Taller 9

Métodos Computacionales para Políticas Públicas - URosario

Entrega: viernes 28-oct-2016 11:59 PM

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Instrucciones:

- Guarde una copia de este *Jupyter Notebook* en su computador, idealmente en una carpeta destinada al material del curso.
- Modifique el nombre del archivo del *notebook*, agregando al final un guión inferior y su nombre y apellido, separados estos últimos por otro guión inferior. Por ejemplo, mi *notebook* se llamaría: mcpp_taller9_santiago_matallana
- Marque el *notebook* con su nombre y e-mail en el bloque verde arriba. Reemplace el texto "[Su nombre acá]" con su nombre y apellido. Similar para su e-mail.
- Desarrolle la totalidad del taller sobre este *notebook*, insertando las celdas que sea necesario debajo de cada pregunta. Haga buen uso de las celdas para código y de las celdas tipo *markdown* según el caso.
- Recuerde salvar periódicamente sus avances.
- Cuando termine el taller:
    1. Descárguelo en PDF. Si tiene algún problema con la conversión, descárguelo en HTML.
    2. Suba todos los archivos a su repositorio en GitHub, en una carpeta destinada exclusivamente para este taller, antes de la fecha y hora límites.

NLTK Book (http://www.nltk.org/book/ (http://www.nltk.org/book/)), Exercises:

- Chapter 1: 22, 26, 28
- Chapter 2: 2, 4, 11

In [1]:

```
import nltk
```

In [2]:

```
dler = nltk.downloader.Downloader()
dler._update_index()
dler._status_cache['panlex_lite'] = 'installed' # Trick the index to treat panlex_lit
e as it's already installed.
dler.download('all')
```

```
[nltk_data] Downloading collection 'all'
[nltk_data]    |
[nltk_data]    | Downloading package abc to
[nltk_data]    |     C:\Users\PC\AppData\Roaming\nltk_data...
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[nltk_data]    |       date!
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[nltk_data]    |     C:\Users\PC\AppData\Roaming\nltk_data...
[nltk_data]    | Downloading package europarl_raw to
[nltk_data]    |     C:\Users\PC\AppData\Roaming\nltk_data...
```

```
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```

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```
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```

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[nltk_data]    | Downloading package panlex_swadesh to
```

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[nltk_data]    |       to-date!
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[nltk_data]    |   Unzipping corpora\nonbreaking_prefixes.zip.
[nltk_data]    | Downloading package vader_lexicon to
[nltk_data]    |     C:\Users\PC\AppData\Roaming\nltk_data...
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[nltk_data]    | Downloading package mwa_ppdb to
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[nltk_data]    |   Unzipping misc\mwa_ppdb.zip.
[nltk_data]    |
[nltk_data]  Done downloading collection all

Out[2]:

True


In [3]:
```

```
from nltk.book import *
```

```
*** Introductory Examples for the NLTK Book ***
Loading text1, ..., text9 and sent1, ..., sent9
Type the name of the text or sentence to view it.
Type: 'texts()' or 'sents()' to list the materials.
text1: Moby Dick by Herman Melville 1851
text2: Sense and Sensibility by Jane Austen 1811
text3: The Book of Genesis
text4: Inaugural Address Corpus
text5: Chat Corpus
text6: Monty Python and the Holy Grail
text7: Wall Street Journal
text8: Personals Corpus
text9: The Man Who Was Thursday by G . K . Chesterton 1908
```

Chapter 1

22.Find all the four-letter words in the Chat Corpus (text5). With the help of a frequency distribution (FreqDist), show these words in decreasing order of frequency.

In [53]:

```
words_4 = [w for w in (text5) if len(w) == 4]
fdist=FreqDist(words_4)
fdist.most_common()
```

Out[53]:

```
[('JOIN', 1021),
 ('PART', 1016),
 ('that', 274),
 ('what', 183),
 ('here', 181),
 ('....', 170),
 ('have', 164),
 ('like', 156),
 ('with', 152),
 ('chat', 142),
 ('your', 137),
 ('good', 130),
 ('just', 125),
 ('lmao', 107),
 ('know', 103),
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 ('this', 86),
 ('well', 81),
 ('back', 78),
 ('hiya', 78),
 ('they', 77),
 ('yeah', 75),
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 ('want', 71),
 ('love', 60),
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 ('over', 39),
 ('work', 38),
 ('were', 38),
 ('take', 37),
 ('U121', 36),
 ('U115', 36),
 ('song', 36),
 ('U156', 35),
 ('even', 35),
 ('U105', 35),
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 ('does', 35),
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 ('damn', 34),
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('cock', 1),
('Mono', 1),
('ribs', 1),
('AKST', 1),
('star', 1),
("yw's", 1),
('twit', 1),
('Kent', 1),
('Save', 1),
('laid', 1),
('2:55', 1),
('yesh', 1),
('rape', 1),
('kina', 1),
('Oops', 1),
]

```
...」
```

26.What does the following Python code do? sum(len(w) for w in text1) Can you use it to work out the average word length of a text?

In [62]:

```
#Suma las longitudes de cada palabra en el texto 1.
sum([len(w) for w in text1]) / len(text1)
```

Out[62]:

```
3.830411128023649
```

28.Define a function percent(word, text) that calculates how often a given word occurs in a text, and expresses the result as a percentage.

In [70]:

```
def percent(word, text):
    return 100 * text.count(word) / len(text)
print (str(percent('monstrous', text1)) + '%')
```

```
0.00383407650516258 4%
```

Chapter 2

2.Use the corpus module to explore austen-persuasion.txt. How many word tokens does this book have? How many word types?

In [93]:

```
nltk.corpus.gutenberg.fileids()
```

Out[93]:

```
['austen-emma.txt',
 'austen-persuasion.txt',
 'austen-sense.txt',
 'bible-kjv.txt',
 'blake-poems.txt',
 'bryant-stories.txt',
 'burgess-busterbrown.txt',
 'carroll-alice.txt',
 'chesterton-ball.txt',
 'chesterton-brown.txt',
 'chesterton-thursday.txt',
 'edgeworth-parents.txt',
 'melville-moby_dick.txt',
 'milton-paradise.txt',
 'shakespeare-caesar.txt',
 'shakespeare-hamlet.txt',
 'shakespeare-macbeth.txt',
 'whitman-leaves.txt']
```

In [98]:

```
austen = gutenberg.words('austen-persuasion.txt')
len(austen)
```

Out[98]:

98171

In [102]:

```
len(set(austen))
```

Out[102]:

6132

4.Read in the texts of the State of the Union addresses, using the state_union corpus reader. Count occurrences of men, women, and people in each document. What has happened to the usage of these words over time?

In [103]:

```
nltk.corpus.state_union.fileids()
```

Out[103]:

```
['1945-Truman.txt',
 '1946-Truman.txt',
 '1947-Truman.txt',
 '1948-Truman.txt',
 '1949-Truman.txt',
 '1950-Truman.txt',
 '1951-Truman.txt',
 '1953-Eisenhower.txt',
 '1954-Eisenhower.txt',
 '1955-Eisenhower.txt',
 '1956-Eisenhower.txt',
 '1957-Eisenhower.txt',
 '1958-Eisenhower.txt',
 '1959-Eisenhower.txt',
 '1960-Eisenhower.txt',
 '1961-Kennedy.txt',
 '1962-Kennedy.txt',
 '1963-Johnson.txt',
 '1963-Kennedy.txt',
 '1964-Johnson.txt',
 '1965-Johnson-1.txt',
 '1965-Johnson-2.txt',
 '1966-Johnson.txt',
 '1967-Johnson.txt',
 '1968-Johnson.txt',
 '1969-Johnson.txt',
 '1970-Nixon.txt',
 '1971-Nixon.txt',
 '1972-Nixon.txt',
 '1973-Nixon.txt',
 '1974-Nixon.txt',
 '1975-Ford.txt',
 '1976-Ford.txt',
 '1977-Ford.txt',
 '1978-Carter.txt',
 '1979-Carter.txt',
 '1980-Carter.txt',
 '1981-Reagan.txt',
 '1982-Reagan.txt',
 '1983-Reagan.txt',
 '1984-Reagan.txt',
 '1985-Reagan.txt',
 '1986-Reagan.txt',
 '1987-Reagan.txt',
 '1988-Reagan.txt',
 '1989-Bush.txt',
 '1990-Bush.txt',
 '1991-Bush-1.txt',
 '1991-Bush-2.txt',
 '1992-Bush.txt',
 '1993-Clinton.txt',
 '1994-Clinton.txt',
 '1995-Clinton.txt',
 '1996-Clinton.txt',
 '1997-Clinton.txt',
 '1998-Clinton.txt',
 '1999-Clinton.txt',
```

```
'2000-Clinton.txt',

'2001-GWBush-1.txt',
'2001-GWBush-2.txt',
'2002-GWBush.txt',
'2003-GWBush.txt',
'2004-GWBush.txt',
'2005-GWBush.txt',
'2006-GWBush.txt']
```

In [124]:

```
for fileid in state_union.fileids():
    print(fileid,"men=", FreqDist(fileid)['men'])
```

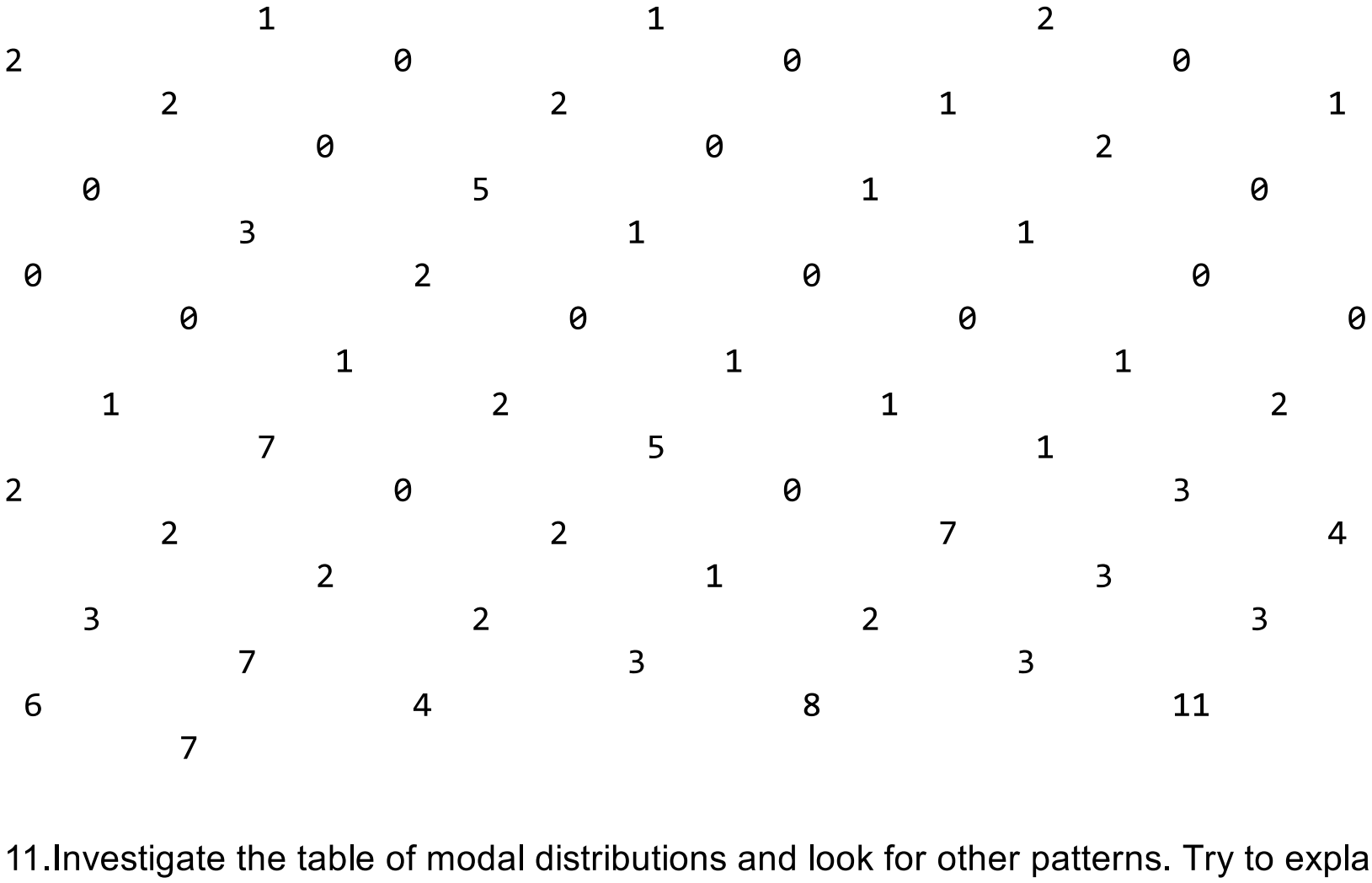
```
1945-Truman.txt men= 0
1946-Truman.txt men= 0
1947-Truman.txt men= 0
1948-Truman.txt men= 0
1949-Truman.txt men= 0
1950-Truman.txt men= 0
1951-Truman.txt men= 0
1953-Eisenhower.txt men= 0
1954-Eisenhower.txt men= 0
1955-Eisenhower.txt men= 0
1956-Eisenhower.txt men= 0
1957-Eisenhower.txt men= 0
1958-Eisenhower.txt men= 0
1959-Eisenhower.txt men= 0
1960-Eisenhower.txt men= 0
1961-Kennedy.txt men= 0
1962-Kennedy.txt men= 0
1963-Johnson.txt men= 0
1963-Kennedy.txt men= 0
1964-Johnson.txt men= 0
1965-Johnson-1.txt men= 0
1965-Johnson-2.txt men= 0
1966-Johnson.txt men= 0
1967-Johnson.txt men= 0
1968-Johnson.txt men= 0
1969-Johnson.txt men= 0
1970-Nixon.txt men= 0
1971-Nixon.txt men= 0
1972-Nixon.txt men= 0
1973-Nixon.txt men= 0
1974-Nixon.txt men= 0
1975-Ford.txt men= 0
1976-Ford.txt men= 0
1977-Ford.txt men= 0
1978-Carter.txt men= 0
1979-Carter.txt men= 0
1980-Carter.txt men= 0
1981-Reagan.txt men= 0
1982-Reagan.txt men= 0
1983-Reagan.txt men= 0
1984-Reagan.txt men= 0
1985-Reagan.txt men= 0
1986-Reagan.txt men= 0
1987-Reagan.txt men= 0
1988-Reagan.txt men= 0
1989-Bush.txt men= 0
1990-Bush.txt men= 0
1991-Bush-1.txt men= 0
1991-Bush-2.txt men= 0
1992-Bush.txt men= 0
1993-Clinton.txt men= 0
1994-Clinton.txt men= 0
1995-Clinton.txt men= 0
1996-Clinton.txt men= 0
1997-Clinton.txt men= 0
1998-Clinton.txt men= 0
1999-Clinton.txt men= 0
2000-Clinton.txt men= 0
```

```
2001-GWBush-1.txt men= 0
2001-GWBush-2.txt men= 0
2002-GWBush.txt men= 0
2003-GWBush.txt men= 0
2004-GWBush.txt men= 0
2005-GWBush.txt men= 0
2006-GWBush.txt men= 0
```

In [115]:

```
cfd = nltk.ConditionalFreqDist(
    (target, fileid[:])
    for fileid in state_union.fileids()
    for w in state_union.words(fileid)
    for target in ['men', 'women', 'people']
    if w.lower() == target)
cfd.tabulate()
```

1945-Truman.txt 1946-Truman.txt 1947-Truman.txt 1
948-Truman.txt 1949-Truman.txt 1950-Truman.txt 1951-Truman.t
xt 1953-Eisenhower.txt 1954-Eisenhower.txt 1955-Eisenhower.txt 1956-Eise
nhower.txt 1957-Eisenhower.txt 1958-Eisenhower.txt 1959-Eisenhower.txt 1
960-Eisenhower.txt 1961-Kennedy.txt 1962-Kennedy.txt 1963-Johns
on.txt 1963-Kennedy.txt 1964-Johnson.txt 1965-Johnson-1.txt 1965
-Johnson-2.txt 1966-Johnson.txt 1967-Johnson.txt 1968-Johnson.t
xt 1969-Johnson.txt 1970-Nixon.txt 1971-Nixon.txt 1972
-Nixon.txt 1973-Nixon.txt 1974-Nixon.txt 1975-Ford.txt
1976-Ford.txt 1977-Ford.txt 1978-Carter.txt 1979-Cart
er.txt 1980-Carter.txt 1981-Reagan.txt 1982-Reagan.txt 1
983-Reagan.txt 1984-Reagan.txt 1985-Reagan.txt 1986-Reagan.t
xt 1987-Reagan.txt 1988-Reagan.txt 1989-Bush.txt 199
0-Bush.txt 1991-Bush-1.txt 1991-Bush-2.txt 1992-Bush.txt
1993-Clinton.txt 1994-Clinton.txt 1995-Clinton.txt 1996-Clint
on.txt 1997-Clinton.txt 1998-Clinton.txt 1999-Clinton.txt 20
00-Clinton.txt 2001-GWBush-1.txt 2001-GWBush-2.txt 2002-GWBush.t
xt 2003-GWBush.txt 2004-GWBush.txt 2005-GWBush.txt 2006-
GWBush.txt
men 2 12 7
5 2 6
8 3 2 4
2 5 2 4
2 6 6
0 8 3 7
12 12 11
4 5 2 1
1 1 0 0
3 2 0
0 1 1 1
3 3 1
2 1 1 2
3 2 7 4
1 1 1
2 1 2 2
5 3 1
3 6 7 8
7
people 10 49 12
22 15 15
10 17 15 26
30 11 19 11
10 10 10
3 12 3 16
14 35 25
17 6 23 32
7 9 20 14
18 19 26
15 12 11 17
19 27 12
14 24 17 13
9 14 13 27
45 66 73
43 31 22 22
41 15 12
14 33 21 18
22
women 2 7 2



11.Investigate the table of modal distributions and look for other patterns. Try to explain them in terms of your own impressionistic understanding of the different genres. Can you find other closed classes of words that exhibit significant differences across different genres?

In [127]:

```
brown.categories()
```

Out[127]:

```
['adventure',
 'belles_lettres',
 'editorial',
 'fiction',
 'government',
 'hobbies',
 'humor',
 'learned',
 'lore',
 'mystery',
 'news',
 'religion',
 'reviews',
 'romance',
 'science_fiction']
```

In [131]:

```
cfd = nltk.ConditionalFreqDist(
    (genre, word)
    for genre in brown.categories()
    for word in brown.words(categories=genre))
genres = ['news', 'religion', 'hobbies', 'science_fiction', 'romance',
          'humor','adventure','belles_lettres','editorial', 'fiction','government','l
earned','lore','mystery','reviews']
modals = ['can', 'could', 'may', 'might', 'must', 'will']
cfd.tabulate(conditions=genres, samples=modals)
```

```
                  can could   may might  must  will
           news    93    86    66    38    50   389
       religion    82    59    78    12    54    71
        hobbies   268    58   131    22    83   264
science_fiction    16    49     4    12     8    16
        romance    74   193    11    51    45    43
          humor    16    30     8     8     9    13
      adventure    46   151     5    58    27    50
 belles_lettres   246   213   207   113   170   236
      editorial   121    56    74    39    53   233
        fiction    37   166     8    44    55    52
     government   117    38   153    13   102   244
        learned   365   159   324   128   202   340
           lore   170   141   165    49    96   175
        mystery    42   141    13    57    30    20
        reviews    45    40    45    26    19    58
```

-Usando todos los generos, podemos ver por ejemplo que el govierno usa más will, lo sería coherente con la idea de que los gobiernos justifican sus acciones por lo que ellos consideran que estas van a lograr. -En el texto del genero de misterio la palabra que más se usa es could (podría), lo que prodia indicar que lo releante es la incertidumbre sobre cualquier evento y las posible consecuencias.

In [137]:

```
cfd = nltk.ConditionalFreqDist(
    (genre, word)
    for genre in brown.categories()
    for word in brown.words(categories=genre))
genres = ['news', 'religion', 'hobbies', 'science_fiction', 'romance',
          'humor','adventure','belles_lettres','editorial', 'fiction','government','l
earned','lore','mystery','reviews']
modals = ['dead','love', 'pain']
cfd.tabulate(conditions=genres, samples=modals)
```

```
                dead love pain
          news     8    3    1
      religion     9   13    3
       hobbies     3    6    0
science_fiction    7    3    7
       romance    15   32    5
         humor     3    4    1
     adventure    25    9    9
 belles_lettres   20   68    4
     editorial     5   13    2
       fiction    19   16   10
    government     1    1    0
       learned    12   13   18
          lore    15   19   19
       mystery    21    7    8
       reviews     3    7    0
```

-Usando las palabras claves love, pain y dead, vemos que la palabra love es principalmente usada en belles_lettres y romance la palabra pues obviamente en estas se idealiza las relaciones con el amor. Dead es usada principalmente en mystery y aventura pues en estos textos la muerte de un individuo es muy llamativo y provoca mayor interes en el lector.