Loyal to the Game)
  - Is There Heaven for a G?
- **Mama's Just a Little Girl (Better Dayz disc 1)**
- **Me and My Girlfriend**
  - Thug Passion (All Eyez on Me disc 2)
  - Skandalouz (All Eyez On Me disc 1)
  - Me and My Girlfriend (the don killuminati)

## Native American Categories

- **Born on the Rez**
  - (FrankWaln)
- **Rez Affiliated**
  - (Litefoot.Good Day to Die)
- **My Ancestors**
  - (Litefoot.Good Day to Die)
- **A Song For Her**
  - (NataaniiMeans.2Worlds)



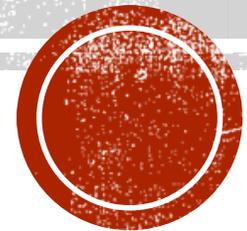
# **PRELIMINARY FINDINGS & ANALYSIS**



# RESEARCH QUESTIONS

Do Native American male rappers address socioeconomic issues in their lyrics?

How does the lyrical content of Native American male rappers compare Tupac Shakur's lyrical content written before 1996?



# DO NATIVE AMERICAN MALE RAPPERS ADDRESS SOCIOECONOMIC ISSUES IN THEIR LYRICS? **YES!**

- Total word count=41,067
- #1 ColonizedAggression- 0.93% of total (381 words)
  - genocidal, violence, war, treaties, warpath, poverty
- #25 Oppression- 0.86% (353 words)
  - Government, BoardingSchool, disease, CIB, BlackCharredTipis
- #51 Home- 0.94% (386 words)
  - `Reservation, Plains, Earth, Dirtstreets, communities
- #64 Structural Racism- 1.34% (550 words)
  - CIB, BoardingSchool, Bible, poverty

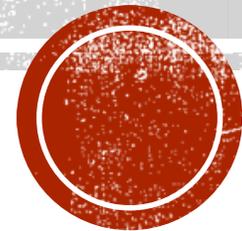


# HOW DOES THE LYRICAL CONTENT OF NATIVE AMERICAN MALE RAPPERS COMPARE TO TUPAC SHAKUR'S LYRICAL CONTENT WRITTEN BEFORE 1996?

- Total word count=165,433
  - #1 ColonizedAggression- 1.47% of total (2,431 words)
    - Gat, LatashaHarlins, DressedinBlueSlacks
  - #25 Oppression- 0.41% (678 words)
    - Slavery, BanAllRapMusic, AmeriKKKa
  - #51 Home- 0.61% (1,009 words)
    - Warzone, hood, block, concrete
  - #64 Structural Racism- 1.24% (2,051 words)
    - PenitentiaryTimes, PackedJails, Deadbroke
- Total word count=41,067
  - #1 ColonizedAggression- 0.93% of total (381 words)
    - genocidal, violence, war, treaties, warpath
  - #25 Oppression- 0.86% (353 words)
    - Government, disease, CIB, BlackCharredTipis
  - #51 Home- 0.94% (386 words)
    - Reservation, Plains, Earth, Dirtstreets, communities
  - #64 Structural Racism- 1.34% (550 words)
    - CIB, BoardingSchool, Bible



# FUTURE DIRECTIONS



# REFERENCES

## Research Analyzing Lyrics using Text Analysis and Visualization Software and Applications

- Petrie, Pennebaker, and Sivertsten, “Things we said today; A linguistic analysis of the Beatles,” *Psychology of Aesthetics, Creativity, and the Arts* 2(4) (2008): 197-202. **Findings:** Overall, lyrics became darker, more psychologically distant, and less immediate over time. (LIWC) (<http://homepage.psy.utexas.edu/homepage/faculty/pennebaker/reprints/beatles.pdf>).
- Pettijohn and Sacco, JR., “The language of lyrics: An Analysis of Popular *Billboard* Songs across conditions of social and economic threat,” *Journal of Language and Social Psychology* 28 (3) (2009): 297-311. **Findings:** Songs with more words per sentence, a focus on the future, and greater mention of social processes and intergroup themes were popular during threatening social and economic conditions.
- Kakde, Ghanekar, and Sindhu, “Life’s a Song! Mining Country Music Topics Using SAS® Text Miner,” Conference Presentation. SAS Global **USED:** SAS® Text Miner--Text Import, Text Parsing, Text Filter, Text Topic nodes; and the **FINDINGS:** Female artists are twice as likely to sing about heartbreak as compared to male artists; Percentage of songs about *Country Life, Love & happiness* and *Childhood* are almost identical for both female and male singers. <http://support.sas.com/resources/papers/proceedings13/268P-2013.pdf>.
- Powell-Morse, “Lyric intelligence in popular music: A Ten Year Analysis,” Data Visualizations from SeatSmart,” (2005). **USED:** Readability Score- It uses writing analysis tools like the Flesch-Kincaid grade index and many others to create an average of the US reading level of a piece of text. Analyzed 225 songs in 4 different datasets, resulting in 2,000+ individual data points. **FINDINGS:** The average grade level for top ranking songs appearing on *Billboard* is the 3<sup>rd</sup> grade. And the bar is getting lower. <http://seatsmart.com/blog/lyric-intelligence/>.
- “Bob Dylan—analyzing 55 years of lyrics.” via Tableau Picasso (a blog about data visualization with Tableau). <http://tableaupicasso.com/bob-dylan-analyzing-55-years-of-lyrics/>. 2015. This was a submission to Music Viz Contest – provided some datasets.
- “Everything in its right place: Visualization and content analysis of Radiohead lyrics,” everyday analytics. (2013). **RESULTS:** An interactive resource with lexical density on the y-axis and lyrical density on the x-axis. You can examine the lexical density of different albums by selecting the color in a legend. <http://www.everydayanalytics.ca/2013/06/radiohead-lyrics-data-visualization-and-content-analysis.html>
- Lee, Peter. “Taylor Swift’s Lyrics: A Textual Analysis,” *Hooks and Harmony*. (2014). **FINDINGS:** But it does seem as if Swift doesn’t put a lot of thought into her lyrics (except maybe the ones involving ex-boyfriends), nor is she trying harder as she grows older. <http://www.hooksandharmony.com/taylor-swifts-lyrics-textual-analysis/>



# REFERENCES

- Petrie, Pennebaker, and Sivertsten, “Things we said today; A linguistic analysis of the Beatles,” *Psychology of Aesthetics, Creativity, and the Arts* 2(4) (2008): 197-202. **Findings:** Overall, lyrics became darker, more psychologically distant, and less immediate over time. (LIWC) (<http://homepage.psy.utexas.edu/homepage/faculty/pennebaker/reprints/beatles.pdf>).
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- “Bob Dylan—analyzing 55 years of lyrics.” via Tableau Picasso (a blog about data visualization with Tableau). <http://tableaupicasso.com/bob-dylan-analyzing-55-years-of-lyrics/>. 2015. This was a submission to Music Viz Contest – provided some datasets.
- “Everything in its right place: Visualization and content analysis of Radiohead lyrics,” everyday analytics. (2013). **RESULTS:** An interactive resource with lexical density on the y-axis and lyrical density on the x-axis. You can examine the lexical density of different albums by selecting the color in a legend. <http://www.everydayanalytics.ca/2013/06/radiohead-lyrics-data-visualization-and-content-analysis.html>
- Lee, Peter. “Taylor Swift’s Lyrics: A Textual Analysis,” Hooks and Harmony. (2014). **FINDINGS:** But it does seem as if Swift doesn’t put a lot of thought into her lyrics (except maybe the ones involving ex-boyfriends), nor is she trying harder as she grows older. <http://www.hooksandharmony.com/taylor-swifts-lyrics-textual-analysis/>



# QUESTIONS??



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**THANK YOU!**

