



# Lyrical Transformation of



DH 100 Theory and Methods with Professor  
Adam Anderson | Alisha Lewis | 30 June 2021

"Music expresses feeling and thought, without language; it was below and before speech, and it is above and beyond all words." - Robert G. Ingersoll

# Outline

- ★ Research Questions
- ★ Project Importance
- ★ Jupyter Notebook
- ★ Github Repository
- ★ Poster
- ★ Conclusions
- ★ Works Cited



## HOT 100

★ STAR performer—Slides registering greatest proportionate upward progress this week.

WEEK	WEEKS ON CHART	WEEK ENDS	TITLE	ARTIST, LABEL & NUMBER	WEEKS ON CHART
1	2	5	10 THE HOUSE OF THE RISING SUN	Black Sabbath, Warner Bros.	5
2	1	2	2 WHERE DID OUR LOVE GO	Frankie Knuckles, Atlantic	9
3	1	2	3 EVERYBODY LOVES SOMEBODY	Eric Martin, Warner Bros.	11
4	7	14	4 BECAUSE...	Sheena Easton, Polygram	10
5	6	13	5 C'MON AND SWIM	Allyson Williams, Atlantic	4
6	23	56	6 BREAD AND BUTTER	Barbra Streisand, Columbia	4
7	4	5	7 UNDER THE BOARDWALK	Robyn, Atlantic	11
8	4	3	8 A HARD DAY'S NIGHT	Barbra Streisand, Columbia	10
9	10	16	9 HOW DO YOU DO IT	Barbra Streisand, Columbia	10
10	15	28	10 G.T.O.	Barbra Streisand, Columbia	10
11	13	28	11 SELFISH ONE	Barbra Streisand, Columbia	10
12	17	32	12 I AND I LOVE HER	Barbra Streisand, Columbia	10
13	47	78	13 REMEMBER (Walkin' in the Sun)	Barbra Streisand, Columbia	10
14	20	47	14 YOU NEVER CAN TELL	Barbra Streisand, Columbia	10
15	8	13	15 WALK—DON'T RUN	Barbra Streisand, Columbia	10
16	18	21	16 MAYBE I KNOW	Barbra Streisand, Columbia	10
17	30	39	17 MAYTELLINE	Barbra Streisand, Columbia	10
18	35	47	18 HAUNTED HOUSE	Barbra Streisand, Columbia	10
19	21	38	19 CLINGING VINE	Barbra Streisand, Columbia	10
20	12	15	20 PEOPLE SAY	Barbra Streisand, Columbia	10
21	16	28	21 SUCH A NIGHT	Barbra Streisand, Columbia	10
22	26	31	22 IN THE MISTY MOONLIGHT	Barbra Streisand, Columbia	10
23	11	9	23 WISHIN' AND HOPEIN'	Barbra Streisand, Columbia	10
24	42	60	24 WE'LL SING IN THE SUNSHINE	Barbra Streisand, Columbia	10
25	34	50	25 BABY I NEED YOUR LOVING	Barbra Streisand, Columbia	10
26	29	42	26 IT HURTS TO BE IN LOVE	Barbra Streisand, Columbia	10
27	51	—	27 OH, PRETTY WOMAN	Barbra Streisand, Columbia	10
28	19	20	28 JUST BE TRUE	Barbra Streisand, Columbia	10
29	34	54	29 IT'S ALL OVER NOW	Barbra Streisand, Columbia	10
30	19	22	30 AIN'T SHE SWEET	Barbra Streisand, Columbia	10
31	64	—	31 SAVE IT FOR ME	Barbra Streisand, Columbia	10
32	42	68	32 DANCING IN THE STREET	Barbra Streisand, Columbia	10
33	17	11	33 RAG DOLL	Barbra Streisand, Columbia	10

## HOT 100—A TO Z—(Publisher/Label)

91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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## BUDDING UNDER THE HOT 100

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## Why it Matters

Music tends to reflect the current state of society. As our society has gotten more progressive and open, so have our popular music lyrics. By looking at how lyrics have changed since 1950, an argument can be made regarding what is considered acceptable in the United States. For example, if technology is mentioned more often, it could be reflecting the rise of technology in our society. By analyzing different themes in popular music lyrics, commentary on the values of our society can be argued.

**billboard**  
**THE HOT**  
**100**

## Jupyter Notebook Experience

- ★ Adapted from Eunice Chan's work on Billboard Hot 100 and Rishabh Parekh's web scraping work
- ★ Difficult to web scrape from Genius
- ★ Trouble scraping songs with featured artists and older songs
- ★ Self generated dictionaries for technology and swear words
- ★ Useful for creating visuals and tables that show trends

```
for word in song:
```

```
#Count number of words in first person singular
if word in first_person_single:
    words_first_single += 1
```

```
#Count number of words in first person plural
if word in first_person_plural:
    words_first_plural += 1
```

```
#Count number of words in second person
if word in second_person:
    words_second += 1
```

```
#Count number of male pronouns
if word in male:
    words_male += 1
```










```
#Count number of female pronouns
if word in female:
    words_female += 1
```

```
#Count number of technology references
if word in technology:
    words_tech += 1
```

```
#Count number of swear words
if word in swear_words:
    words_swear += 1
```



# GitHub Repository

	alishalewis Update README.md	ce307f1 4 days ago	 25 commits
	Alisha Lewis DigHum100 Poster - P...	Add files via upload	4 days ago
	Data_Analysis (1).ipynb	Add files via upload	4 days ago
	Extracting_Billboard_100_Genius (1)...	Add files via upload	4 days ago
	LICENSE	Initial commit	18 days ago
	README.md	Update README.md	4 days ago
	alisha data (2).csv	Add files via upload	4 days ago
	results with years.csv	Add files via upload	4 days ago

## README.md



Welcome! I am currently working on a DigHum100 project analyzing the lyrics of US Billboard Hot 100 Songs from 1950-2018. I am a recent UC Berkeley grad with a Bachelor of Arts in Cognitive Science and a minor in Data Science. Check out my google colab notebook for this project [here](#).

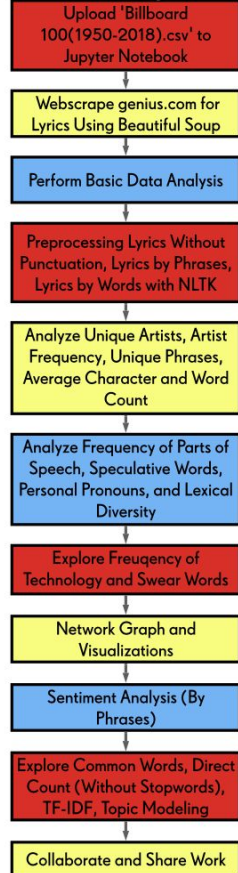
- ★ Serves as a great place to store documents
- ★ Useful for sharing with peers
- ★ Collaborative workspace
- ★ Good backup in case files are lost
- ★ Peers can elaborate and create further work

# Lyrical Transformation of

DH 100 Theory and Methods | Alisha Lewis | 27 June 2021



## Project Work Flow



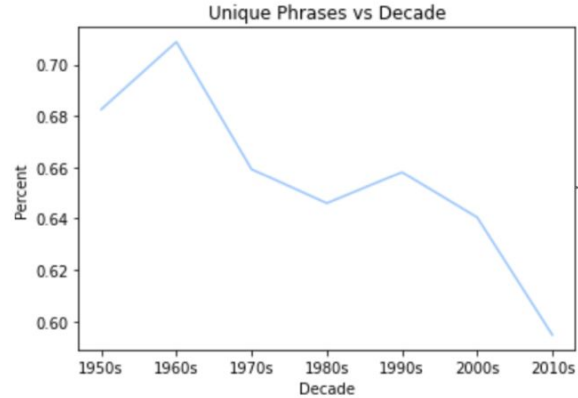
## Introduction:

The content of popular music has changed drastically over the years and often highlights the beliefs of our society. Through looking at American music lyric trends, values and cultural shifts can be analyzed. While studies have concluded that music has gotten [more negative](#) and [less about love](#), this project aims to analyze how much more music mentions technology and swear words, along with more general analysis. America has progressed to be more accepting of these topics in popular culture, and this study hopes consider if this is reflected within popular music lyrics.

## Research Question: How have Billboard Hot 100 Lyrics Changed Since 1950 to Reflect Societal Values?

## Description of Data Set:

This project will use a dataset on [Billboard Hot 100 songs from 1950-2018](#) created by Eunice Chan. This dataset contains the Billboard Hot 100 song title and artist for every year from 1950 till 2018. Eunice manually inputted lyrics for the top two songs of every year creating 136 data points, but this project relies on having more data for more detailed analysis. To learn how to web scrape lyrics from genius.com, work from [Rishabh Parekh's project](#) will be adapted to this project. Using Parekh's technique, the lyrics for the songs in Chan's csv file were scraped. Some lyrics were unable to be found so there are 2,540 song lyrics in the expanded data set. This dataset includes the lyrics along with the artist, song, and year. While Chan's and Parkeh's work has inspired much of the organization and basic data analysis, this project hopes to expand by looking at specific themes in a wider dataset of lyrics such as technology and swear words. With a much larger dataset, this project is able to produce more reliable results that show better trends about lyrics have changed generally. To analyze specific shifts in references to technology and swear words, a dictionary was manually created to track how many times those words appear in the lyrics. Using data analysis, NLTK, and visualizations, this project will highlight how Billboard Hot 100 lyrics have changed since 1950, reflecting a shift in societal values.

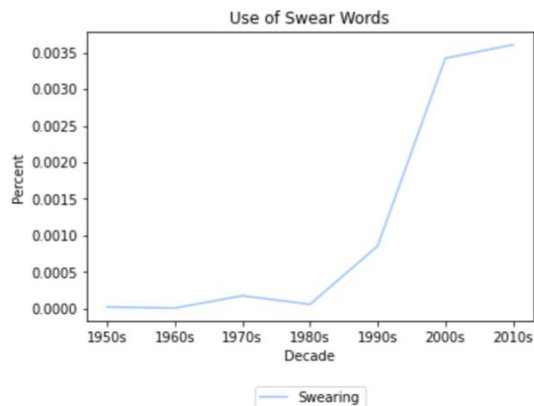
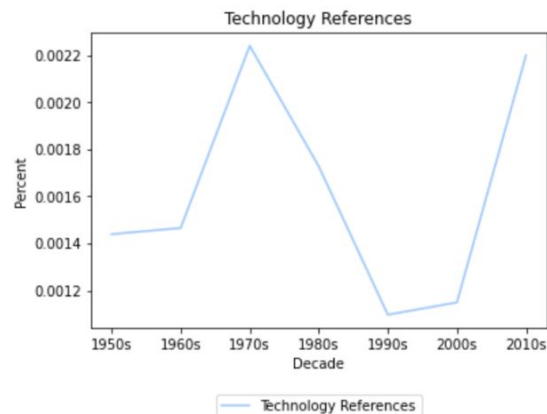


## Interpreting Results:

In the graph "Unique Phrases vs Decade," there appears to be a steep decline in the amount of unique phrases since 1950. While there was a slight bump in the amount of unique phrases in 1990, there is an overall downward trend. In the words clouds for the 1950s and 2010s, there are both similarities and differences. While words such as "love" and "baby" are not the most popular words by 2010, they are still common enough to be featured in the word cloud. There are words that disappeared completely from the most common words since 1950, such as "rock" and "kiss." Additionally, words have appeared in the 2010s that were not present before like "ain't." In the "Technology References" graph there are two spikes in the 1970s and 2010s. The 1990s appear to have the lowest amount of technology references. Looking at the "Use of Swear Words" graph, there is a steep incline of swear word usage starting in the 1990s. It seems to have leveled off slightly in the 2010s, but there is still an increase. Prior to that, there was a slight increase in the 1970s.

## Discussion of Results:

It could be hypothesized that the trends these graphs are correlated to shifts in our societal values. As our society has become more progressive and open, those shifts have been reflected in our popular music. A possible explanation for a decrease in unique phrases is the rise in rap music. This genre uses shorter, more repetitive phrases and began to be popular around the 1970s. When considering shifts in the most common words, it can be assumed that this is due to changes in our language. For example, it would make sense that "ain't" did not appear in the 1950s most common word cloud because it was not apart of the slang at that time. The lyrics seem to be less about love, suggesting that the US has become less romantic and could be focused on other topics such as sex. Furthermore, words like "rock" may be less common because of a shift in genre popularity. Rock was the most popular genre in the 1950s, but hip hop popularity has risen in 2010. When considering references to technology, there is a spike in the 1970s, which is when the first personal computers were created. There is another spike in the 2010s, which could be explained by the more common use of cell phones. It is unusual that there were more references to technology in the 1950s and 1960s than there were in the 1990s and 2000s. It is possible this could be due to the selection of words in the technology dictionary. The use of swear words starkly increased in the 1980s, which could be due to the popularity of rap starting in the 1970s. Swearing also suggests a more casual societal standards.



## Conclusions:

As discussed, the song lyrics of popular music can indicate shifts in genre popularity, societal values, and historic events. Through analyzing trends in popular music lyrics, the rise of technology, rap, slang, and a more progressive society has been highlighted. Future work could include expanding the dictionaries to include more words of association or exploring topic modeling to look at technology and swearing. If topic modeling were to be adapted to this, more topics could be explored. Further studies could also look at genre, gender identification of artists, and use of slang. This project could be improved with a larger dataset. While this dataset is much larger than the original, the webscraper failed to get the lyrics for many songs that had featured artists. Featuring has become much more popular in more recent times and is more common in certain genres, so this could have skewed the results. Additionally, some of the older songs lyrics were not on genius, so there is missing data there. The dataset could be expanded to twice it's size if these bugs in web scraping can be fixed.

## Works Cited:

[Github Repo](#)  
[More Negative Lyrics](#)  
[Chan, Billboard Hot 100](#)  
[Parekh, DH Project](#)  
[History of Computers](#)  
[History of Rap](#)  
[Coding help and feedback from Luc Le Pottier, Ash Tan, and Professor Anderson](#)



# Billboard

## Conclusions

- ★ Popular music lyrics show shifts in societal values and reflect historical trends
- ★ Lyrics were about technology in times of invention such as the computer and cell phone
- ★ Swear words have become much more common in our lyrics, reflecting a more casual atmosphere
- ★ There are less unique phrases in lyrics, demonstrating that popular music is more repetitive

# Video

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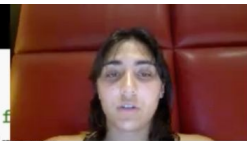
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```





## Works Cited

Thank you to:

Eunice Chan

Rishabh  
Parekh

Luc Le Pottier

Prof. Adam  
Anderson

Ash Tan

Images:

Slide 1

Slide 2

Slide 3

Slide 4

Slide 9

Slide 10