Final Project Word

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library(tidyverse)

## -- Attaching packages --------------------------------------------------------- tidyverse 1.2.1 --

## v ggplot2 3.2.1 v purrr 0.3.2  
## v tibble 2.1.3 v dplyr 0.8.3  
## v tidyr 1.0.0 v stringr 1.4.0  
## v readr 1.3.1 v forcats 0.4.0

## -- Conflicts ------------------------------------------------------------ tidyverse\_conflicts() --  
## x dplyr::filter() masks stats::filter()  
## x dplyr::lag() masks stats::lag()

library(flexdashboard)

# read in data  
clues <- read\_tsv("./data/master\_season1-35.tsv")

## Parsed with column specification:  
## cols(  
## round = col\_double(),  
## value = col\_double(),  
## daily\_double = col\_character(),  
## category = col\_character(),  
## comments = col\_character(),  
## answer = col\_character(),  
## question = col\_character(),  
## air\_date = col\_date(format = ""),  
## notes = col\_character()  
## )

answers <- clues %>%   
 select(category, answer, question)  
  
#filter years out of answers, create new column, arrange descending  
years\_data <- answers %>%   
 mutate(years = str\_extract(answer, "[0-9]{4}")) %>%  
 filter(str\_count(years)==4)%>%   
 arrange(desc(years)) %>%   
 slice(413:84470) %>%   
 group\_by(years)   
  
 years\_data1 <- years\_data %>%   
 summarize(count = n()) %>%   
 arrange(desc(count)) %>%   
 ungroup()

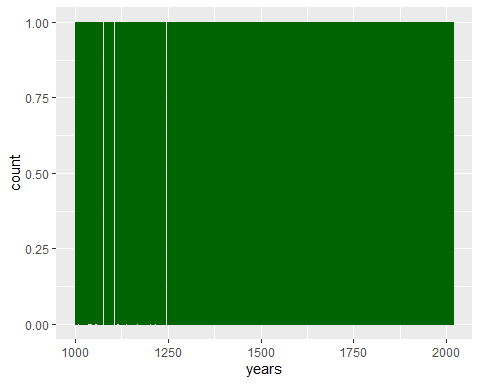
# transform years column to numeric  
years2 <- transform(years\_data1, years = as.numeric(years))  
  
years2

## years count  
## 1 1996 1087  
## 2 1999 1024  
## 3 1997 1023  
## 4 1980 999  
## 5 2000 994  
## 6 1960 975  
## 7 1995 961  
## 8 1990 906  
## 9 1998 891  
## 10 1970 868  
## 11 1989 831  
## 12 1984 830  
## 13 1988 818  
## 14 1986 816  
## 15 1994 812  
## 16 1992 803  
## 17 2001 797  
## 18 1987 744  
## 19 1991 739  
## 20 1950 735  
## 21 1993 733  
## 22 2008 731  
## 23 1968 723  
## 24 2003 721  
## 25 1964 697  
## 26 2009 684  
## 27 1962 659  
## 28 2002 657  
## 29 1967 655  
## 30 1985 645  
## 31 1973 644  
## 32 1930 642  
## 33 1969 640  
## 34 2004 640  
## 35 1971 636  
## 36 1975 636  
## 37 2005 634  
## 38 1979 626  
## 39 2006 625  
## 40 1976 622  
## 41 1961 621  
## 42 1920 617  
## 43 1982 617  
## 44 1978 605  
## 45 2010 594  
## 46 2007 591  
## 47 1974 589  
## 48 1940 588  
## 49 1972 586  
## 50 2011 581  
## 51 1963 574  
## 52 1977 573  
## 53 1981 568  
## 54 1965 561  
## 55 2012 553  
## 56 1983 551  
## 57 2013 539  
## 58 1959 518  
## 59 1954 493  
## 60 1939 484  
## 61 1966 483  
## 62 1957 481  
## 63 1956 473  
## 64 1948 470  
## 65 1947 469  
## 66 1955 453  
## 67 1945 448  
## 68 1953 446  
## 69 1952 445  
## 70 2014 440  
## 71 1958 420  
## 72 2015 419  
## 73 1946 402  
## 74 1936 399  
## 75 1949 388  
## 76 1935 380  
## 77 1941 377  
## 78 2016 372  
## 79 1951 356  
## 80 1942 354  
## 81 1912 349  
## 82 1937 346  
## 83 1934 334  
## 84 1900 331  
## 85 1890 324  
## 86 1933 317  
## 87 1929 315  
## 88 1944 310  
## 89 2017 310  
## 90 1938 308  
## 91 1932 305  
## 92 1800 303  
## 93 1901 292  
## 94 1870 277  
## 95 1913 276  
## 96 1917 271  
## 97 1919 271  
## 98 1928 270  
## 99 1927 261  
## 100 1924 259  
## 101 1931 255  
## 102 1904 250  
## 103 1923 250  
## 104 1850 249  
## 105 1922 248  
## 106 1865 245  
## 107 1860 244  
## 108 1776 233  
## 109 1880 233  
## 110 1926 233  
## 111 2018 232  
## 112 1898 230  
## 113 1914 228  
## 114 1863 227  
## 115 1862 224  
## 116 1903 222  
## 117 1916 222  
## 118 1910 218  
## 119 1915 218  
## 120 1918 218  
## 121 1889 217  
## 122 1861 216  
## 123 1925 216  
## 124 1943 216  
## 125 1896 209  
## 126 1812 203  
## 127 1876 203  
## 128 1902 201  
## 129 1864 199  
## 130 1905 198  
## 131 1893 192  
## 132 1881 191  
## 133 1840 190  
## 134 1906 189  
## 135 1909 189  
## 136 1867 188  
## 137 1921 188  
## 138 1892 187  
## 139 1830 185  
## 140 1895 185  
## 141 1908 185  
## 142 1789 179  
## 143 1911 179  
## 144 1899 178  
## 145 1869 177  
## 146 1775 176  
## 147 1897 173  
## 148 1871 172  
## 149 1848 169  
## 150 1888 167  
## 151 1886 166  
## 152 1859 162  
## 153 1907 160  
## 154 1820 157  
## 155 1851 150  
## 156 1872 148  
## 157 1849 143  
## 158 1883 142  
## 159 1847 139  
## 160 1894 137  
## 161 1846 136  
## 162 1868 135  
## 163 1887 135  
## 164 1600 134  
## 165 1857 134  
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## 167 1500 132  
## 168 1814 132  
## 169 1882 132  
## 170 1885 131  
## 171 1877 128  
## 172 1770 127  
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## 175 1000 125  
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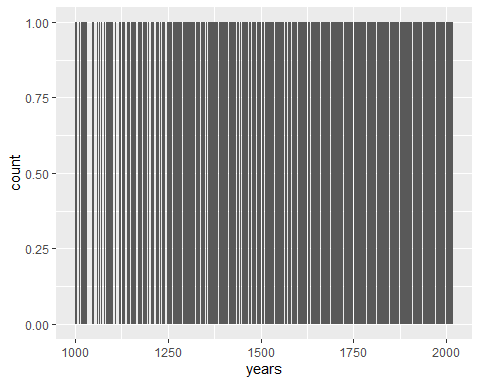
# check data class  
sapply(years2, mode)

## years count   
## "numeric" "numeric"

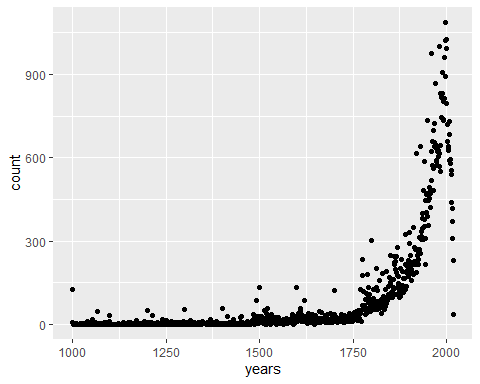
# try out a variety of sample plots   
  
ggplot(data = years2)+  
 stat\_count(mapping = aes(x = years), color = "dark green")



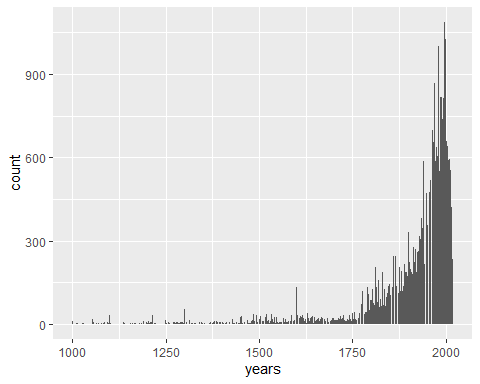
ggplot(years2, aes(x = years)) +  
 stat\_count(mapping = aes(x = years))



ggplot(years2, aes(x = years, y = count)) +  
 geom\_point()

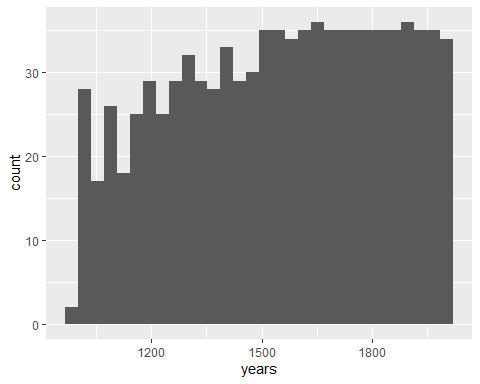


ggplot(years2, aes(x = years, y = count)) +  
 geom\_col()



ggplot(years2, aes(x = years)) +  
 geom\_histogram()

## `stat\_bin()` using `bins = 30`. Pick better value with `binwidth`.

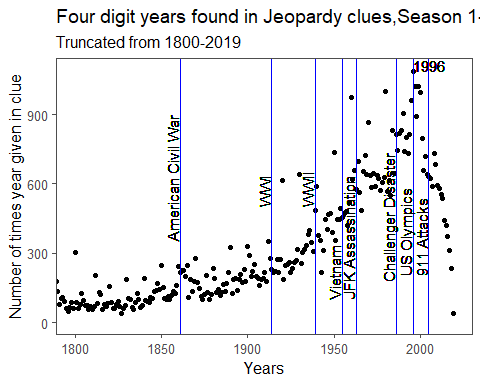


# Plots to use in Flex dashboard

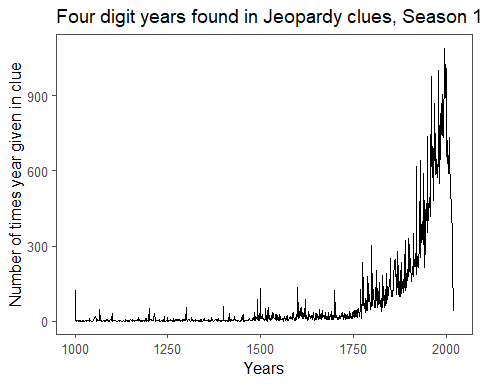
# add two plots to flex dashboard - reference\_plot and line\_plot  
  
# add to flex dashboard  
library(ggthemes)  
reference\_plot <-   
 ggplot(years2, aes(x = years, y = count)) +  
 geom\_point()+  
 coord\_cartesian(xlim = c(1800,2019))+  
 geom\_vline(xintercept=1996,colour="blue")+  
 geom\_text(aes(x=1996,label="1996",y=1087,vjust=0,hjust=0),  
 colour="black",  
 text=element\_text(size=11))+  
 geom\_text(x=1995,label=  
 "US Olympics",y=200,angle=90,vjust=0,hjust=0)+  
 geom\_vline(xintercept=1861,colour="blue")+  
 geom\_text(x=1860, label=  
 "American Civil War",y=350,angle=90,vjust=0,hjust=0)+  
 geom\_vline(xintercept=1914,colour="blue")+  
 geom\_text(x=1913,label="WWI",y=500,angle=90,vjust=0,hjust=0)+  
 geom\_vline(xintercept=1939,colour="blue")+  
 geom\_text(x=1938,label="WWII",y=500,angle=90,vjust=0,hjust=0)+  
 geom\_vline(xintercept=1955,colour="blue")+  
 geom\_text(x=1954,label="Vietnam",y=100,angle=90,vjust=0,hjust=0)+  
 geom\_vline(xintercept=2005,colour="blue")+  
 geom\_text(x=2004,label="911 Attacks",y=200,angle=90,vjust=0,hjust=0)+  
 geom\_vline(xintercept=1963,colour="blue")+  
 geom\_text(x=1962,label=  
 "JFK Assassination",y=100,angle=90,vjust=0,hjust=0)+  
 geom\_vline(xintercept=1986,colour="blue")+  
 geom\_text(x=1985,label=  
 "Challenger Disaster",y=175,angle=90,vjust=0,hjust=0)+  
 xlab("Years")+  
 ylab("Number of times year given in clue")+  
 ggtitle("Four digit years found in Jeopardy clues,Season 1-35",  
 subtitle = "Truncated from 1800-2019")+  
 theme\_few()

## Warning: Ignoring unknown parameters: text

reference\_plot



#library(plotly)  
#plot\_ly(years2, type = "scatter", x = ~ years, y = ~count)  
  
# include this on flex dashboard  
line\_plot <- ggplot(years2, aes(x = years, y = count)) +  
 geom\_line() +  
 xlab("Years") +  
 ylab("Number of times year given in clue")+  
 ggtitle("Four digit years found in Jeopardy clues, Season 1-35") +  
 theme\_few()  
  
line\_plot



# pull out top 10 ranking years   
top\_10 <- years\_data1 %>%   
 slice(1:10)  
print(top\_10)

## # A tibble: 10 x 2  
## years count  
## <chr> <int>  
## 1 1996 1087  
## 2 1999 1024  
## 3 1997 1023  
## 4 1980 999  
## 5 2000 994  
## 6 1960 975  
## 7 1995 961  
## 8 1990 906  
## 9 1998 891  
## 10 1970 868

#use in flex dashboard  
library(knitr)  
top\_10\_table <-   
 kable(top\_10,   
 align = c("r","r"),  
 caption = "Top 10 most mentioned years")  
  
top\_10\_table

Top 10 most mentioned years

|  |  |
| --- | --- |
| years | count |
| 1996 | 1087 |
| 1999 | 1024 |
| 1997 | 1023 |
| 1980 | 999 |
| 2000 | 994 |
| 1960 | 975 |
| 1995 | 961 |
| 1990 | 906 |
| 1998 | 891 |
| 1970 | 868 |

# perform binom.test  
# use in flexdashboard  
sum\_stats <- years2 %>%   
summarize(mean\_count = mean(count))  
sum\_stats

## mean\_count  
## 1 92.88177

#proportion of answers that have years from total dataset  
mean\_prop <-   
 nrow(years\_data)/nrow(clues)  
print(mean\_prop)

## [1] 0.2404123

prop\_96 <-  
 1087/nrow(years\_data)  
print(prop\_96)

## [1] 0.01293155

library(broom)  
binom.test(x = 1087, n = nrow(years\_data), p = 0.006) %>%   
 tidy()

## # A tibble: 1 x 8  
## estimate statistic p.value parameter conf.low conf.high method  
## <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <chr>   
## 1 0.0129 1087 1.14e-112 84058 0.0122 0.0137 Exact~  
## # ... with 1 more variable: alternative <chr>