analise_v2

March 31, 2021

[1]:
```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
from nltk.tokenize import word_tokenize
from nltk.corpus import stopwords
from nltk import pos_tag
from nltk import stem
from string import punctuation
import re
```

[3]:
```
df_bolsonaro = pd.read_json('./jairbolsonaro.json')[['created_at', 'full_text']]
df_lula = pd.read_json('./LulaOficial.json')[['created_at', 'full_text']]
```

[4]:
```
print('Posts bolsonaro:', len(df_bolsonaro))
print('Posts lula:', len(df_lula))
```

```
Posts bolsonaro: 6794
Posts lula: 14961
```

0.1 Filtragem e padronização

[5]:
```
def deEmojify(text):
    regrex_pattern = re.compile(pattern = "["
        u"\U0001F600-\U0001F64F"  # emoticons
        u"\U0001F300-\U0001F5FF"  # symbols & pictographs
        u"\U0001F680-\U0001F6FF"  # transport & map symbols
        u"\U0001F1E0-\U0001F1FF"  # flags (iOS)
                           "]+", flags = re.UNICODE)
    return regrex_pattern.sub(r'',text)
```

[17]:
```
stop_words = list(stopwords.words('portuguese'))
stop_words = stop_words + ['vc', 'vcs', 'd', 'q', 'ñ', 'c/', 'p/']
words_to_filter = ['...', 'http', 'https', 'lula', "bom", "dia", "forte",␣
↪"abraço", "anos", "hoje", "sobre", "aqui", "fala", "visita", "bolsonaro",␣
↪"pode", "voltar", "vida", "todo", "outros", "agora", "melhor", "ainda",␣
↪"parte", "jair", "parabéns", 'dilma', 'haddad', 'ricardo', 'paulo',␣
↪'expresidente', '....']
```

```
def padronizacao(msg):
    msg = deEmojify(msg).lower()
    msg = re.sub(r'\w*([/:\d@#])\w*', '', msg)
    msg = re.sub(r"(['-])", '', msg)
    word_tokens = word_tokenize(msg, language='portuguese')
    tagged_msg = pos_tag(word_tokens)
    tagged_msg = [w[0] for w in tagged_msg if w[1] != "PRP"]
    filtered_frases = [w for w in word_tokens if (not w in stop_words) and␣
 ↪(pos_tag) and (not w in punctuation) and (w not in words_to_filter) and (w␣
 ↪is not int) and len(w) > 3]
    filtered_frases = " ".join(filtered_frases)
    return filtered_frases
```

[18]:
```
df_bolsonaro['full_text'] = df_bolsonaro['full_text'].apply(lambda x:␣
 ↪padronizacao(x))
df_lula['full_text'] = df_lula['full_text'].apply(lambda x: padronizacao(x))
```

0.2 Contagem

[19]:
```
dicionario_bolsonaro = {}
for msg in df_bolsonaro['full_text'].tolist():
    palavras = msg.split()
    for palavra in palavras:
        if palavra not in dicionario_bolsonaro:
            dicionario_bolsonaro[palavra] = 1
        else:
            dicionario_bolsonaro[palavra] += 1
```

[20]:
```
dicionario_lula = {}
for msg in df_lula['full_text'].tolist():
    palavras = msg.split()
    for palavra in palavras:
        if palavra not in dicionario_lula:
            dicionario_lula[palavra] = 1
        else:
            dicionario_lula[palavra] += 1
```

[21]:
```
df_palavras_bolsonaro = pd.DataFrame.from_dict(dicionario_bolsonaro,␣
 ↪orient='index')
df_palavras_bolsonaro.reset_index(inplace=True)
df_palavras_bolsonaro.columns = ['palavra', 'count_b']

df_palavras_lula = pd.DataFrame.from_dict(dicionario_lula, orient='index')
df_palavras_lula.reset_index(inplace=True)
df_palavras_lula.columns = ['palavra', 'count_l']
```

```
df_merge_palavras = df_palavras_lula.merge(df_palavras_bolsonaro, on='palavra')
```

[22]:
```
df_merge_palavras.to_csv("palavras.csv", index=False)
df_merge_palavras
```

[22]:

	palavra	count_l	count_b
0	presidente	929	231
1	nessa	42	31
2	eleição	190	28
3	ganha	44	17
4	primeiro	166	59
…	…	…	…
6703	levados	1	1
6704	apareço	1	1
6705	cronograma	1	2
6706	amapá	1	3
6707	integrou	1	2

[6708 rows x 3 columns]

[23]:
```
stemmer = stem.RSLPStemmer()
df_merge_palavras['radical'] = df_merge_palavras['palavra'].apply(lambda x:␣
↪stemmer.stem(x))
radical_df = df_merge_palavras.groupby('radical').sum()
radical_df.reset_index(inplace=True)
```

[24]:
```
radical_df['full'] = radical_df['radical'].apply(lambda x: df_merge_palavras.
↪query(f"radical == '{x}'").query(f"radical == '{x}'").sort_values('count_l',␣
↪ascending=False)['palavra'].values[0])#
```

[25]:
```
filter_list = ['entrevista', 'nunca', 'vivo', 'durante', 'porque', 'contra',␣
↪'mundo', 'sabe', 'chegar', 'falar', 'dizer', 'luta', 'neste', 'novo', 'moro']
radical_df = radical_df.query(f'~full.isin({filter_list})')
```

[27]:
```
radical_df['count_l_relativo'] = radical_df['count_l'].apply(lambda x: 100 * (x/
↪radical_df['count_l'].sum()))
radical_df['count_b_relativo'] = radical_df['count_b'].apply(lambda x: 100 * (x/
↪radical_df['count_b'].sum()))
```

[28]:
```
radical_df.to_csv("radicais.csv", index=False)
radical_df
```

[28]:

	radical	count_l	count_b	full	count_l_relativo	\
0	abaix	5	2	abaixo	0.004974	
1	abandon	10	11	abandono	0.009949	
2	abastec	1	1	abastecimento	0.000995	

```
3      abenço        6       18        abençoe          0.005969
4       abert       35       38       abertura          0.034821
…         …       …        …             …                 …
3376     ótic        1        1          ótica          0.000995
3377     ótim        8        6          ótimo          0.007959
3378    ônibu       42       12         ônibus          0.041786
3379      últ      163      104         último          0.162168
3380     únic      141       36          única          0.140280

      count_b_relativo
0             0.003847
1             0.021158
2             0.001923
3             0.034623
4             0.073092
…                …
3376          0.001923
3377          0.011541
3378          0.023082
3379          0.200042
3380          0.069245

[3366 rows x 6 columns]
```

[29]:
```
def plot_chart(df, column1, column2, size, ax, title, ylabel,␣
↪x_labels_col='palavra'):
    labels = df[x_labels_col].to_list()[:size]
    lula_count = df[column1].to_list()[:size]
    bolsonaro_count = df[column2].to_list()[:size]

    x = np.arange(len(labels))  # the label locations
    width = 0.2  # the width of the bars

    ax.bar(x - width/2, lula_count, width, label='Lula', color='#DE1738')
    ax.bar(x + width/2, bolsonaro_count, width, label='Bolsonaro',␣
↪color='#6456B7')

    # Add some text for labels, title and custom x-axis tick labels, etc.
    ax.set_ylabel(ylabel, fontsize=20)
    ax.set_title(title, fontsize=25)
    ax.set_xticks(x)
    ax.set_xticklabels(labels, rotation=90, fontsize=15)
    ax.legend(prop={'size': 15})
```

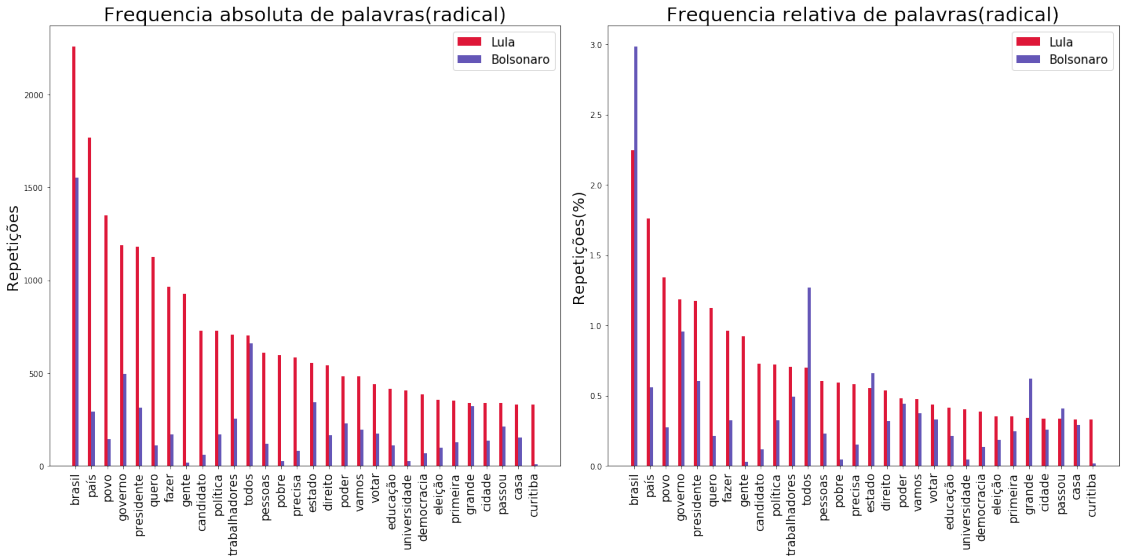
[30]:
```
size = 30
```

0.3 Perspectiva do Lula

[31]:
```
fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(20, 10))

radical_df.sort_values(by='count_l', ascending=False, inplace=True)
plot_chart(radical_df, column1="count_l", column2="count_b", size=size, ax=ax1,␣
 ↪title="Frequencia absoluta de palavras(radical)", ylabel="Repetições",␣
 ↪x_labels_col='full')
plot_chart(radical_df, column1="count_l_relativo", column2="count_b_relativo",␣
 ↪size=size, ax=ax2, title="Frequencia relativa de palavras(radical)",␣
 ↪ylabel="Repetições(%)", x_labels_col='full')

plt.tight_layout()
plt.show()
```



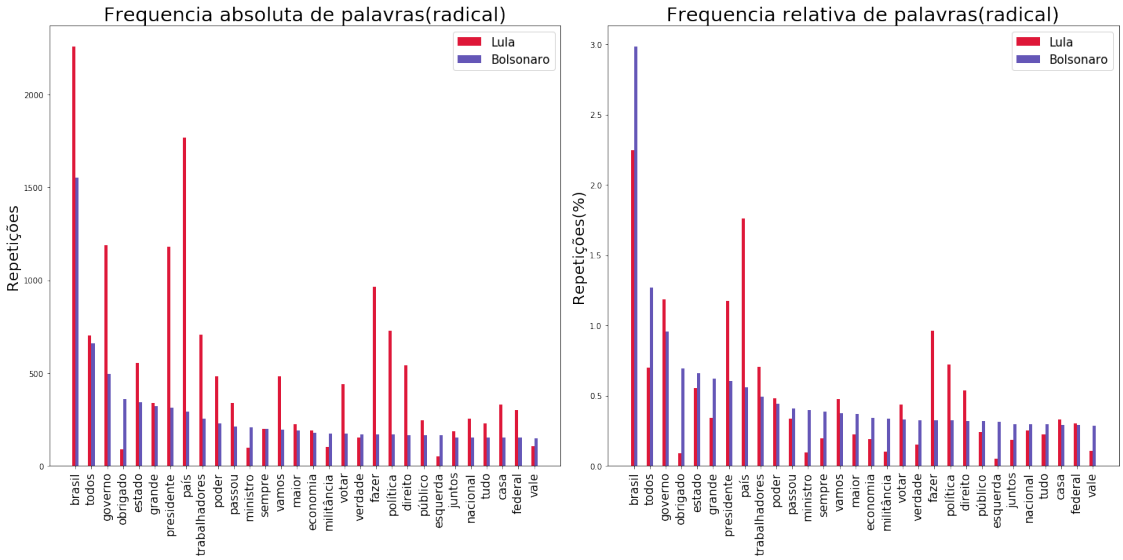
0.4 Perspectiva do Bolsonaro

[32]:
```
fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(20, 10))

radical_df.sort_values(by='count_b', ascending=False, inplace=True)
plot_chart(radical_df, column1="count_l", column2="count_b", size=size, ax=ax1,␣
 ↪title="Frequencia absoluta de palavras(radical)", ylabel="Repetições",␣
 ↪x_labels_col='full')
plot_chart(radical_df, column1="count_l_relativo", column2="count_b_relativo",␣
 ↪size=size, ax=ax2, title="Frequencia relativa de palavras(radical)",␣
 ↪ylabel="Repetições(%)", x_labels_col='full')

plt.tight_layout()
```

```
plt.show()
```

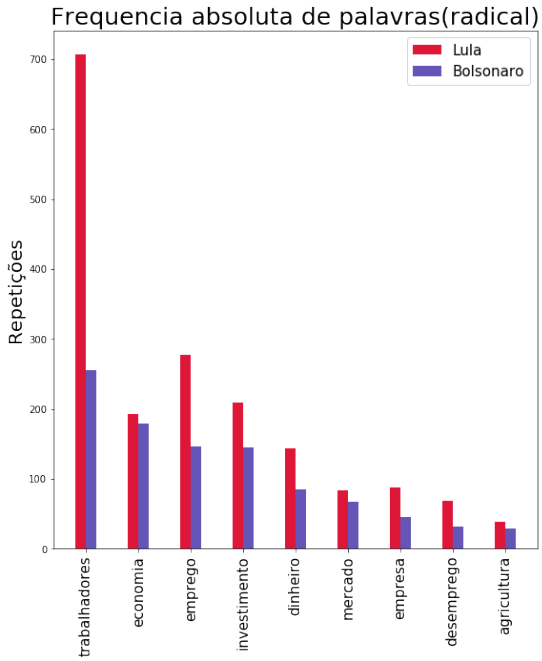


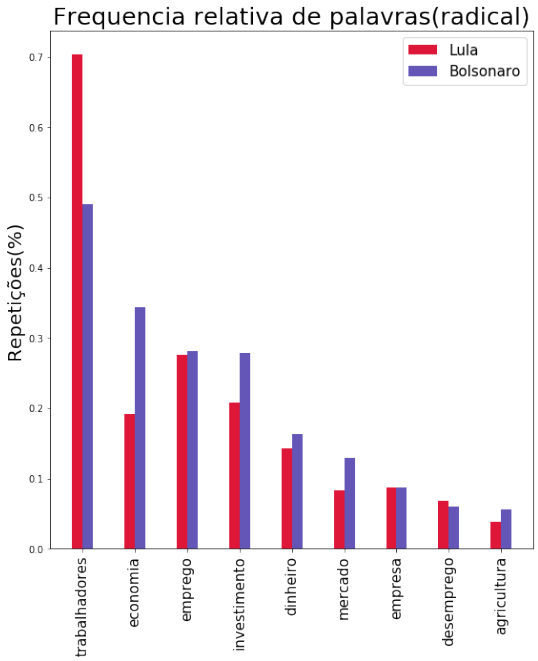
0.5 Palavras chave

0.5.1 economia

[22]:
```
#economia
economia = ['investimento', 'economia', 'agricultura', 'emprego', 'dinheiro',␣
 ↪'mercado', 'trabalhador', 'trabalho', 'desemprego', 'empresas']
lista = [stemmer.stem(x) for x in economia]
```

[24]:
```
economia_df = radical_df.query(f'radical.isin({lista})')
fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(20, 10))
plot_chart(economia_df, column1="count_l", column2="count_b", size=size,␣
 ↪ax=ax1, title="Frequencia absoluta de palavras(radical)",␣
 ↪ylabel="Repetições", x_labels_col='full')
plot_chart(economia_df, column1="count_l_relativo", column2="count_b_relativo",␣
 ↪size=size, ax=ax2, title="Frequencia relativa de palavras(radical)",␣
 ↪ylabel="Repetições(%)", x_labels_col='full')
```

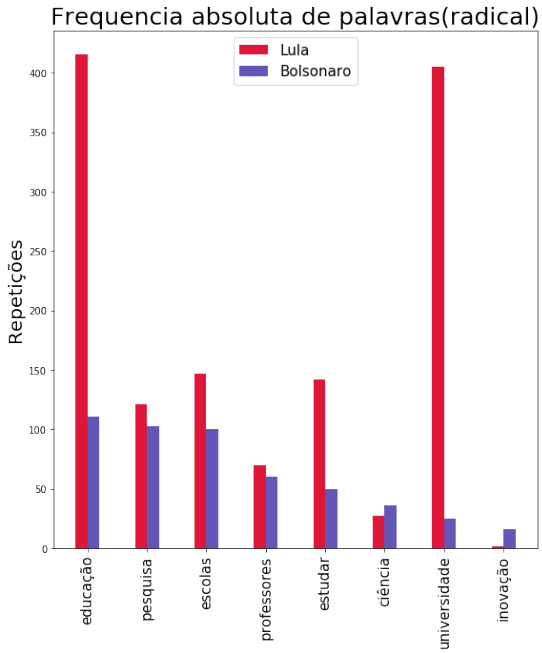


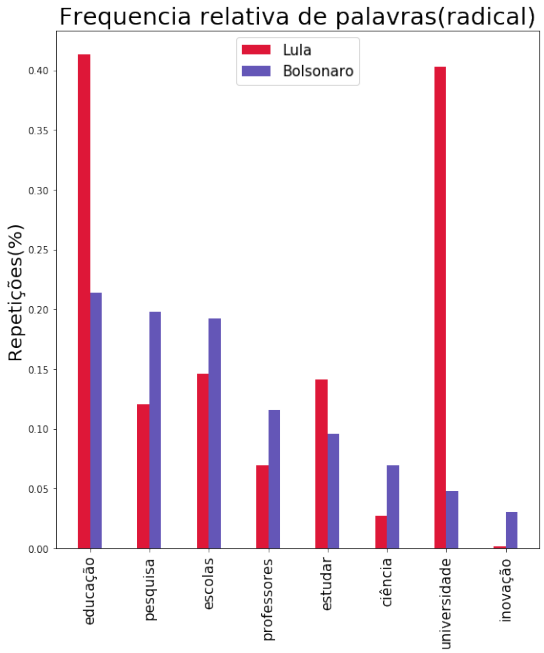


0.5.2 ciência e educação

[47]:
```
ciencia = ['educação', 'ciência', 'inovação', 'pesquisa', 'escolas',␣
 ↪'universidade', 'estudar', 'professores']
lista = [stemmer.stem(x) for x in ciencia]
```

[48]:
```
ciencia_df = radical_df.query(f'radical.isin({lista})')
fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(20, 10))
plot_chart(ciencia_df, column1="count_l", column2="count_b", size=size, ax=ax1,␣
 ↪title="Frequencia absoluta de palavras(radical)", ylabel="Repetições",␣
 ↪x_labels_col='full')
plot_chart(ciencia_df, column1="count_l_relativo", column2="count_b_relativo",␣
 ↪size=size, ax=ax2, title="Frequencia relativa de palavras(radical)",␣
 ↪ylabel="Repetições(%)", x_labels_col='full')
```

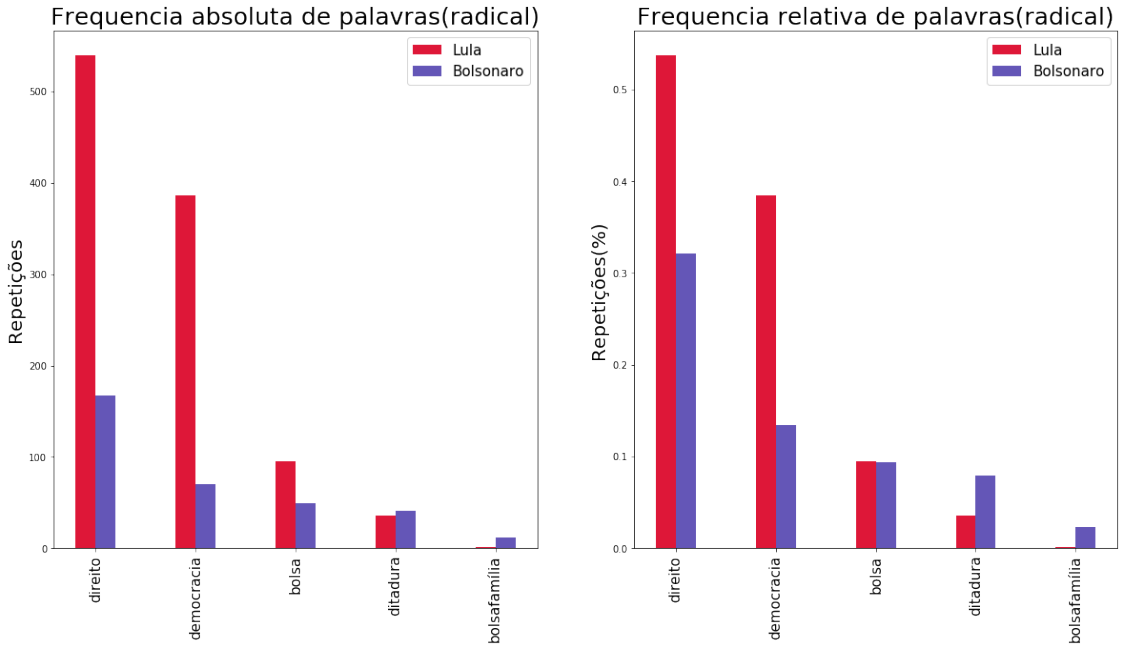




0.5.3 Política

[33]:
```
politica = ['bolsafamília', 'ditadura', 'democracia', 'direitos', 'bolsa']
lista = [stemmer.stem(x) for x in politica]
```

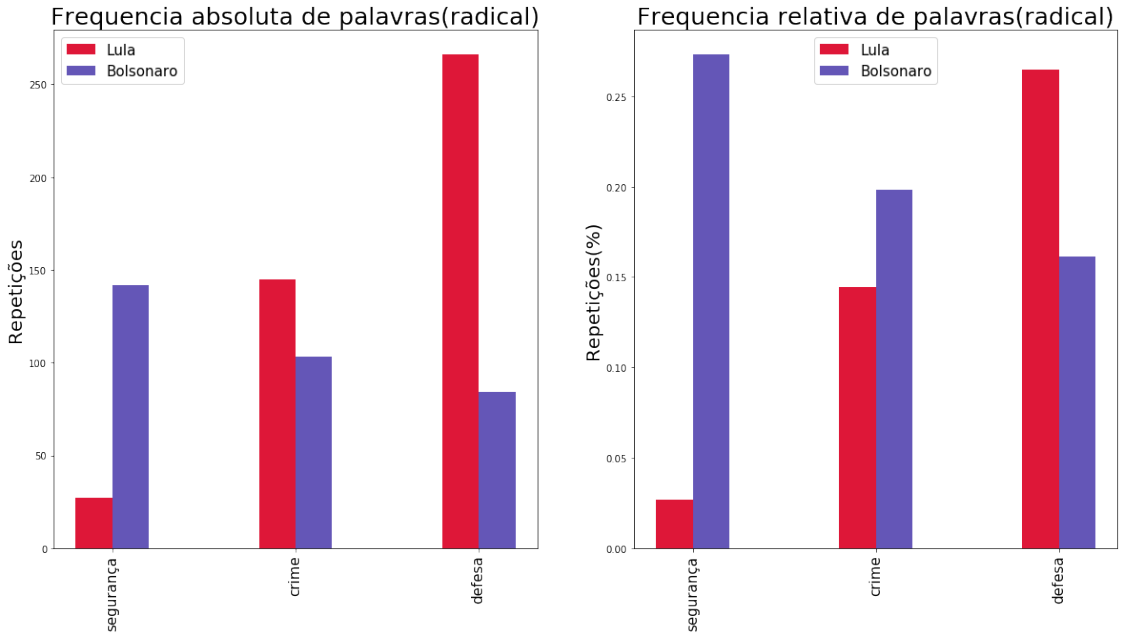
[34]:
```
politica_df = radical_df.query(f'radical.isin({lista})')
fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(20, 10))
plot_chart(politica_df, column1="count_l", column2="count_b", size=size,␣
 ↪ax=ax1, title="Frequencia absoluta de palavras(radical)",␣
 ↪ylabel="Repetições", x_labels_col='full')
plot_chart(politica_df, column1="count_l_relativo", column2="count_b_relativo",␣
 ↪size=size, ax=ax2, title="Frequencia relativa de palavras(radical)",␣
 ↪ylabel="Repetições(%)", x_labels_col='full')
```



0.5.4 Segurança

[36]:
```
seguranca = ['segurança', 'defesa', 'crime']
lista = [stemmer.stem(x) for x in seguranca]
```

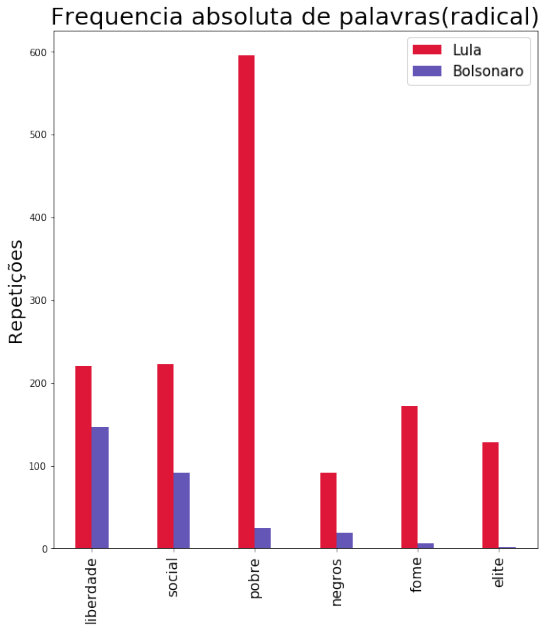
[37]:
```
seguranca_df = radical_df.query(f'radical.isin({lista})')
fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(20, 10))
plot_chart(seguranca_df, column1="count_l", column2="count_b", size=size,␣
 ↪ax=ax1, title="Frequencia absoluta de palavras(radical)",␣
 ↪ylabel="Repetições", x_labels_col='full')
plot_chart(seguranca_df, column1="count_l_relativo",␣
 ↪column2="count_b_relativo", size=size, ax=ax2, title="Frequencia relativa de␣
 ↪palavras(radical)", ylabel="Repetições(%)", x_labels_col='full')
```

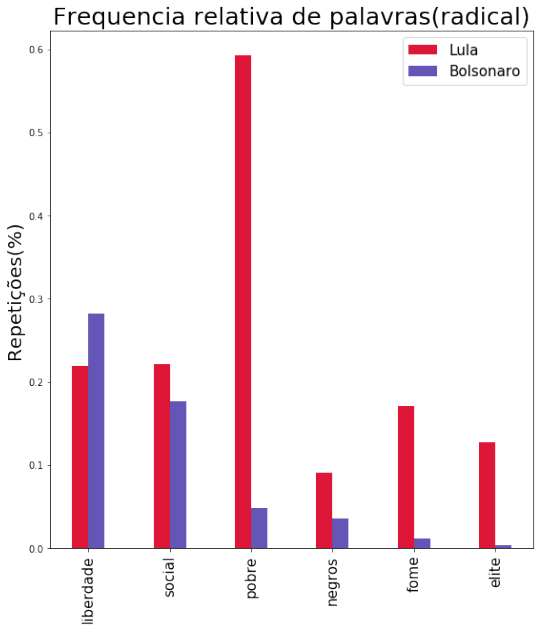


0.5.5 Social

[45]:
```
social = ['pobre', 'fome', 'elite', 'sexualidade', 'social', 'liberdade',␣
 ↪'negros']
lista = [stemmer.stem(x) for x in social]
```

[46]:
```
social_df = radical_df.query(f'radical.isin({lista})')
fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(20, 10))
plot_chart(social_df, column1="count_l", column2="count_b", size=size, ax=ax1,␣
 ↪title="Frequencia absoluta de palavras(radical)", ylabel="Repetições",␣
 ↪x_labels_col='full')
plot_chart(social_df, column1="count_l_relativo", column2="count_b_relativo",␣
 ↪size=size, ax=ax2, title="Frequencia relativa de palavras(radical)",␣
 ↪ylabel="Repetições(%)", x_labels_col='full')
```

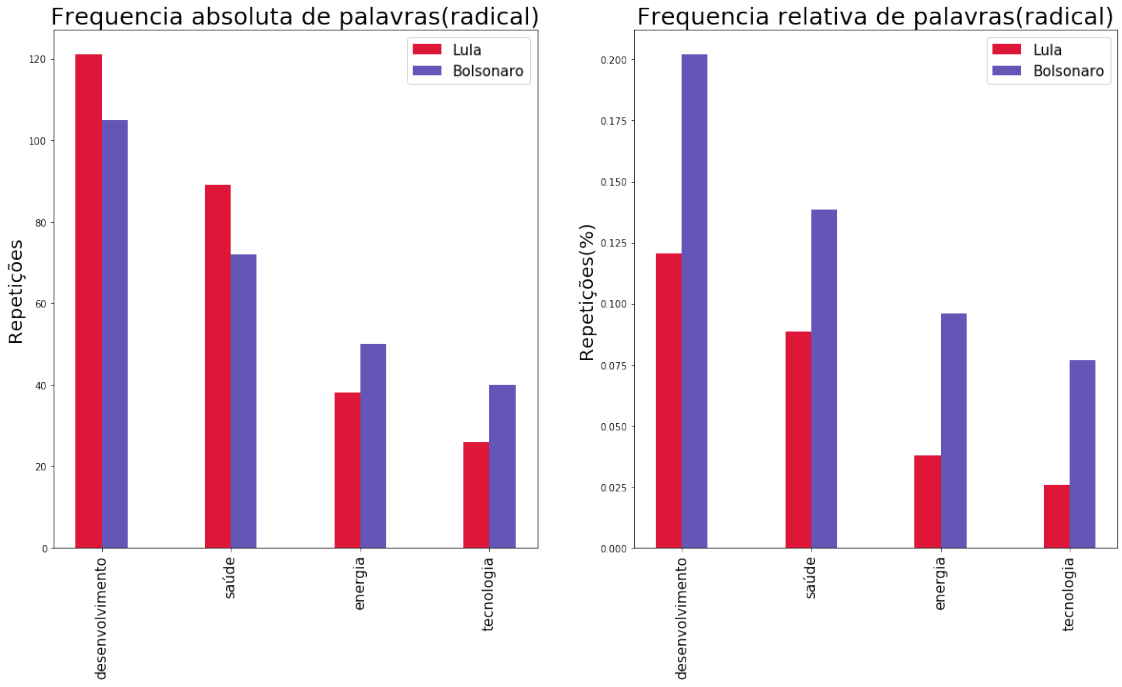




0.5.6 Outros

[49]:
```
outros = ['desenvolvimento', 'saúde', 'energia', 'tecnologia']
lista = [stemmer.stem(x) for x in outros]
```

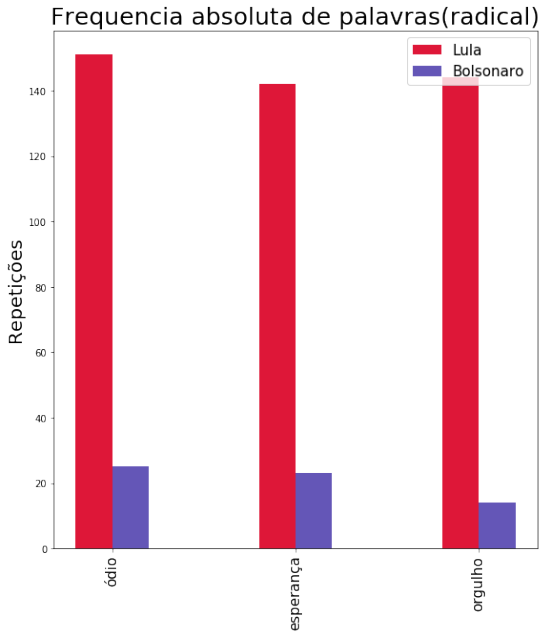
[50]:
```
outros_df = radical_df.query(f'radical.isin({lista})')
fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(20, 10))
plot_chart(outros_df, column1="count_l", column2="count_b", size=size, ax=ax1,␣
↪title="Frequencia absoluta de palavras(radical)", ylabel="Repetições",␣
↪x_labels_col='full')
plot_chart(outros_df, column1="count_l_relativo", column2="count_b_relativo",␣
↪size=size, ax=ax2, title="Frequencia relativa de palavras(radical)",␣
↪ylabel="Repetições(%)", x_labels_col='full')
```

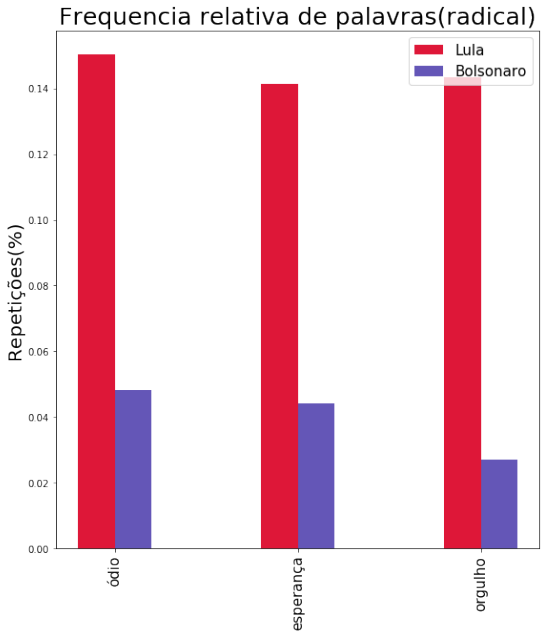


0.5.7 Sentimento

[41]:
```
sentimento = ["orgulho", 'esperança', 'ódio']
lista = [stemmer.stem(x) for x in sentimento]
```

[42]:
```
sentimento_df = radical_df.query(f'radical.isin({lista})')
fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(20, 10))
plot_chart(sentimento_df, column1="count_l", column2="count_b", size=size,␣
 ↪ax=ax1, title="Frequencia absoluta de palavras(radical)",␣
 ↪ylabel="Repetições", x_labels_col='full')
plot_chart(sentimento_df, column1="count_l_relativo",␣
 ↪column2="count_b_relativo", size=size, ax=ax2, title="Frequencia relativa de␣
 ↪palavras(radical)", ylabel="Repetições(%)", x_labels_col='full')
```


Frequencia absoluta de palavras(radical)
Lula
Bolsonaro
Repetições
0
20
40
60
80
100
120
140
ódio
esperança
orgulho


Frequencia relativa de palavras(radical)
Lula
Bolsonaro
Repetições(%)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
ódio
esperança
orgulho

[ ]: