

WHAT CAN WE LEARN FROM MUSIC POLLS?

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PLAN OF PRESENTATION

This presentation.. a little different..

Present two (related) analyses:

1. “The Times They Are A-Chagin’: On the ephemeral nature of music polls” (with Liam Lenten), just accepted..
2. “Social media followers as music fans: Analysis of a music poll event” (with Paul Crosby and Liam Lenten), just commenced..

2016 NOBEL LAUREATE BOB DYLAN

Ed Bradley: *Rolling Stone Magazine just named your song 'Like a Rolling Stone' the number one song of all time... That must be good to have as part of your legacy?*

Bob Dylan: *Maybe this week. The lists, they change.. quite frequently, I don't really pay much attention to that.*

“Dylan Looks Back”, *60 Minutes*, December 5, 2004

WHY STUDY MUSIC POLLS?

- Music polls provide different information to music charts
- Some possible advantages:
 - Provide a means to compare products from different eras
 - Provide a mechanism to gauge passive consumption
 - Provide a way to understand ex-post assessment of quality

THE TRIPLE J HOTTEST 100

- Triple J is Australia's publicly-owned youth radio station (network)
- Since 1989 have run a listener poll of songs
- Played throughout day on January 26 (Australia Day)
- Claims title as 'World's Largest Online Music Poll'
- Two basic formats:
 1. 'Best song of all time Hottest 100' (1989, 1990, 1991, 1998, 2009)
 2. 'Best song of calendar year Hottest 100' (1993-2012)
 - Also Best song of last 20 years Hottest 100 (2013)

RESEARCH QUESTIONS

1. How stable are music preferences through time?
2. Do preference for new songs displace old songs?
3. Is there evidence of bandwagon, spillover or fad effects in voting behaviour?

SO WHAT??

- Preferences affect sales, which affect economic outcomes
- Creation and consumption of polls provides its own utility
- Provides an opportunity to learn about the stability of demand for information goods over time beyond the confluence of fads

PREVIEW OF FINDINGS

- All-time Hottest 100s
 - Observe a significant amount of rotation of songs coupled with longevity of handful of songs
 - Significant entry of new (recent) songs but their existence in future polls is volatile, indicative of a ‘fad’ effect
 - Sometimes see entry of new (not recent-release) songs that might have been associated with hit movies or TV shows, indicative of ‘spillover’ effect
- Annual Hottest 100s
 - 20-year Hottest 100 shows general bias towards successful songs of annual polls but with important omissions (fad songs)
 - Annual CD release has influenced voting behaviour in 20-year Hottest 100

ALL-TIME HOTTEST 100s: SURVIVAL

Top 100

<i>Survival</i>	1989	1990	1991	1998	2009
1989	100				
1990	56	100			
1991	42	59	100		
1998	16	19	32	100	
2009	12	12	20	49	100

Top 50

<i>Survival</i>	1989	1990	1991	1998	2009
1989	50				
1990	43	50			
1991	34	38	50		
1998	12	14	22	50	
2009	10	8	12	34	50

ALL-TIME HOTTEST 100s: RANKING STABILITY

Top 100

<i>Spearman</i>	1989	1990	1991	1998	2009
1989	1.000				
1990	0.698	1.000			
1991	0.450	0.628	1.000		
1998	0.459	0.333	0.272	1.000	
2009	0.196	-0.014	0.155	0.410	1.000

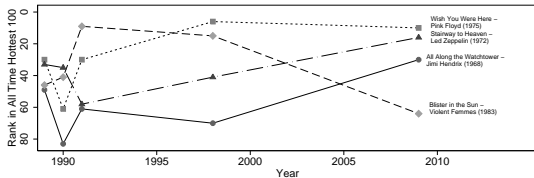
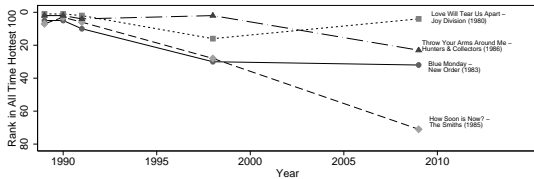
Top 50

<i>Spearman</i>	1989	1990	1991	1998	2009
1989	1.000				
1990	0.682	1.000			
1991	0.414	0.658	1.000		
1998	0.364	0.415	0.492	1.000	
2009	0.152	0.357	0.077	0.579	1.000

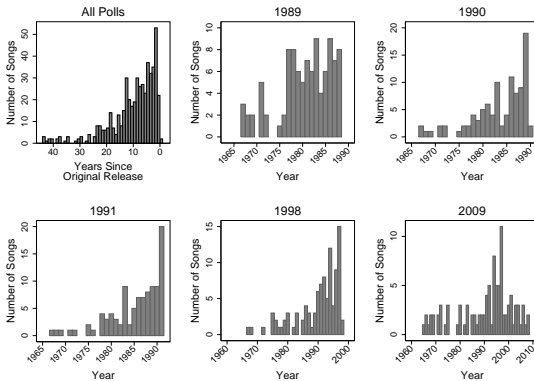
ALL-TIME HOTTEST 100s: RELATIVE MOVEMENTS

<i>Top 100</i>					
<i>Movement</i>	1989	1990	1991	1998	2009
1989					
1990	17/5/34				
1991	13/1/28	18/0/41			
1998	5/1/10	7/1/11	10/1/21		
2009	6/0/6	5/0/7	9/1/10	20/2/27	
<i>Top 50</i>					
<i>Movement</i>	1989	1990	1991	1998	2009
1989					
1990	9/5/29				
1991	7/1/26	6/0/32			
1998	2/1/9	2/1/11	3/1/18		
2009	4/0/6	1/0/7	2/1/9	7/1/26	

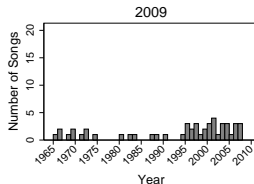
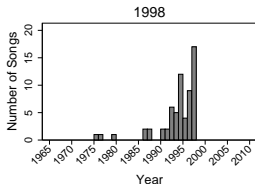
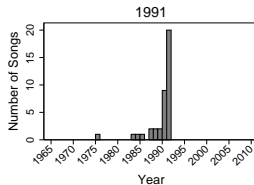
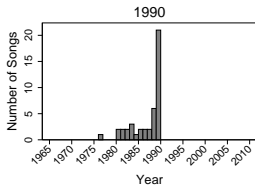
ALL-TIME HOTTEST 100s: PROFILES OF SELECTED SONGS



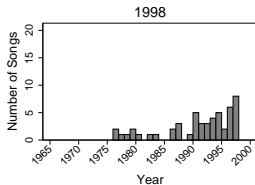
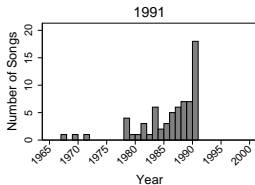
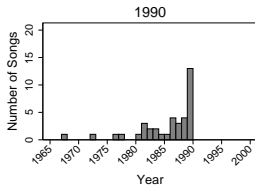
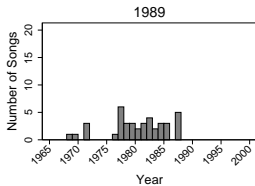
ALL-TIME HOTTEST 100s: SONGS BY YEAR OF RELEASE



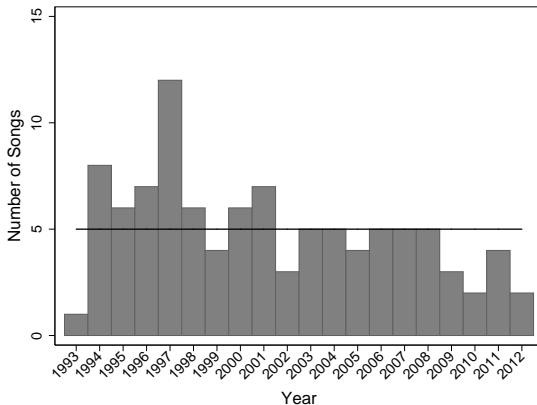
ALL-TIME HOTTEST 100s: ENTRIES BY YEAR OF RELEASE



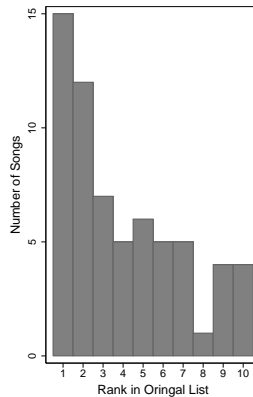
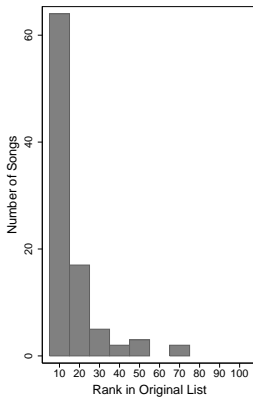
ALL-TIME HOTTEST 100s: EXITS BY YEAR OF RELEASE



20-YEAR HOTTEST 100: NUMBER OF SONGS BY YEAR (1993-2012)



20-YEAR HOTTEST 100: NUMBER OF SONGS BY ANNUAL HOTTEST 100 RANK



INCREASED EXPOSURE: THE ANNUAL DOUBLE CD

- Each year following the annual Hottest 100 the station releases a double CD
- However, due to copyright licensing constraints, not all songs on the CDs are necessarily the highest ranked
- The question is whether the songs that do appear on the CD feature more prominently on the 20-year Hottest 100 poll of 2013
 - The answer is 'yes'!

CD rank statistics

20-year vs. CD

Probit results

BACKGROUND AND DATA

- What are the benefits of achieving success in the Hottest 100?
- We track social media followers for 145 artists on Facebook, Twitter and Instagram
- Data set covers 22 November 2015 - 27 March 2016 (19 weeks)
- Artists were selected using 'J-Play' data
- Of these, 53 were in countdown (some with multiple songs) and 92 were not in countdown
- Social media followers serve as proxy for fan base

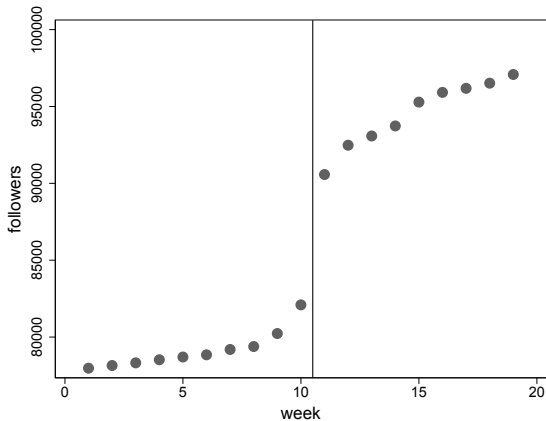
DiD Model

Summary Stats

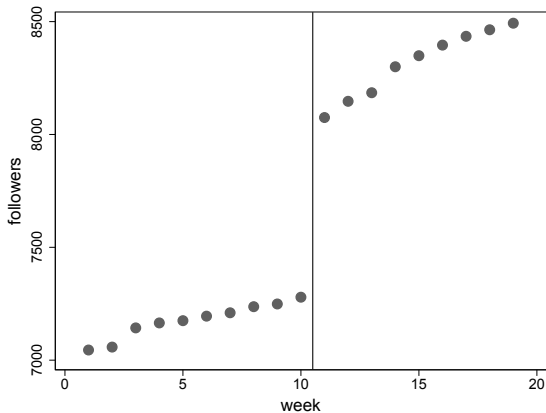
Weekly Stats

Results

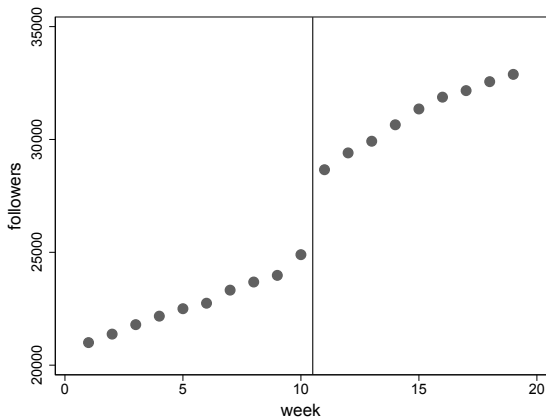
THE RUBENS (#1) — FACEBOOK FOLLOWERS



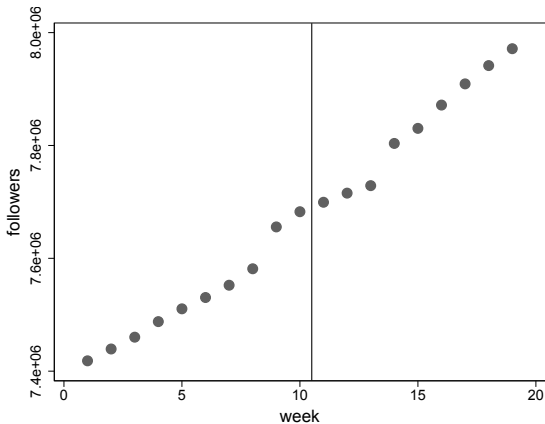
THE RUBENS (#1) — TWITTER FOLLOWERS



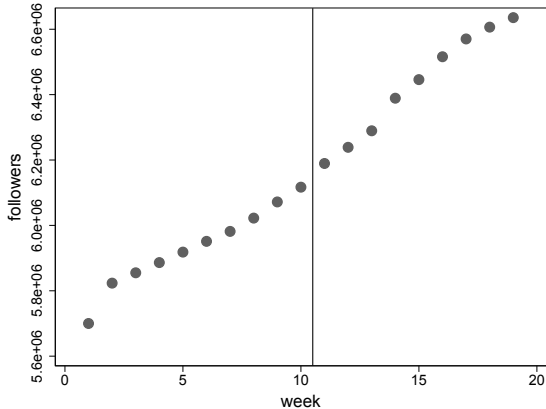
THE RUBENS (#1) — INSTAGRAM FOLLOWERS



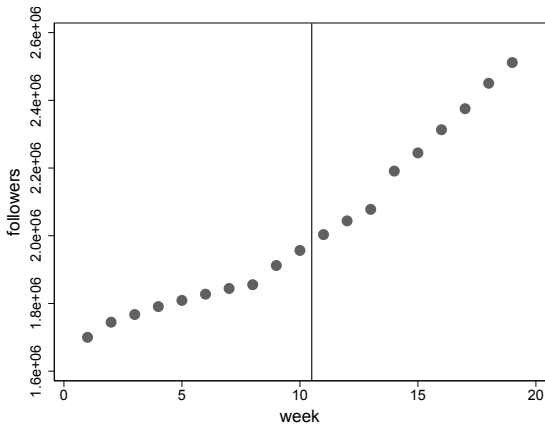
KENDRICK LAMAR (#2) — FACEBOOK FOLLOWERS



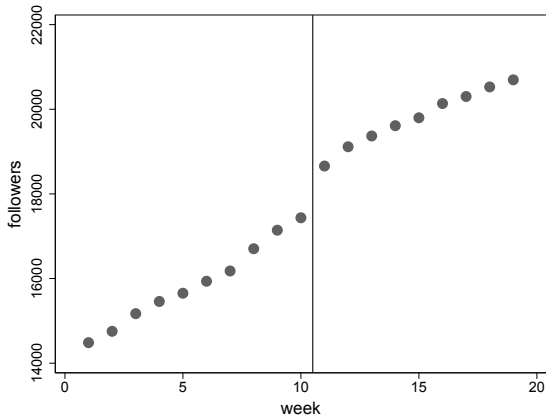
KENDRICK LAMAR (#2) — TWITTER FOLLOWERS



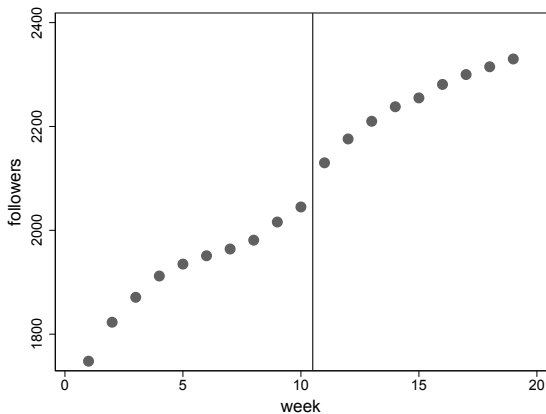
KENDRICK LAMAR (#2) — INSTAGRAM FOLLOWERS



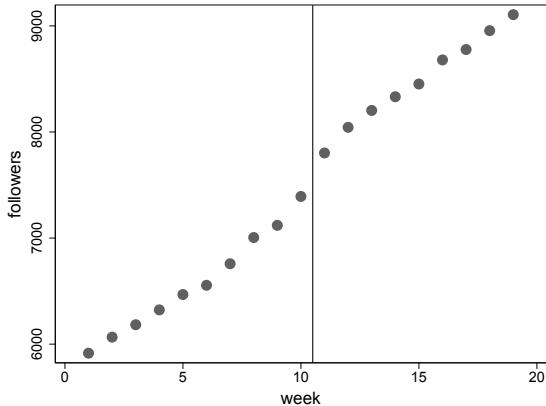
GANG OF YOUTHS (#21) — FACEBOOK FOLLOWERS



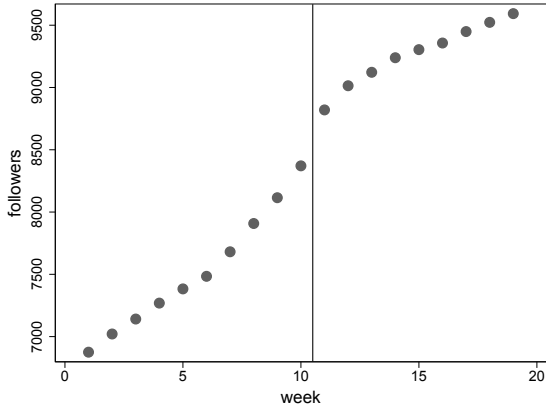
GANG OF YOUTHS (#21) — TWITTER FOLLOWERS



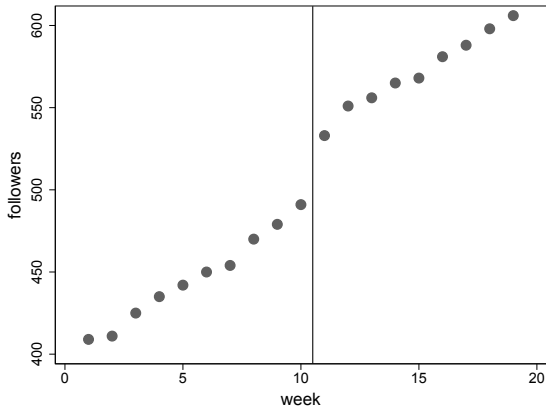
GANG OF YOUTHS (#21) — INSTAGRAM FOLLOWERS



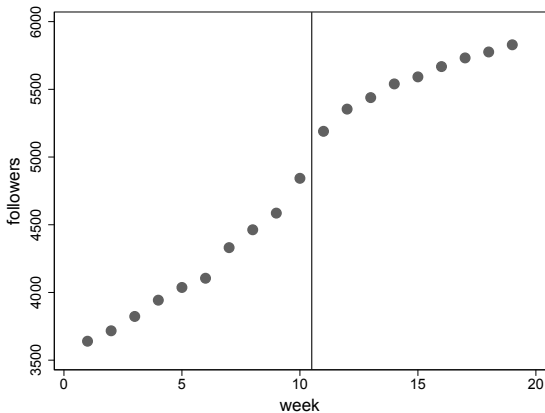
BOO SEEKA (#50) — FACEBOOK FOLLOWERS



BOO SEEKA (#50) — TWITTER FOLLOWERS



BOO SEEKA (#50) — INSTAGRAM FOLLOWERS



THANK YOU!



ANNUAL CD SONG RANK STATISTICS

Year	No. CD songs	Average rank	Percentile rank			Rank < CD		Rank > CD	
			25th	50th	75th	No.	%	No.	%
1993	31	35.4	19	34	46	13	42%	18	58%
1994	30	36.0	20	36	49	12	40%	18	60%
1995	32	30.2	14.5	28	47.5	18	56%	14	44%
1996	31	36.1	10	31	57	16	52%	15	48%
1997	31	34.6	13	23	58	18	58%	13	42%
1998	33	37.4	14	34	58	16	48%	17	52%
1999	36	37.6	12	30	62.5	19	53%	17	47%
2000	36	34.8	11.5	27	55	20	56%	16	44%
2001	33	41.8	19	36	61	16	48%	17	52%
2002	39	43.0	24	39	60	20	51%	19	49%
2003	40	48.6	19	47	81.5	18	45%	22	55%
2004	40	39.2	14.5	36	66.5	21	53%	19	48%
2005	41	34.9	18	29	56	26	63%	15	37%
2006	41	35.8	12	32	54	25	61%	16	39%
2007	43	37.0	11	32	57	27	63%	16	37%
2008	44	35.1	16	35.5	47.5	31	70%	13	30%
2009	42	31.0	11	24.5	50	29	69%	13	31%
2010	41	24.8	12	23	33	34	83%	7	17%
2011	42	31.9	11	22.5	54	27	64%	15	36%
2012	41	29.4	14	26	38	32	78%	9	22%
Total	747	35.6	14	31	53	438	59%	309	41%

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20-YEAR HOTTEST 100 vs. ANNUAL CD

All Lists Ranks	No. Songs Total	No. on 20-year	No. on CD	No. CD Total %	No. 20-year and CD	No. 20-year and CD %
1-5	100	44	76	10%	36	82%
6-10	100	19	70	9%	14	74%
11-15	100	12	45	6%	8	67%
16-20	100	5	75	10%	3	60%
21-25	100	5	45	6%	4	80%
All	2000	93	747	100%	69	74%

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APPEARANCE ON 20-YEAR HOTTEST 100

	Pr (Rank20 < 100)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CD	0.249*	0.370**	0.503***					
	(0.135)	(0.149)	(0.159)					
Ranked	0.048***	0.051***	0.053***	0.049***	0.064***	0.054***	0.061***	
	(0.005)	(0.005)	(0.005)	(0.006)	(0.007)	(0.005)	(0.006)	
CD × Ranked				0.006***				
				(0.002)				
CD × 1(Rank > Songs)					0.944***		0.712**	
					(0.334)		(0.326)	
Not CD × 1(Rank < Songs)						-0.479***	-0.428***	
						(0.158)	(0.162)	
1(Rank < Songs)								1.168***
								(0.197)
CD × 1(Rank < Songs)								0.726***
								(0.153)
Year dummies	N	Y	Y	Y	Y	Y	Y	Y
Month dummies	N	Y	Y	Y	Y	Y	Y	Y
Solo/Band controls	N	N	Y	Y	Y	Y	Y	Y
Country controls	N	N	Y	Y	Y	Y	Y	Y
N	2000	2000	2000	2000	2000	2000	2000	2000
Log likelihood	-248	-228	-220	-220	-221	-227	-224	-268
Pseudo R ²	0.341	0.393	0.416	0.416	0.412	0.397	0.403	0.288

Notes: Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

EMPIRICAL MODEL

We estimate the following Diff-in-Diff model:

$$\ln \text{Followers}_{ist} = \alpha \text{After} + \delta \text{After} \times \text{Treatment} + \mathbf{x}'_{ist} \beta + \varepsilon_{ist}$$

where

- '*Followers_{ist}*' are social media follower of artist *i* on social media *s* in week *t*;
- '*After*' refers to weeks after January 26, 2016 (Hottest 100 event);
- '*Treatment*' refers to artists that made it into the Hottest 100.

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SUMMARY STATISTICS: FACEBOOK FOLLOWERS

Week 10 Followers Summary Statistics						
	N	Mean	Median	SD	Min	Max
Facebook						
Hottest 100 = No						
Non-Aus	44	1,714,426	304,809	3,814,510	287	17,305,925
Aus	48	68,864	17,615	151,628	3052	838,830
Total	92	855,872	82,645	2,751,453	287	17,305,925
Hottest 100 = Yes						
Non-Aus	24	3,273,364	768,800	7,041,478	29	34,469,020
Aus	29	352,817	82,095	827,166	1105	4,301,209
Total	53	1,675,328	272,835	4,945,014	29	34,469,020
Week 11 Followers Summary Statistics						
	N	Mean	Median	SD	Min	Max
Facebook						
Hottest 100 = No						
Non-Aus	44	1,715,899	305,033	3,816,164	288	17,304,560
Aus	48	69,059	17,701	152,040	3065	842,364
Total	92	856,678	82,775	2,752,741	288	17,304,560
Hottest 100 = Yes						
Non-Aus	24	3,280,468	771,436	7,044,335	29	34,482,807
Aus	29	355,884	90,573	832,922	1113	4,331,756
Total	53	1,680,224	278,485	4,947,935	29	34,482,807

SUMMARY STATISTICS: INSTAGRAM FOLLOWERS

Week 10 Followers Summary Statistics						
	N	Mean	Median	SD	Min	Max
Instagram						
Hottest 100 = No						
Non-Aus	44	227,404	42,344	716,065	247	4,681,770
Aus	48	24,070	4,996	65,861	49	367,454
Total	92	121,317	13,823	504,934	49	4,681,770
Hottest 100 = Yes						
Non-Aus	24	1,442,657	137,733	3,781,162	1133	18,318,083
Aus	29	61,339	20,646	101,706	7	430,980
Total	53	686,841	42,346	2,609,824	7	18,318,083
Week 11 Followers Summary Statistics						
	N	Mean	Median	SD	Min	Max
Instagram						
Hottest 100 = No						
Non-Aus	44	229,712	42,537	721,619	245	4,715,179
Aus	48	24,327	5,156	66,562	49	371,858
Total	92	122,555	14,013	508,911	49	4,715,179
Hottest 100 = Yes						
Non-Aus	24	1,460,530	139,014	3,822,654	1154	18,518,761
Aus	29	62,602	21,165	103,317	7	436,877
Total	53	695,626	43,014	2,638,667	7	18,518,761

SUMMARY STATISTICS: TWITTER FOLLOWERS

Week 10 Followers Summary Statistics						
	N	Mean	Median	SD	Min	Max
Twitter						
Hottest 100 = No						
Non-Aus	44	458,712	104,979	1,149,535	3415	6,945,020
Aus	48	11,095	2,286	19,137	2	82,564
Total	92	225,173	24,947	821,673	2	6,945,020
Hottest 100 = Yes						
Non-Aus	24	1,964,314	286,328	5,784,945	1554	28,299,932
Aus	29	114,578	9,952	419,522	445	2,269,478
Total	53	952,194	31,586	3,970,003	445	28,299,932
Week 11 Followers Summary Statistics						
	N	Mean	Median	SD	Min	Max
Twitter						
Hottest 100 = No						
Non-Aus	44	459,830	105,306	1,152,454	3420	6,964,597
Aus	48	11,136	2,290	19,209	2	82,962
Total	92	225,729	25,066	823,752	2	6,964,597
Hottest 100 = Yes						
Non-Aus	24	1,979,026	288,078	5,829,584	1598	28,514,126
Aus	29	115,419	10,084	421,938	441	2,282,424
Total	53	959,317	31,694	4,000,544	441	28,514,126

WEEKLY GROWTH OF SOCIAL MEDIA FOLLOWERS

Facebook				
Week	Hottest 100 = No		Hottest 100 = Yes	
	Mean	Median	Mean	Median
2	0.98%	0.36%	0.72%	0.34%
3	0.80%	0.35%	0.77%	0.38%
4	0.60%	0.35%	0.80%	0.37%
5	0.49%	0.28%	0.68%	0.42%
6	0.41%	0.23%	0.64%	0.35%
7	0.34%	0.19%	0.68%	0.44%
8	0.59%	0.30%	0.91%	0.48%
9	0.48%	0.32%	0.93%	0.48%
10	0.51%	0.35%	0.91%	0.52%
11	0.48%	0.31%	1.21%	0.60%
12	0.56%	0.27%	0.85%	0.57%
13	0.58%	0.29%	0.71%	0.46%
14	0.54%	0.31%	0.93%	0.47%
15	0.48%	0.30%	0.87%	0.46%
16	0.64%	0.30%	0.82%	0.53%
17	0.48%	0.27%	0.62%	0.40%
18	0.44%	0.29%	0.67%	0.41%
19	0.41%	0.25%	0.56%	0.38%
Total	0.54%	0.29%	0.79%	0.44%

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WEEKLY GROWTH OF SOCIAL MEDIA FOLLOWERS

Instagram				
Week	Hottest 100 = No		Hottest 100 = Yes	
	Mean	Median	Mean	Median
2	1.80%	1.58%	2.37%	2.08%
3	1.25%	1.56%	2.63%	1.92%
4	3.78%	1.30%	2.39%	1.59%
5	1.54%	1.24%	1.77%	1.40%
6	0.91%	0.89%	1.28%	1.02%
7	1.14%	0.96%	1.83%	1.36%
8	1.53%	1.26%	1.81%	1.62%
9	1.32%	1.14%	1.67%	1.22%
10	1.30%	1.25%	2.06%	1.68%
11	1.26%	1.07%	2.58%	1.80%
12	1.20%	1.04%	1.56%	1.65%
13	1.07%	0.88%	1.25%	1.19%
14	1.45%	0.97%	1.90%	1.28%
15	1.34%	0.96%	1.46%	1.08%
16	1.15%	0.89%	1.51%	1.26%
17	0.89%	0.75%	1.21%	1.10%
18	1.14%	0.81%	1.41%	1.10%
19	0.94%	0.82%	1.14%	0.95%
Total	1.39%	1.04%	1.77%	1.33%

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WEEKLY GROWTH OF SOCIAL MEDIA FOLLOWERS

Week	Twitter			
	Hottest 100 = No		Hottest 100 = Yes	
	Mean	Median	Mean	Median
2	0.66%	0.38%	1.08%	0.58%
3	0.69%	0.29%	1.00%	0.54%
4	0.59%	0.25%	0.89%	0.52%
5	1.51%	0.26%	0.65%	0.47%
6	0.31%	0.18%	0.56%	0.43%
7	0.23%	0.11%	0.50%	0.37%
8	0.47%	0.21%	0.93%	0.57%
9	0.53%	0.28%	0.86%	0.52%
10	0.46%	0.28%	0.79%	0.63%
11	0.52%	0.33%	1.34%	0.84%
12	0.52%	0.29%	0.86%	0.78%
13	0.47%	0.22%	0.61%	0.45%
14	0.58%	0.31%	0.95%	0.60%
15	0.46%	0.22%	0.94%	0.51%
16	0.47%	0.21%	1.08%	0.57%
17	0.53%	0.19%	0.70%	0.50%
18	0.66%	0.20%	0.92%	0.55%
19	0.69%	0.22%	0.72%	0.38%
Total	0.57%	0.24%	0.85%	0.53%

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DIFF-IN-DIFF MODEL OF SOCIAL MEDIA FOLLOWERS

	Facebook	Twitter	Instagram	All
After	-0.009* (0.005)	-0.012** (0.005)	-0.017*** (0.006)	-0.013*** (0.004)
After × Treatment	0.031** (0.014)	0.032** (0.013)	0.045** (0.017)	0.036*** (0.012)
Week	0.006*** (0.001)	0.006*** (0.001)	0.015*** (0.001)	0.009*** (0.001)
Facebook				1.597*** (0.162)
Twitter				0.08211 (0.139)
Cons	11.570*** (0.006)	10.050*** (0.007)	9.886*** (0.008)	9.941*** (0.089)
Artist FEs	Yes	Yes	Yes	Yes
Obs	2755	2755	2755	8265
Number Artists	145	145	145	145
R^2	0.4103	0.3682	0.6529	0.9993

Notes: Clustered (artist-level) standard errors in parentheses;

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.