# Do Presidents Have Sentiments ?

**Salvino A. Salvaggio, PhD**   Industry Analysis & Funding, Director
ssalvaggio@qstp.org.qa   Qatar Science & Technology Park
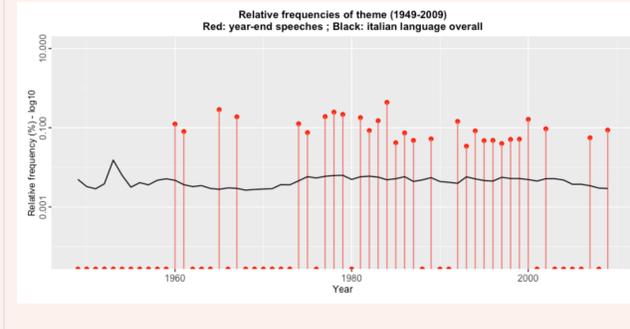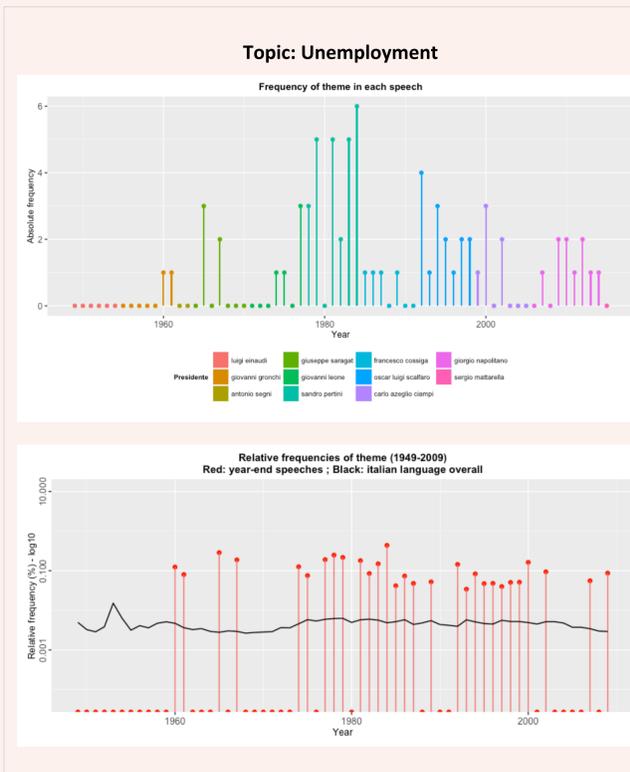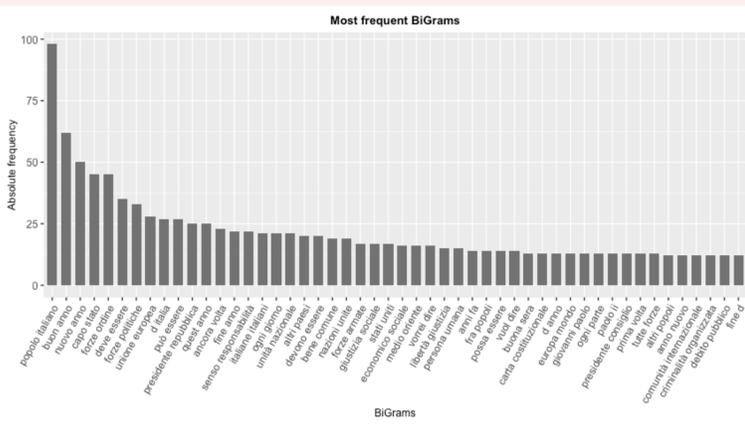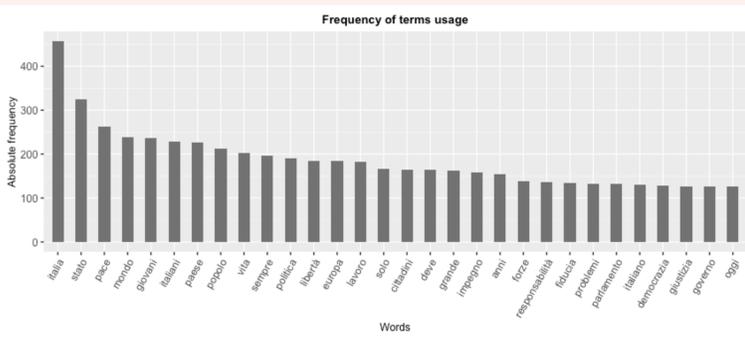
July 2017
useR!1017  -  Brussels

Although data analysis has been fully incorporated in the literary studies field for over a decade, an in-depth investigation of the textual or verbal production of public administration with equal quantitative rigor has not occurred yet.
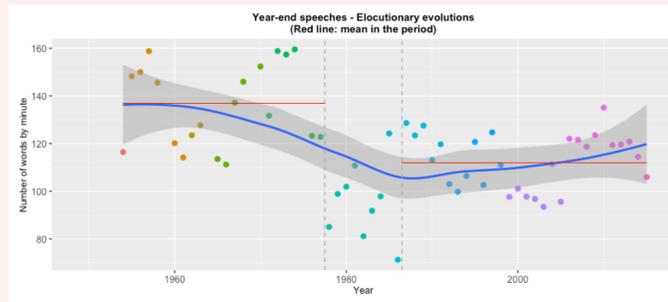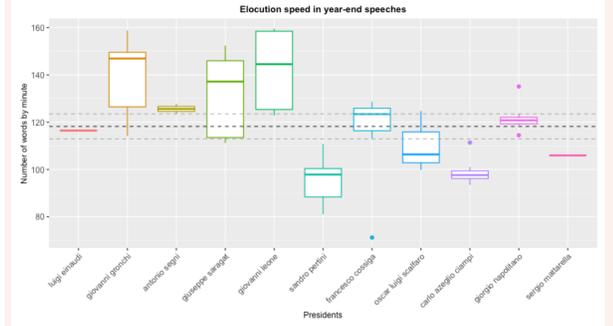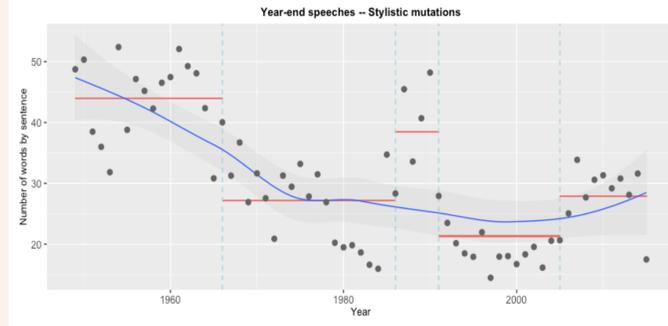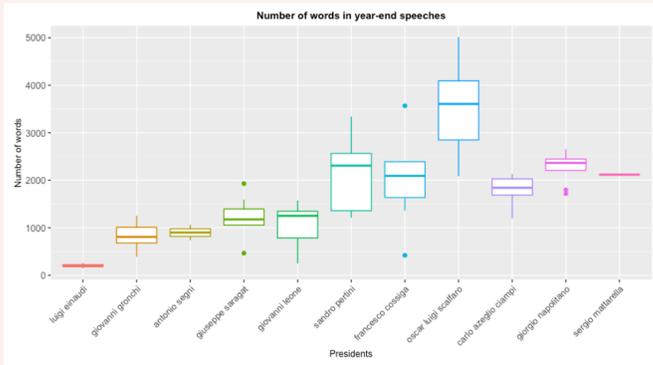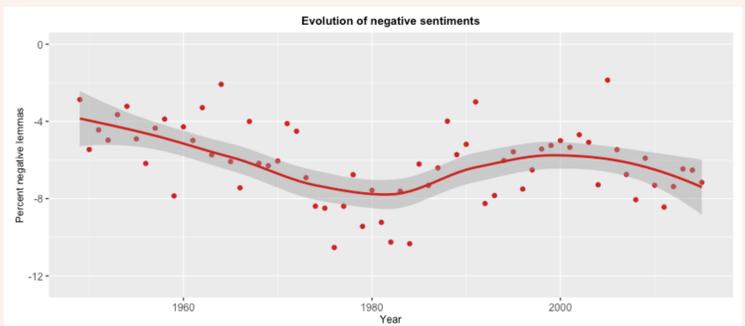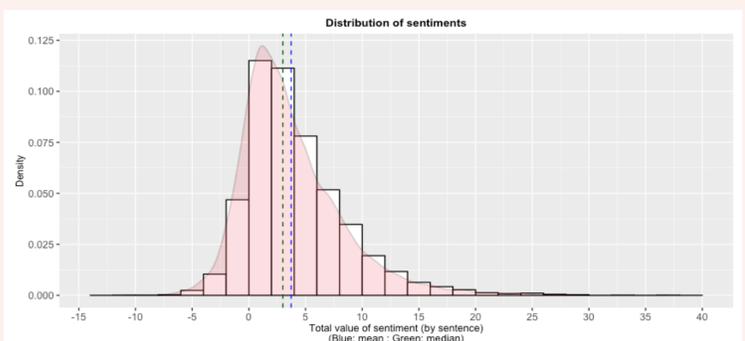This work relies on data analysis tools to explore all the Italian Presidents' New Year speeches from 1949 to 2015. The 67 speeches are analyzed through quantitative methods such as (1) descriptive statistics, (2) natural language processing, (3) sentiment analysis and opinion mining.
The aim is to use data science methodologies to enrich and enhance political studies.

**(1).** *Descriptive statistics* were used to quantify the way(s) each President speaks to the Nation. Amongst others, it allowed differentiating elocutionary styles: crisper (202 words/speech) or verbose (3,513 words/speech), direct (17 words/sentence) or convoluted (49 words/sentence), slow (95 words/minute) or fast (142 words/minute), as well as variations to means. When applied to the time series, the descriptive analysis shows the mutations of the elocutionary styles over time and the fact that they are not always in line with the zeitgeist.



**(2).** *Natural language processing* methods highlighted the frequency and associations of single or groups of words. This was useful to extract the features of the New Year speeches overall but also the main interests of each President (with the oldest President in the history of the Italian Republic being the most worried about the future of the young generation). Quantified examples are given for 7 themes: unemployment, work/job, youth, culture, terrorism, reform, and homeland. Absolute and relative frequencies of these themes were computed and compared to the average frequency of the same themes in the language overall for the same period. Supported by meaningful independence t-tests and confidence intervals, this approach showed the comparative evolution of the recurrence of the 7 topics. But it also showed it can be generalized to any theme.



Pres. Segni    Pres. Pertini    Pres. Napolitano

**(3).** After having built a "sentiment dictionary", quantitative *sentiment analysis and opinion mining* have been applied to quantify the expression of ideas, opinions, and statements as positive or negative based on the wording. Relevant differences between Presidents emerge with, at the 2 extremes, President Pertini (18% positive sentiments against 9% negative) and President Gronchi (27% positive sentiments against 4.5% negative). Also, historical trends become more visible: towards more pessimism in the 1980s followed by a slightly stronger optimism in the 1990s and again more negative sentiments from 2000 onward. Sentiment analysis also made obvious that some Presidents built up their narratives following recurrent "sentiment/opinion patterns". The most evident case is President Napolitano that alternates good and bad news in such a specific manner that it becomes a pattern signature structuring most of his speeches.

**President Napolitano's year-end addresses in 2007 and 2011. A resemblance of the narrative structure is observed**