Client Report - W02 Project 1: What's in a name?

Course DS 250

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Elevator pitch

You can tell a lot about a civilization from it's language, and one of the most important aspects of language are the words that we used to represent people. A name is the essence of a thing, and the trends in child names over the last century tell a story about the evolution of our culture. In this project I will show visualizations that compare the relative prominence of names over time, and I will also show how the popularity of names has changed over time.

```python
# Include and execute your code here

#read in url to df
url = 'https://github.com/byuidatascience/data4names/raw/master/data-raw/names_year/names_year.csv'
dat = pd.read_csv(url)
#  Show some data
dat.tail(-5)
```

	name	year	AK	AL	AR	AZ	CA	CO	CT	DC	...	TN	TX	UT	VA	VT	WA	WI	WV	WY	Total
5	Aaden	2011	0	10	0	0	39	7	0	0	..	6	26	0	7	0	5	5	0	0	228.0
6	Aaden	2012	0	7	0	5	38	0	0	0	..	5	17	0	0	0	5	0	0	0	167.0
7	Aaden	2013	0	5	0	0	29	0	0	0	..	0	25	0	0	0	0	0	0	0	154.0

	name	year	AK	AL	AR	AZ	CA	CO	CT	DC	..	TN	TX	UT	VA	VT	WA	WI	WV	WY	Total
8	Aaden	2014	0.0	0.0	0.0	5.0	31.0	6.0	0.0	0.0	..	0.0	24.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	181.0
9	Aaden	2015	0.0	5.0	0.0	14.0	34.0	5.0	7.0	0.0	..	0.0	35.0	0.0	9.0	0.0	0.0	6.0	0.0	0.0	247.0
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
393379	Zyon	2011	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	..	5.0	9.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	117.0
393380	Zyon	2012	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	..	0.0	75.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	118.5
393381	Zyon	2013	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	..	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	93.0
393382	Zyon	2014	0.0	7.0	0.0	0.0	0.0	0.0	0.0	5.0	..	0.0	7.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0	73.0
39	Zyon	2015	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	..	0.0	10.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	87

name	year	AK	AL	AR	AZ	CA	CO	CT	DC	..	TN	TX	UT	VA	VT	WA	WI	WV	WY	Total
3383	on	15	0	0	0	0	0	0	0	0.0	0	.	0	0	0	0	0	0	0	.5

GRAND QUESTION 1

How does your name at your birth year compare to its use historically?

The name 'Scott' showed 26,177 occurrences in the year 1964, with the largest geographic areas of usage in the Mid-west and West. Historically, the name showed minimal usage throughout the 20th century until the 1950's, when it began to appear in popular culture. The greatest spike in usage for 'Scott' appears in the mid-1960's, with the largest years being 1963 - 1966, including my own birth year. There was at least one very popular 'hit' song in 1963 that featured the name prominently, and the name was also used in a popular television show in 1964. The name 'Scott' has been used in popular culture since the 1950's, but it was not until the 1960's that it became a popular name for children. Starting in 1972 - 1973 the name began to decline in popularity, and it has been on a steady decline since then. The name 'Scott' is currently ranked 1,000th in popularity.

GQ1 TABLE 1A - showing the occurrence of the name 'Scott' in each U.S. state for the year 1964:

```
# Include and execute your code here\

# query the larger data file for name and year
mydat = dat.query('name == "Scott" & year == 1964')
# melt the data so that states become rows instead of columns
mydat_melt = mydat.melt(id_vars=['name', 'year'])
mydat_melt.drop(columns=['name'], inplace=True)
mydat_melt.drop(columns=['year'], inplace=True)

#  rename columns
mydat_melt.rename(columns = {'variable':'State'}, inplace = True)
mydat_melt.rename(columns = {'value':'Total'}, inplace = True)

# Get indexe where variable column equals 'Total'
indexState = mydat_melt[mydat_melt['State'] == 'Total'].index
# Delete these row indexes from dataFrame
mydat_melt.drop(indexState , inplace=True)

Markdown(mydat_melt.to_markdown(index=False))
```

State	Total
AK	54
AL	197
AR	133
AZ	191
CA	2581
CO	383
CT	249
DC	104
DE	63
FL	652
GA	340
HI	100
IA	801
ID	116
IL	1773
IN	1002
KS	325
KY	234
LA	293
MA	1114
MD	384
ME	285
MI	1779
MN	1088
MO	642
MS	108
MT	154
NC	314
ND	186
NE	388
NH	184
NJ	947
NM	70
NV	63
NY	1179.5

State	Total
OH	930.5
OK	257
OR	302
PA	1864
RI	152
SC	145
SD	217
TN	257
TX	819
UT	272
VA	320
VT	86
WA	605
WI	1248
WV	168
WY	58

GQ1 CHART 1A - showing the occurrence of the name 'Scott' in each U.S. state for the year 1964:

```
# Include and execute your code here

# compute the total number of occurrences for 'Scott' in 1964 across all
states

alt.Chart(mydat_melt, title="Occurrences of the name 'Scott' in U.S. States
in 1964")\
    .encode(x="State:N", y="Total:Q")\
    .mark_bar(width = 10)\
    .properties(
        width=800,
        height=300

    )

C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.Chart(...)
```

GQ1 TABLE 2A - showing the total occurrences of the name 'Scott' in all U.S. states for the year 1964:

```
# Include and execute your code here

# Display the total number of occurrences for 'Scott' in 1964 for each state,
plus total
mydat_sum = mydat[["name","year","Total"]]
Markdown(mydat_sum.to_markdown(index=False))

# mydat_sum = mydat_melt['Total'].sum()
# mydat_sum
# Markdown(mydat_sum.to_markdown(index=False))
```

name	year	Total
Scott	1964	26177

GQ1 CHART 2A - showing the total occurrences of the name 'Scott' in all U.S. states for the year 1964:

```
# Include and execute your code here

# Display the total number of occurrences for 'Scott' in 1964 for each state,
plus total
alt.Chart(mydat_sum, title="Total occurrences of the name 'Scott' in the U.S.
in 1964")\
    .encode(x="year:N", y="Total:Q")\
    .mark_bar(width = 50)\
    .properties(
        width=200,
        height=300

    )
C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.Chart(...)
```

GQ1 TABLE 3A - showing the 5 states with the least occurrences of the name 'Scott' in the U.S. for the year 1964:

```
# Include and execute your code here

# compute the 5 min states for occurences of 'Scott' in 1964

mydat_min = mydat_melt.nsmallest(5,'Total')
```

```
# mydat_min
Markdown(mydat_min.to_markdown(index=False))
```

State	Total
AK	54
WY	58
DE	63
NV	63
NM	70

GQ1 CHART 3A - showing the 5 states with the least occurrences of the name 'Scott' in the U.S. for the year 1964:

```
# Include and execute your code here

# Chart the 5 min states for occurences of 'Scott' in 1964

alt.Chart(mydat_min, title="Five U.S. States with the least occurrences of
the name 'Scott' in the U.S. in 1964")\
    .encode(x="State:N", y="Total:Q")\
    .mark_bar(width = 20)\
    .properties(
        width=400,
        height=300

    )
```

```
C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.Chart(...)
```

GQ1 TABLE 4A - Table showing the 5 states with the most occurrences of the name 'Scott' in the U.S. for the year 1964:

```
# Include and execute your code here

# compute the max 5 states for occurences of 'Scott' in 1964

mydat_max = mydat_melt.nlargest(5,'Total')
mydat_max
Markdown(mydat_max.to_markdown(index=False))
```

State	Total
CA	2581
PA	1864

State	Total
MI	1779
IL	1773
WI	1248

GQ1 CHART 4A - Table showing the 5 states with the most occurrences of the name 'Scott' in the U.S. for the year 1964:

```
# Include and execute your code here

# Chart the max 5 states for occurences of 'Scott' in 1964

alt.Chart(mydat_max, title="Five U.S. States with the largest occurrences of
the name 'Scott' in the U.S. in 1964")\
    .encode(x="State:N", y="Total:Q")\
    .mark_bar(width = 20)\
    .properties(
        width=400,
        height=300

    )
```

```
C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.Chart(...)
```

GQ1 TABLE 1B - showing the 5 states with the least occurrences of the name 'Scott' in the U.S. for the year 1964:

```
# Include and execute your code here

# Occurrences of 'Scott' for all U.S. States for each year from 1910 - 2015

# # compute the total number of occurrences for 'Scott' for all years across
all states
mydat = dat.query('name == "Scott" & year > 1880')
# melt the data so that the states become rows
mydat_melt = mydat.melt(id_vars=['name', 'year'])
# #  rename columns
mydat_melt.rename(columns = {'variable':'State'}, inplace = True)
mydat_melt.rename(columns = {'value':'Total'}, inplace = True)
mydat_melt = mydat_melt.query('State != "Total"')
mydat_melt = mydat_melt.groupby('year').Total.sum().reset_index()

Markdown(mydat_melt.to_markdown(index=False))
```

year	Total
1910	7
1911	21
1912	49
1913	67
1914	82
1915	105
1916	105
1917	123
1918	108
1919	133
1920	150
1921	144
1922	152
1923	152
1924	175
1925	131
1926	103
1927	114
1928	118
1929	106
1930	89
1931	66
1932	115
1933	111
1934	120
1935	148
1936	170
1937	159
1938	192
1939	228
1940	269
1941	344
1942	474
1943	513
1944	569

year	Total
1945	835
1946	1502
1947	2019
1948	2286
1949	3039
1950	4270
1951	5380
1952	6197
1953	7489
1954	9456
1955	10770
1956	13219
1957	15141.5
1958	19166
1959	19757
1960	21608
1961	21203
1962	27307.5
1963	26419.5
1964	26177
1965	21132.5
1966	22922.5
1967	22329
1968	21204.5
1969	21667
1970	21954.5
1971	23554.5
1972	18757.5
1973	17315
1974	15579.5
1975	14277.5
1976	14065.5
1977	12638.5
1978	12406.5
1979	11438.5

year	Total
1980	11478
1981	11708.5
1982	11596
1983	10270.5
1984	8815.5
1985	9204.5
1986	9113.5
1987	9149
1988	9344
1989	8039.5
1990	7587
1991	7109
1992	6059
1993	5572
1994	4916
1995	4080
1996	3665
1997	3339
1998	3062
1999	2717
2000	2453
2001	2290
2002	2018
2003	1758
2004	1632
2005	1455
2006	1345
2007	1234
2008	1008
2009	888
2010	837
2011	776
2012	740
2013	653
2014	678

year	Total
2015	608

GQ1 CHART 1B - showing the 5 states with the least occurrences of the name 'Scott' in the U.S. for the year 1964:

```
# Include and execute your code here

# Display the total number of occurrences for 'Scott' for all years for each
state, plus total

alt.Chart(mydat_melt, title="Occurrences of the name 'Scott' accross all U.S.
States from 1910 to 2015")\
    .encode(x="year:N", y="Total:Q")\
    .mark_bar(width = 5)\
    .properties(
        width=1100,
        height=300

    )
```

```
C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.Chart(...)
```

GQ1 TABLE 2B - showing the total historical occurrences of the name 'Scott' for all U.S. states for the years 1910 - 2015:

```
# Include and execute your code here

# # compute the total number of occurrences for 'Scott' for all years for
each state
mydat = dat.query('name == "Scott" & year > 1880')

# melt the data so that the states become rows
mydat_melt = mydat.melt(id_vars=['name', 'year'])

#  rename columns
mydat_melt.rename(columns = {'variable':'State'}, inplace = True)
mydat_melt.rename(columns = {'value':'Total'}, inplace = True)
mydat_melt = mydat_melt.groupby('State').Total.sum().reset_index()

# Get index where variable column equals 'Total'
indexState = mydat_melt[mydat_melt['State'] == 'Total'].index
# Delete these row indexes from dataFrame
mydat_melt.drop(indexState , inplace=True)
```

```
Markdown(mydat_melt.to_markdown(index=False))
```

State	Total
AK	1524
AL	4953
AR	3867
AZ	7554
CA	51340.5
CO	10876
CT	11707
DC	2668
DE	1773
FL	18252
GA	9042
HI	2999
IA	16363
ID	4358
IL	40272.5
IN	21790.5
KS	9231
KY	6785
LA	8614
MA	25722.5
MD	10309.5
ME	6776
MI	37879.5
MN	27106
MO	17201
MS	2924
MT	3735
NC	8884
ND	4379
NE	9555
NH	4968
NJ	23639.5
NM	2499

State	Total
NV	2203
NY	47941
OH	41483.5
OK	7072
OR	10505
PA	38899.5
RI	3899
SC	4168
SD	4246
TN	6775
TX	23667.5
UT	10627
VA	10422
VT	2538
WA	17621
WI	29682.5
WV	4482
WY	1615

GQ1 CHART 2B - showing the total historical occurrences of the name 'Scott' for all U.S. states for the years 1910 - 2015:

```
# Include and execute your code here

# # compute the total number of occurrences for 'Scott' for all years across
all states
alt.Chart(mydat_melt, title="Total occurrence of the name 'Scott' accross
each U.S. State from 1910 to 2015")\
    .encode(x="State:N", y="Total:Q")\
    .mark_bar(width = 5)\
    .properties(
        width=800,
        height=300

    )

C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.Chart(...)
```

GQ1 TABLE 3B - showing the states with the least historical occurrences of the name 'Scott' for the years 1910 - 2015:

```
# Include and execute your code here

# compute the 5 min states for occurences of 'Scott' across all years

mydat_min = mydat_melt.nsmallest(5,'Total')
mydat_min
```

	State	Total
0	AK	1524.0
51	WY	1615.0
8	DE	1773.0
33	NV	2203.0
32	NM	2499.0

GQ1 CHART 3B - showing the states with the least historical occurrences of the name 'Scott' for the years 1910 - 2015:

```
# Include and execute your code here

# Chart the 5 min states for occurences of 'Scott'  across all years

alt.Chart(mydat_min, title="Five U.S. States with the least occurrences of
the name 'Scott' in the U.S. from 1910 - 1915")\
    .encode(x="State:N", y="Total:Q")\
    .mark_bar(width = 20)\
    .properties(
        width=400,
        height=300

    )
```

```
C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.Chart(...)
```

GQ1 TABLE 4B - showing the states with the most historical occurrences of the name 'Scott' for the years 1910 - 2015:

```
# Include and execute your code here

# compute the max 5 states for occurences of 'Scott' in 1964
```

```
mydat_max = mydat_melt.nlargest(5,'Total')
mydat_max
```

	State	Total
4	CA	51340.5
34	NY	47941.0
35	OH	41483.5
14	IL	40272.5
38	PA	38899.5

GQ1 CHART 4B - showing the states with the most historical occurrences of the name 'Scott' for the years 1910 - 2015:

```
# Include and execute your code here

# Chart the max 5 states for occurences of 'Scott' in 1964

alt.Chart(mydat_max, title="Five U.S. States with the largest occurrences of
the name 'Scott' in the U.S. from 1910 - 1915")\
    .encode(x="State:N", y="Total:Q")\
    .mark_bar(width = 20)\
    .properties(
        width=400,
        height=300

    )

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instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.Chart(...)
```

include figures in chunks and discuss your findings in the figure.

GRAND QUESTION 2

If you talked to someone named Brittany on the phone, what is your guess of his or her age? What ages would you not guess?

type your results and analysis here

Based upon the data my best guess would be 1985 to 1998 for a birth year. The name 'Brittany' showed very little occurrence until the rise of the pop music star "Brittany Spears," and rose and fell with her popularity. The name shows dramatic increase in usage in 1985, and then a dramatic decrease starting in 1998.

GQ2 TABLE 1A - showing the total historical occurrences of the name 'Brittany' for each year across all U.S. states for the years 1910 - 2015:

```
# Include and execute your code here

# Occurrences of 'Brittany' for all U.S. States for each year from 1910 -
2015

mydat = dat.query('name == "Brittany" & year > 1880')
# melt the data so that the states become rows
mydat_melt = mydat.melt(id_vars=['name', 'year'])
# #   rename columns
mydat_melt.rename(columns = {'variable':'State'}, inplace = True)
mydat_melt.rename(columns = {'value':'Total'}, inplace = True)
mydat_melt = mydat_melt.query('State != "Total"')
mydat_melt = mydat_melt.groupby('year').Total.sum().reset_index()

Markdown(mydat_melt.to_markdown(index=False))
```

year	Total
1968	5
1969	12
1970	32
1971	81
1972	158
1973	166
1974	198
1975	277
1976	304
1977	448
1978	592
1979	764
1980	1383
1981	1701
1982	3093
1983	4377
1984	7664
1985	14010
1986	17856.5
1987	18825.5
1988	21952

year	Total
1989	30848
1990	32562.5
1991	26963.5
1992	23416.5
1993	21728
1994	17808.5
1995	15875.5
1996	13796
1997	11527
1998	9843
1999	7942
2000	5183
2001	2915
2002	1912
2003	1559
2004	1323.5
2005	1168
2006	1009
2007	891
2008	749
2009	644
2010	698
2011	717
2012	745
2013	699
2014	660
2015	636

include figures in chunks and discuss your findings in the figure.

GQ2 CHART 1A - showing the total historical occurrences of the name 'Brittany' for each year across all U.S. states for the years 1910 - 2015:

```
# Include and execute your code here
alt.Chart(mydat_melt, title="Annual occurrence of the name 'Brittany' in the
U.S. across all states from 1910 - 1915")\
    .encode(x = "year:N", y = "Total:Q")\
    .mark_bar(width = 5)\
    .properties(
```

```
        width=1100,
        height=300

    )
```

```
C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.Chart(...)
```

My useless chart

GQ2 TABLE 2A - showing the total occurrences of the name 'Brittany' in each U.S. state for the years 1910 - 2015:

```
# Include and execute your code here

# # compute the total number of occurrences for 'Brittany' for all years for
each state
mydat = dat.query('name == "Brittany" & year > 1880')

# melt the data so that the states become rows
mydat_melt = mydat.melt(id_vars=['name', 'year'])

#  rename columns
mydat_melt.rename(columns = {'variable':'State'}, inplace = True)
mydat_melt.rename(columns = {'value':'Total'}, inplace = True)
mydat_melt = mydat_melt.groupby('State').Total.sum().reset_index()

# Get index where variable column equals 'Total'
indexState = mydat_melt[mydat_melt['State'] == 'Total'].index
# Delete these row indexes from dataFrame
mydat_melt.drop(indexState , inplace=True)

Markdown(mydat_melt.to_markdown(index=False))
```

State	Total
AK	750
AL	7431.5
AR	4362
AZ	4963
CA	18956.5
CO	5165
CT	3169
DC	1122.5

State	Total
DE	1043
FL	18438
GA	14179.5
HI	747
IA	3004
ID	1101
IL	15387
IN	10255
KS	2350
KY	9042.5
LA	8699.5
MA	5352
MD	7343
ME	1362
MI	11028
MN	5228
MO	7714
MS	5129
MT	823
NC	14090
ND	1072
NE	1807
NH	1238
NJ	7747
NM	1630
NV	1732
NY	15134.5
OH	17697.5
OK	4920
OR	3252
PA	12759
RI	1034
SC	7604
SD	905
TN	9325.5

State	Total
TX	21272.5
UT	3199
VA	10986
VT	654
WA	4758
WI	6260
WV	3915
WY	581

GQ2 CHART 2A - showing the total occurrences of the name 'Brittany' in each U.S. state for the years 1910 - 2015:

```
# Include and execute your code here

# # compute the total number of occurrences for 'Brittany' for all years
across all states
alt.Chart(mydat_melt, title="Total occurrence of the name 'Brittany' accross
each U.S. State from 1910 to 2015")\
    .encode(x="State:N", y="Total:Q")\
    .mark_bar(width = 5)\
    .properties(
        width=800,
        height=300

    )

C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.Chart(...)
```

GRAND QUESTION 3

Mary, Martha, Peter, and Paul are all Christian names. From 1920 - 2000, compare the name usage of each of the four names. What trends do you notice?

type your results and analysis here

Usage of the names 'Mary' and 'Martha' both show spikes during W.W. I and W.W. II, increasing their pre-war totals by 100%, from about 20,000 to 45,000 during each war and droping back to about 30,000 between the wars. Both names exhibit the same pattern of occurrence for the last 70 years, with sharp declines in usage right after W.W. II followed by a steady decline from the 1970's to the present.

Usage of the names 'Peter' and 'Paul' both show spikes during W.W. I, increasing their pre-war totals by about 200%, with no drop between the wars and a further spike of another 150% during W.W.II. Both names exhibit the same pattern of occurrence for the last 70 years, with sharp spikes in the 1960's with the rebirth of interest in spiritual concepts and folk music in the 1960's follwed by a steady decline from the 1970's to the present.

The rise for all four names during both world wars makes sense considering that it was a time of grave instability and danger for the world, for the nation and for individuals. People were reaching for stability, for peace, for tradition and for continuity and looking to the Bible to find it.

GQ3 TABLE 1A - showing the total historical occurrences of the name 'Mary' in all U.S. states for each of the years 1910 - 2015:

```
# Include and execute your code here

# Occurrences of 'Mary' for all U.S. States for each year from 1910 - 2015

mydat = dat.query('name == "Mary" & year > 1880')
# melt the data so that the states become rows
mydat_melt = mydat.melt(id_vars=['name', 'year'])
# #  rename columns
mydat_melt.rename(columns = {'variable':'State'}, inplace = True)
mydat_melt.rename(columns = {'value':'Total'}, inplace = True)
mydat_melt = mydat_melt.query('State != "Total"')
mydat_melt = mydat_melt.groupby('year').Total.sum().reset_index()

Markdown(mydat_melt.to_markdown(index=False))
```

year	Total
1910	17568.5
1911	19058.5
1912	24685.5
1913	27013.5
1914	32734.5
1915	41425
1916	43642.5
1917	44589
1918	49738.5
1919	47296
1920	45928.5
1921	49070
1922	48514
1923	45749.5

year	Total
1924	44981
1925	45006.5
1926	42416.5
1927	43645.5
1928	37597.5
1929	36396.5
1930	38872.5
1931	34680
1932	35923.5
1933	32867.5
1934	34809.5
1935	32865.5
1936	31045
1937	33171.5
1938	34026.5
1939	32546
1940	35422.5
1941	35127
1942	37619
1943	40505.5
1944	39509.5
1945	38813
1946	45337.5
1947	51053
1948	50828
1949	47835
1950	53791
1951	48928.5
1952	49898.5
1953	45603
1954	48678.5
1955	46351
1956	45111
1957	43334
1958	39392

year	Total
1959	39242
1960	36910.5
1961	33353.5
1962	31908.5
1963	31314.5
1964	29094
1965	25823
1966	23328.5
1967	20413.5
1968	18096.5
1969	16045
1970	15333
1971	14606.5
1972	12914.5
1973	11429.5
1974	11398
1975	9916
1976	9941.5
1977	9936.5
1978	9057.5
1979	9605
1980	10730.5
1981	10692
1982	9912.5
1983	9345
1984	8916.5
1985	8269.5
1986	7938.5
1987	7402.5
1988	7992.5
1989	8127.5
1990	8308
1991	8400
1992	8454
1993	7891.5

year	Total
1994	7746
1995	7438
1996	6946
1997	6627
1998	6434
1999	6360
2000	6184
2001	5725
2002	5452
2003	5004
2004	4770
2005	4445
2006	4078
2007	3666
2008	3488
2009	3149
2010	2856
2011	2684
2012	2554
2013	2626
2014	2621
2015	2588

GQ3 CHART 1A - showing the total historical occurrences of the name 'Mary' in all U.S. states for each of the years 1910 - 2015:

```python
# Include and execute your code here

# Display the total number of occurrences for 'Mary' for all years for each
state, plus total

chart = alt.Chart(mydat_melt, title="Occurrences of the name 'Mary' accross
all U.S. States from 1910 to 2015")\
    .encode(x="year:N", y="Total:Q")\
    .mark_bar(width = 5)\
    .properties(
        width=1100,
        height=300

    )
```

```
lines_df = pd.DataFrame({'big_events': [1914, 1918, 1939, 1945, 1962, 1969]})

rules = (
    alt.Chart(lines_df)
    .mark_rule(
        color = c_cp[4],
        opacity= 0.35,
        size = 1
    )
    .encode(
        # x = alt.X("x:Q", scale = alt.Scale(domain = (1910, 2015)))
        x = "big_events:N")
    .properties(
        width = 1100,
        height = 400
        # scale = alt.Scale(domain = (1910, 2015))
    )
)

chart + rules

C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.LayerChart(...)
```

GQ3 TABLE 2A - showing the total historical occurrences of the name 'Martha' in all U.S.
states for each of the years 1910 - 2015:

```
# Include and execute your code here

# Occurrences of 'Martha' for all U.S. States for each year from 1910 - 2015

mydat = dat.query('name == "Martha" & year > 1880')
# melt the data so that the states become rows
mydat_melt = mydat.melt(id_vars=['name', 'year'])
# #   rename columns
mydat_melt.rename(columns = {'variable':'State'}, inplace = True)
mydat_melt.rename(columns = {'value':'Total'}, inplace = True)
mydat_melt = mydat_melt.query('State != "Total"')
mydat_melt = mydat_melt.groupby('year').Total.sum().reset_index()

Markdown(mydat_melt.to_markdown(index=False))
```

year	Total
1910	2837

year	Total
1911	3008
1912	3902
1913	4527
1914	5430
1915	7217
1916	7606
1917	8259
1918	8339
1919	8318
1920	8705
1921	9254
1922	9018
1923	8731
1924	9163
1925	8757
1926	8557
1927	8088.5
1928	8245
1929	7381.5
1930	7830
1931	7248.5
1932	7329.5
1933	6905
1934	7603
1935	7383.5
1936	7176.5
1937	7645
1938	8017.5
1939	7956.5
1940	8204
1941	8250.5
1942	9514
1943	9700
1944	9329
1945	8744

year	Total
1946	9763
1947	10651
1948	10006
1949	9508
1950	9840
1951	9598
1952	9699
1953	9262
1954	8585
1955	7930
1956	7703
1957	7365
1958	6393.5
1959	6439
1960	5504.5
1961	5712
1962	5164
1963	4879
1964	4448
1965	3793
1966	3267
1967	2708
1968	2557
1969	2399
1970	2346
1971	2167
1972	1718
1973	1698
1974	1811
1975	1768
1976	1580
1977	1572
1978	1469
1979	1420
1980	1525

year	Total
1981	1549
1982	1270.5
1983	1166
1984	969.5
1985	1057
1986	1134
1987	1117
1988	969
1989	1049.5
1990	1222
1991	1096
1992	955.5
1993	1027
1994	928
1995	887
1996	849
1997	830
1998	737
1999	693
2000	741
2001	713
2002	670
2003	592
2004	548
2005	557
2006	551
2007	492
2008	452
2009	402
2010	353
2011	315
2012	340
2013	292
2014	337
2015	312

GQ3 CHART 2A - showing the total historical occurrences of the name 'Martha' in all U.S. states for each of the years 1910 - 2015:

```
# Include and execute your code here

# Display the total number of occurrences for 'Martha' for all years for each
state, plus total

chart = alt.Chart(mydat_melt, title="Occurrences of the name 'Martha' accross
all U.S. States from 1910 to 2015, with W.W.I, W.W.II & 60's Revolution
plotted")\
    .encode(x="year:N", y="Total:Q")\
    .mark_bar(width = 5)\
    .properties(
        width=1100,
        height=300

    )

lines_df = pd.DataFrame({'big_events': [1914, 1918, 1939, 1945, 1962, 1969]})

rules = (
    alt.Chart(lines_df)
    .mark_rule(
        color = c_cp[4],
        opacity= 0.35,
        size = 1
    )
    .encode(
        # x = alt.X("x:Q", scale = alt.Scale(domain = (1910, 2015)))
        x = "big_events:N")
    .properties(
        width = 1100,
        height = 400
        # scale = alt.Scale(domain = (1910, 2015))
    )
)

chart + rules

C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.LayerChart(...)
```

GQ3 TABLE 3A - showing the total historical occurrences of the name 'Peter' in all U.S. states for each of the years 1910 - 2015:

```
# Include and execute your code here

# Occurrences of 'Peter' for all U.S. States for each year from 1910 - 2015

mydat = dat.query('name == "Peter" & year > 1880')
# melt the data so that the states become rows
mydat_melt = mydat.melt(id_vars=['name', 'year'])
# #  rename columns
mydat_melt.rename(columns = {'variable':'State'}, inplace = True)
mydat_melt.rename(columns = {'value':'Total'}, inplace = True)
mydat_melt = mydat_melt.query('State != "Total"')
mydat_melt = mydat_melt.groupby('year').Total.sum().reset_index()

Markdown(mydat_melt.to_markdown(index=False))
```

year	Total
1910	578
1911	793
1912	1647
1913	1903
1914	2604
1915	2993.5
1916	3359
1917	3452
1918	3698
1919	3358
1920	3479
1921	3530
1922	3143.5
1923	3403
1924	3510
1925	3369
1926	3355
1927	2883
1928	2858.5
1929	3201
1930	3251
1931	3093
1932	2694.5
1933	3120

year	Total
1934	2865
1935	3413
1936	3706
1937	3283.5
1938	4289
1939	4633
1940	5039
1941	5608
1942	6582
1943	5920
1944	5450
1945	5604
1946	6449
1947	8591
1948	8050
1949	7180
1950	8366
1951	9004
1952	9581
1953	8561
1954	10073
1955	9689.5
1956	11321
1957	10284.5
1958	9555
1959	10028.5
1960	9545
1961	9225.5
1962	9577
1963	8571.5
1964	9907
1965	8364.5
1966	7626.5
1967	8087
1968	8133

year	Total
1969	7170
1970	6854
1971	5995.5
1972	6479
1973	5918
1974	5128.5
1975	5707
1976	4721
1977	5323
1978	5425.5
1979	6076
1980	5296
1981	5551
1982	5611
1983	4760.5
1984	4743.5
1985	5285.5
1986	5018
1987	5161
1988	5042.5
1989	4620.5
1990	4866.5
1991	4956
1992	3934.5
1993	4532
1994	3928.5
1995	3817.5
1996	4069
1997	3821
1998	3377
1999	3430
2000	3137
2001	2944
2002	2851
2003	2780

year	Total
2004	2787
2005	2540
2006	2464
2007	2331
2008	2167
2009	1992
2010	1914
2011	1814
2012	1841
2013	1835
2014	1896
2015	1902

GQ3 CHART 3A - showing the total historical occurrences of the name 'Peter' in all U.S. states for each of the years 1910 - 2015:

```python
# Include and execute your code here

# Display the total number of occurrences for 'Peter' for all years for each
state, plus total

chart = alt.Chart(mydat_melt, title="Occurrences of the name 'Peter' accross
all U.S. States from 1910 to 2015")\
    .encode(x="year:N", y="Total:Q")\
    .mark_bar(width = 5)\
    .properties(
        width=1100,
        height=300

    )

lines_df = pd.DataFrame({'big_events': [1914, 1918, 1939, 1945, 1962, 1969]})

rules = (
    alt.Chart(lines_df)
    .mark_rule(
        color = c_cp[4],
        opacity= 0.35,
        size = 1
    )
    .encode(
        # x = alt.X("x:Q", scale = alt.Scale(domain = (1910, 2015)))
        x = "big_events:N")
    .properties(
```

```
        width = 1100,
        height = 400
        # scale = alt.Scale(domain = (1910, 2015))
    )
)

chart + rules

C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.LayerChart(...)
```

GQ3 TABLE 4A - showing the total historical occurrences of the name 'Paul' in all U.S. states for each of the years 1910 - 2015:

```
# Include and execute your code here

# Occurrences of 'Paul' for all U.S. States for each year from 1910 - 2015

mydat = dat.query('name == "Paul" & year > 1880')
# melt the data so that the states become rows
mydat_melt = mydat.melt(id_vars=['name', 'year'])
# #  rename columns
mydat_melt.rename(columns = {'variable':'State'}, inplace = True)
mydat_melt.rename(columns = {'value':'Total'}, inplace = True)
mydat_melt = mydat_melt.query('State != "Total"')
mydat_melt = mydat_melt.groupby('year').Total.sum().reset_index()

Markdown(mydat_melt.to_markdown(index=False))
```

year	Total
1910	1998
1911	2384
1912	4777
1913	5962
1914	6966.5
1915	9209
1916	10284.5
1917	10534
1918	9890
1919	9913.5
1920	10958.5
1921	11251.5

year	Total
1922	10907
1923	11341.5
1924	11553.5
1925	12626.5
1926	12262
1927	11203
1928	9650.5
1929	10022.5
1930	10493
1931	9812
1932	11379
1933	11324.5
1934	10642
1935	12450.5
1936	11121.5
1937	12269
1938	12690.5
1939	12685.5
1940	13382
1941	13725.5
1942	15335
1943	16520.5
1944	16654
1945	16997
1946	16823.5
1947	18934
1948	17120.5
1949	20309
1950	21763
1951	21399
1952	22197.5
1953	25497
1954	25662.5
1955	24818.5
1956	24852

year	Total
1957	24897.5
1958	21623.5
1959	21464.5
1960	21377
1961	20980.5
1962	20155
1963	21904.5
1964	19928.5
1965	20051.5
1966	18978.5
1967	19168.5
1968	18531
1969	16884
1970	17193
1971	13902
1972	13123.5
1973	11327.5
1974	9951.5
1975	9554
1976	9980
1977	10191
1978	9725.5
1979	10428.5
1980	10898.5
1981	10694.5
1982	9129.5
1983	8733
1984	9284.5
1985	8774.5
1986	8454
1987	8112
1988	8238
1989	7494.5
1990	7705.5
1991	7150.5

year	Total
1992	6522
1993	6477
1994	5796
1995	5413
1996	4879
1997	4748
1998	4319
1999	4015
2000	3786
2001	3500
2002	3257
2003	3248
2004	3161.5
2005	3129
2006	3012
2007	2753
2008	2545
2009	2409
2010	2111
2011	2055
2012	1933
2013	2023
2014	1988
2015	2006

GQ3 CHART 4A - showing the total historical occurrences of the name 'Paul' in all U.S. states for each of the years 1910 - 2015:

```
# Include and execute your code here

# Display the total number of occurrences for 'Paul' for all years for each
state, plus total

chart = alt.Chart(mydat_melt, title="Occurrences of the name 'Paul' accross
all U.S. States from 1910 to 2015")\
    .encode(x="year:N", y="Total:Q")\
    .mark_bar(width = 5)\
    .properties(
        width=1100,
        height=300
```

```
    )

lines_df = pd.DataFrame({'big_events': [1914, 1918, 1939, 1945, 1962, 1969]})

rules = (
    alt.Chart(lines_df)
    .mark_rule(
        color = c_cp[4],
        opacity= 0.35,
        size = 1
    )
    .encode(
        # x = alt.X("x:Q", scale = alt.Scale(domain = (1910, 2015)))
        x = "big_events:N")
    .properties(
        width = 1100,
        height = 400
        # scale = alt.Scale(domain = (1910, 2015))
    )
)

chart + rules

C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.LayerChart(...)
```

GRAND QUESTION 4

Think of a unique name from a famous movie. Plot the usage of that name and see how changes line up with the movie release. Does it look like the movie had an effect on usage?

- Leia and Luke from Star Wars

type your results and analysis here

'Luke' and 'Leia' are the names of the two principal characters in the Star Wars series of movies. The popularity of both names rose significantly on the release of the first movie in 1977, and showed additional bumps with each subsequent release (1980, 1983, 1999, 2002, 2005, 2015, 2017, 2019). The popularity of the names has remained high since the release of the first movie, and has not declined since the release of the last movie in 2019. The last series of movies (2015, 2017, 2019) created a new bump in popularity for the names, far exceeding previous spikes (500%).

GQ4 TABLE 1A - showing the total historical occurrences of the name 'Leia' in all U.S. states for each of the years 1910 - 2015:

```
# Include and execute your code here

# Occurrences of 'Leia' for all U.S. States for each year from 1910 - 2015

mydat = dat.query('name == "Leia" & year > 1880')
# melt the data so that the states become rows
mydat_melt = mydat.melt(id_vars=['name', 'year'])
# #   rename columns
mydat_melt.rename(columns = {'variable':'State'}, inplace = True)
mydat_melt.rename(columns = {'value':'Total'}, inplace = True)
mydat_melt = mydat_melt.query('State != "Total"')
mydat_melt = mydat_melt.groupby('year').Total.sum().reset_index()

Markdown(mydat_melt.to_markdown(index=False))
```

year	Total
1963	6
1965	5
1967	6
1976	6
1977	34
1978	73
1979	60
1980	99
1981	71
1982	39
1983	73
1984	35
1985	23
1986	24
1987	30
1988	21
1989	18
1990	24
1991	19
1992	21
1993	26
1995	36
1996	19
1997	46

year	Total
1998	43
1999	60
2000	62
2001	77
2002	91
2003	74
2004	90
2005	158
2006	215
2007	230
2008	243
2009	282
2010	280
2011	298
2012	361
2013	470
2014	547
2015	718

GQ4 CHART 1A - showing the total historical occurrences of the name 'Leia' in all U.S. states for each of the years 1910 - 2015:

```
# Include and execute your code here

# Display the total number of occurrences for 'Leia' for all years for each
state, plus total

chart = alt.Chart(mydat_melt, title="Occurrences of the name 'Luke' accross
all U.S. States from 1910 to 2015, with Star Wars movie releases plotted")\
    .encode(x="year:N", y="Total:Q")\
    .mark_bar(width = 10)\
    .properties(
        width=800,
        height=300
    )

lines_df = pd.DataFrame({'movie_releases': [1977, 1980, 1983, 1999, 2002,
2005, 2015]})

rules = (
    alt.Chart(lines_df)
    .mark_rule(
```

```
        color = c_cp[4],
        opacity= 0.35,
        size = 1
    )
    .encode(
        # x = alt.X("x:Q", scale = alt.Scale(domain = (1910, 2015)))
        x = "movie_releases:N")
    .properties(
        width = 800,
        height = 400
        # scale = alt.Scale(domain = (1910, 2015))
    )
)


chart + rules

C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.LayerChart(...)
```

GQ4 TABLE 2A - showing the total historical occurrences of the name 'Luke' in all U.S.
states for each of the years 1910 - 2015:

```
# Include and execute your code here

# Occurrences of 'Luke' for all U.S. States for each year from 1910 - 2015

mydat = dat.query('name == "Luke" & year > 1880')
# melt the data so that the states become rows
mydat_melt = mydat.melt(id_vars=['name', 'year'])
# #  rename columns
mydat_melt.rename(columns = {'variable':'State'}, inplace = True)
mydat_melt.rename(columns = {'value':'Total'}, inplace = True)
mydat_melt = mydat_melt.query('State != "Total"')
mydat_melt = mydat_melt.groupby('year').Total.sum().reset_index()

Markdown(mydat_melt.to_markdown(index=False))
```

year	Total
1910	37
1911	21
1912	39
1913	73
1914	117

year	Total
1915	125
1916	140
1917	119
1918	125
1919	121
1920	116
1921	120
1922	150
1923	131
1924	154
1925	114
1926	122
1927	108
1928	109
1929	104
1930	95
1931	99
1932	129
1933	59
1934	74
1935	80
1936	72
1937	68
1938	80
1939	82
1940	76
1941	68
1942	63
1943	80
1944	71
1945	73
1946	77
1947	119
1948	115
1949	118

year	Total
1950	121
1951	123
1952	106
1953	108
1954	137
1955	167
1956	205
1957	238
1958	299
1959	295
1960	376
1961	379
1962	371
1963	368
1964	396
1965	336
1966	293
1967	290
1968	331
1969	404
1970	496
1971	482
1972	532
1973	603
1974	700
1975	748
1976	904
1977	1235
1978	1888
1979	2471
1980	3108
1981	3017
1982	2473
1983	2638
1984	2469

year	Total
1985	2739
1986	2646
1987	2588
1988	2617
1989	2704
1990	2870
1991	3015
1992	4064
1993	4351
1994	3910
1995	4628
1996	5015
1997	4952
1998	5282
1999	6133
2000	7141
2001	8004
2002	8692
2003	9297
2004	9549
2005	10003
2006	10082
2007	9602
2008	9412
2009	8614
2010	8835
2011	8697
2012	8998
2013	9558
2014	10480
2015	10219

GQ4 CHART 2A - showing the total historical occurrences of the name 'Luke' in all U.S. states for each of the years 1910 - 2015:

```
# Include and execute your code here
```

```python
# Display the total number of occurrences for 'Luke' for all years for each
state, plus total

chart = alt.Chart(mydat_melt, title="Occurrences of the name 'Luke' accross
all U.S. States from 1910 to 2015, with Star Wars movie releases plotted")\
    .encode(x="year:N", y="Total:Q")\
    .mark_bar(width = 5)\
    .properties(
        width=1100,
        height=300
    )

lines_df = pd.DataFrame({'movie_releases': [1977, 1980, 1983, 1999, 2002,
2005, 2015]})

rules = (
    alt.Chart(lines_df)
    .mark_rule(
        color = c_cp[4],
        opacity= 0.35,
        size = 1
    )
    .encode(
        # x = alt.X("x:Q", scale = alt.Scale(domain = (1910, 2015)))
        x = "movie_releases:N")
    .properties(
        width = 1100,
        height = 400
        # scale = alt.Scale(domain = (1910, 2015))
    )
)


chart + rules

C:\Python310\lib\site-packages\altair\utils\core.py:317: FutureWarning:
iteritems is deprecated and will be removed in a future version. Use .items
instead.
  for col_name, dtype in df.dtypes.iteritems():

alt.LayerChart(...)
```

APPENDIX A (Additional Python Code)

```python
#paste other your code from your python file (.py) here
```