Project (Python): Analyzing TV Data

Whether or not you like football, the Super Bowl is a spectacle. There's a little something for everyone at your Super Bowl party. Drama in the form of blowouts, comebacks, and controversy for the sports fan. There are the ridiculously expensive ads, some hilarious, others gut-wrenching, thought-provoking, and weird. The half-time shows with the biggest musicians in the world, sometimes riding giant mechanical tigers or leaping from the roof of the stadium. It's a show, baby. And in this notebook, we're going to find out how some of the elements of this show interact with each other. After exploring and cleaning our data a little, we're going to answer questions like:

- What are the most extreme game outcomes?
- How does the game affect television viewership?
- How have viewership, TV ratings, and ad cost evolved over time?
- Who are the most prolific musicians in terms of halftime show performances?

1. TV, halftime shows, and the Big Game

super_bowls

	date	super_bowl	venue	city	state	attendance	team_winner
0	2018-02-04	52	U.S. Bank Stadium	Minneapolis	Minnesota	67612	Philadelphia Eagle
1	2017-02-05	51	NRG Stadium	Houston	Texas	70807	New England Patrio
2	2016-02-07	50	Levi's Stadium	Santa Clara	California	71088	Denver Broncos
3	2015-02-01	49	University of Phoenix Stadium	Glendale	Arizona	70288	New England Patrio
4	2014-02-02	48	MetLife Stadium	East Rutherford	New Jersey	82529	Seattle Seahawks

tv

	super_bowl	network	avg_us_viewers	total_us_viewers	rating_household	share_household	rating_18_49	share_18_49
0	52	NBC	103390000	null	43.1	68	33.4	7
1	51	Fox	111319000	172000000	45.3	73	37.1	7
2	50	CBS	111864000	167000000	46.6	72	37.7	7
3	49	NBC	114442000	168000000	47.5	71	39.1	7
4	48	Fox	112191000	167000000	46.7	69	39.3	7

halftime_musicians

	super_bowl ⌄	musician ⌄	num_songs ⌄
0	52	Justin Timberlake	11
1	52	University of Minnesota Marching Band	1
2	51	Lady Gaga	7
3	50	Coldplay	6
4	50	Beyoncé	3

2. Taking note of dataset issues

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 53 entries, 0 to 52
Data columns (total 9 columns):
 #   Column            Non-Null Count  Dtype
---  ------            --------------  -----
 0   super_bowl        53 non-null     int64
 1   network           53 non-null     object
 2   avg_us_viewers    53 non-null     int64
 3   total_us_viewers  15 non-null     float64
 4   rating_household  53 non-null     float64
 5   share_household   53 non-null     int64
 6   rating_18_49      15 non-null     float64
 7   share_18_49       6 non-null      float64
 8   ad_cost           53 non-null     int64
dtypes: float64(4), int64(4), object(1)
memory usage: 3.9+ KB

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 134 entries, 0 to 133
Data columns (total 3 columns):
 #   Column      Non-Null Count  Dtype
---  ------      --------------  -----
 0   super_bowl  134 non-null    int64
 1   musician    134 non-null    object
 2   num_songs   88 non-null     float64
dtypes: float64(1), int64(1), object(1)
memory usage: 3.3+ KB
```
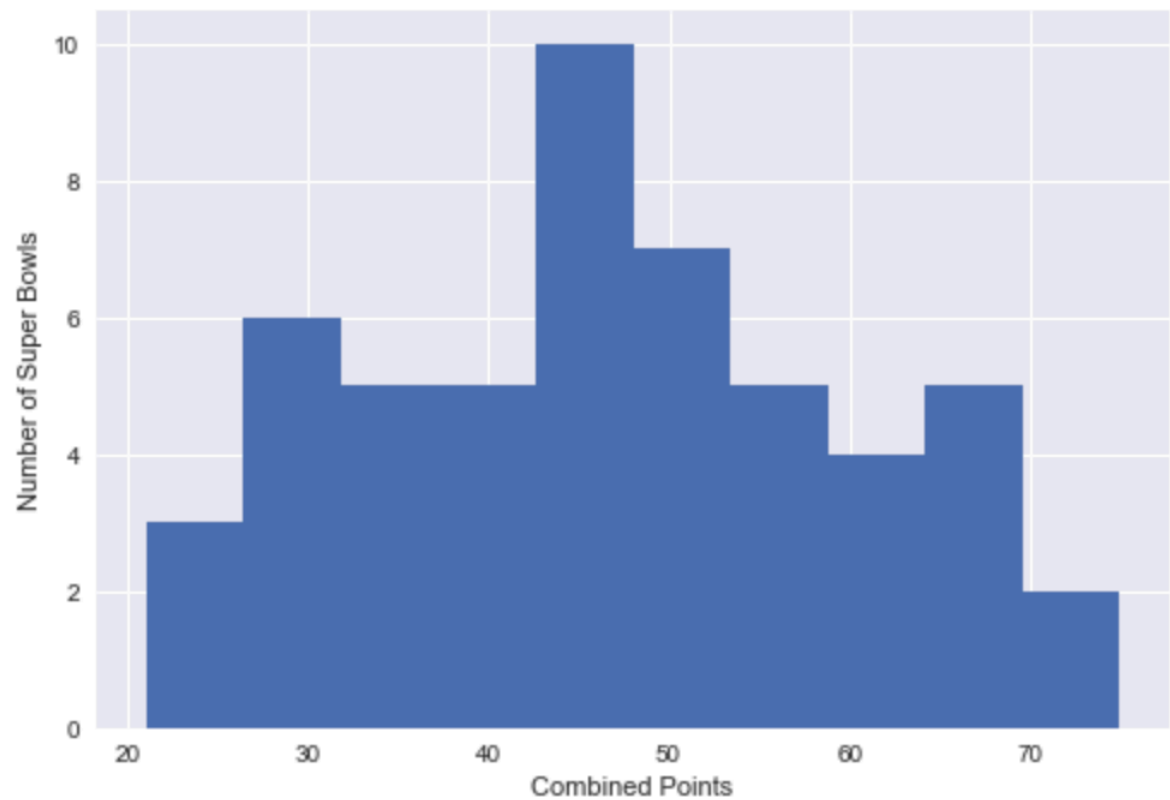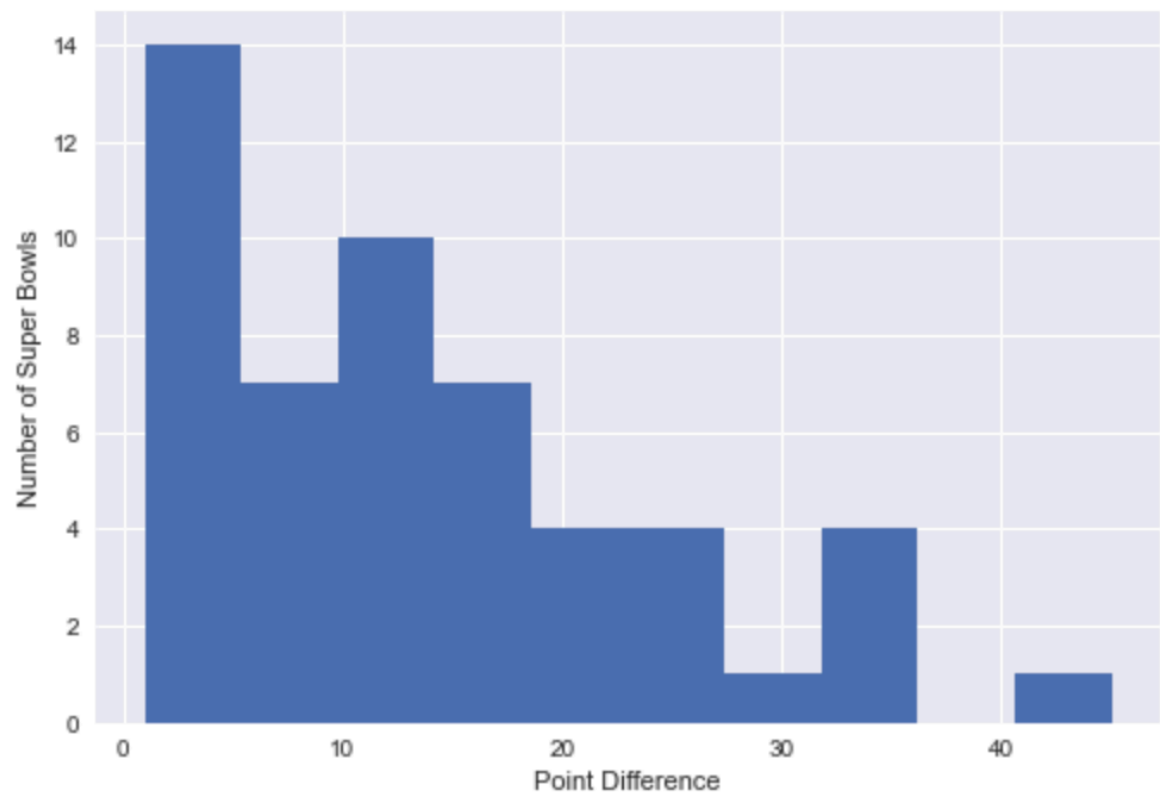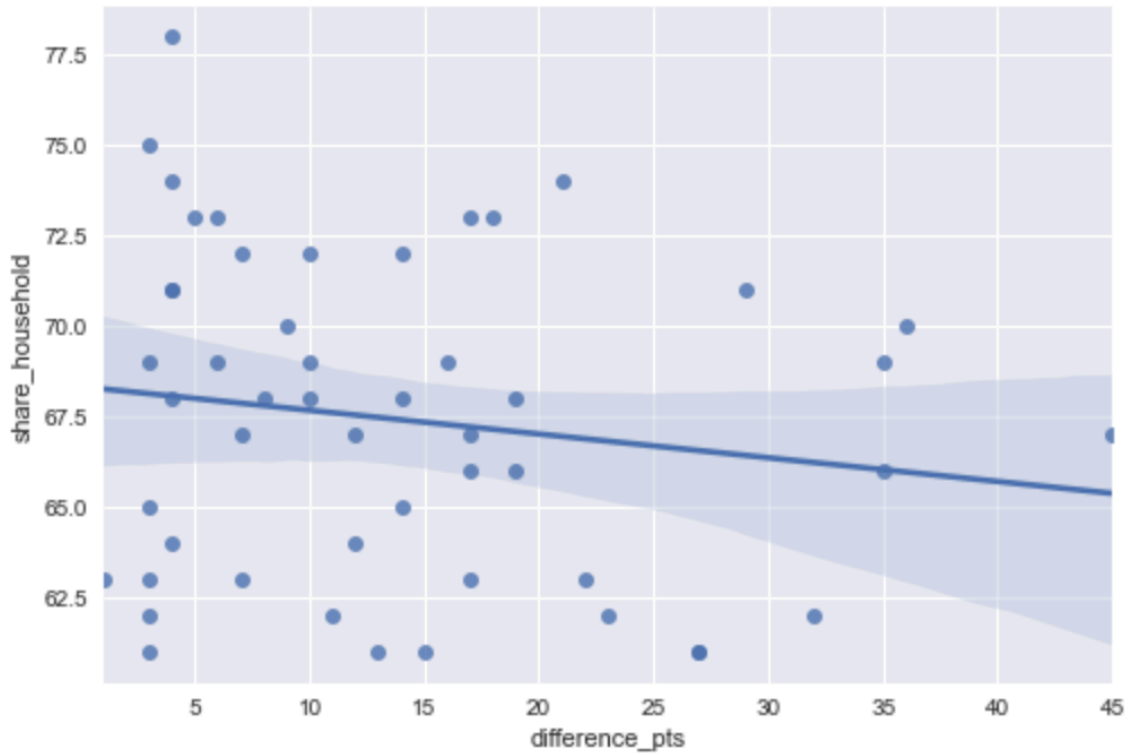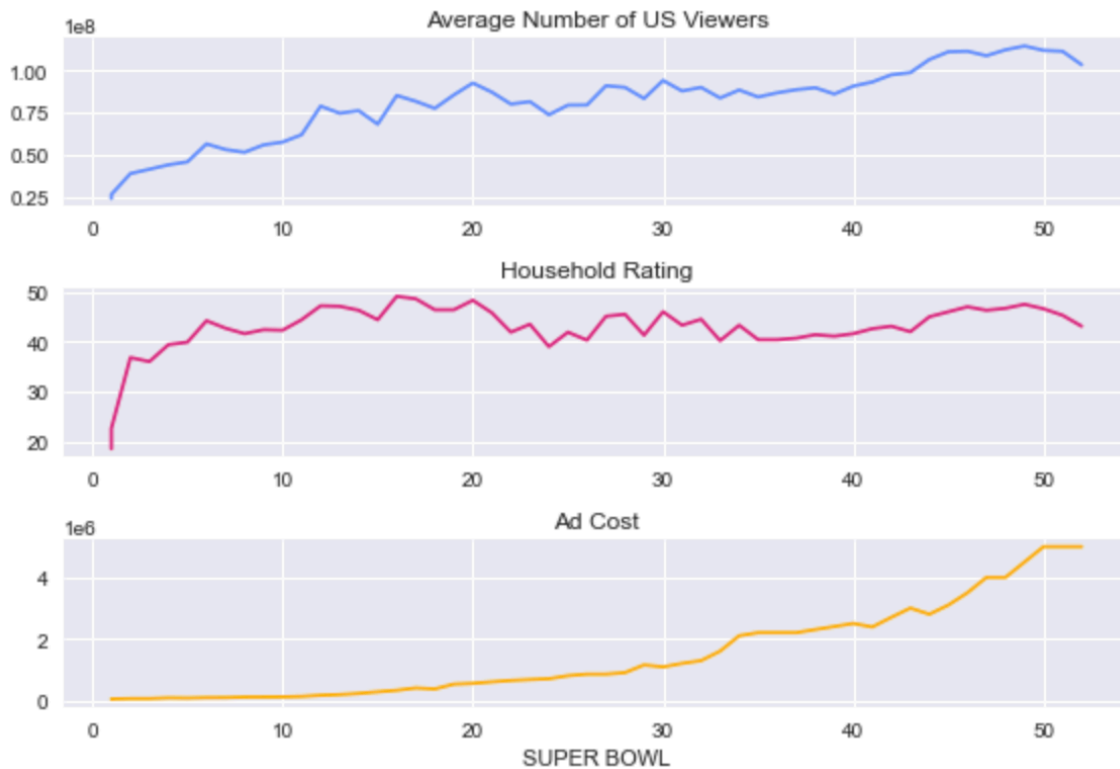
3. Combined points distribution

4. Point difference distribution

5. Do blowouts translate to lost viewers?

6. Viewership and the ad industry over time

7. Halftime shows weren't always this great

	super_bowl ∨	musician ∨	num_songs ∨
80	27	Michael Jackson	5
81	26	Gloria Estefan	2
82	26	University of Minnesota Marching Band	null
83	25	New Kids on the Block	2
84	24	Pete Fountain	1
85	24	Doug Kershaw	1
86	24	Irma Thomas	1
87	24	Pride of Nicholls Marching Band	null
88	24	The Human Jukebox	null
89	24	Pride of Acadiana	null

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« ‹ Page 1 of 6 › »   Rows per page 10 ∨ 54 rows

8. Who has the most halftime show appearances?

	musician ∨	super_bowl ∨
28	Grambling State University Tiger Marching Band	6
104	Up with People	4
1	Al Hirt	4
83	The Human Jukebox	3
76	Spirit of Troy	2
25	Florida A&M University Marching 100 Band	2
26	Gloria Estefan	2
102	University of Minnesota Marching Band	2
10	Bruno Mars	2
64	Pete Fountain	2

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« ‹ Page 1 of 2 › »   Rows per page 10 ∨ 14 rows

9. Who performed the most songs in a halftime show?

	super_bowl ⌄	musician ⌄	num_songs ⌄
0	52	Justin Timberlake	11
70	30	Diana Ross	10
10	49	Katy Perry	8
2	51	Lady Gaga	7
90	23	Elvis Presto	7
33	41	Prince	7
16	47	Beyoncé	7
14	48	Bruno Mars	6
3	50	Coldplay	6
25	45	The Black Eyed Peas	6
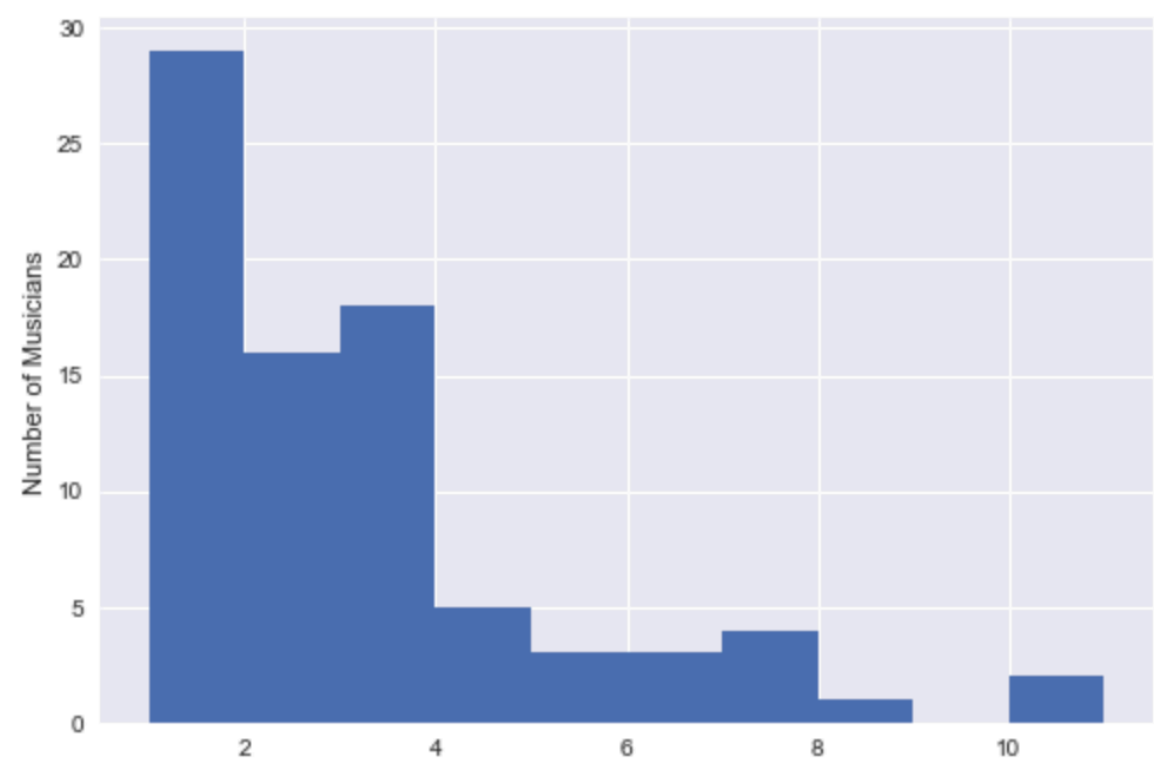
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« ‹ Page 1 of 2 › »   Rows per page 10 ⌄   15 rows