

## RESEARCH ARTICLE

### PRESIDENT BIDEN’S INAUGURAL ADDRESS: A NETMINER ANALYSIS

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#### ABSTRACT

The main purpose of this article is to analyze President Biden’s inaugural address in terms of the software package Net Miner. A major point to note is that one noun that occurs in President Biden’s inaugural address has the highest frequency (220 tokens) and the highest proportion (0.705) and that the seven-word language (expression) has the highest frequency (55 tokens) and the highest proportion (0.176). With respect to topics constituting the inaugural address, it is worthwhile noting that topic 1 and topic 6 were the most widely used ones in the inaugural address, followed by topic 5, and topic 2 (topic 4). When it comes to the word cloud of the inaugural address, the word *America* is the biggest in size. This in turn suggests that it is the most frequently used one and thus it is the 1<sup>st</sup> keyword. With respect to the frequency of the relevant words occurred in the inaugural address, it is worth noting that the word *America* was the most preferred one for President Biden, followed by the word *nation*, the word *day*, and the word *story* (the word *democracy*). Finally, this article provides the links among the relevant words occurred in the inaugural address. It must be stressed that the words *violence*, *cause*, *justice*, etc. are linked to the word *democracy*. It should be pointed out, on the other hand, that the words *Constitution*, *nation*, *Americans*, *justice*, etc. are directly linked to the word *truth*.

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#### INTRODUCTION

The main goal of this article is to analyze President Biden’s inaugural address in terms of the software package Net Miner. First, we aim at looking into the frequency of nouns, their proportion, and their cumulative proportion. Second, we aim to inquire into the length of words used in the inaugural address, their frequency, and their cumulative proportion. Third, we aim at providing a word cloud through which we can see what President Biden was going to achieve during his presidential term. In this word cloud, what President Biden emphasized in the inaugural address is represented as bigger words, compared with other words. Fourth, we aim to investigate six topics and five keywords constituting each topic, which in turn consist of one document, namely President Biden’s inaugural address. Additionally, we also examine the use of each topic in the inaugural address. Fifth, we also aim at providing the probability of becoming the 1<sup>st</sup> keyword, the 2<sup>nd</sup> keyword, and the 3<sup>rd</sup> keyword in each topic. Sixth, we provide a word cloud representing topic 4 as an instance of a topic analysis, which shows what President Biden was going to achieve. Seventh, we provide the visualization of which keywords are linked to each topic. Eighth, our discussion centers on the frequency of the relevant words occurred in President Biden’s inaugural address.

Finally, we provide the visualization of the links among major words used in the inaugural address.

#### The Analysis of President Biden’s Inaugural Address

**The frequency of nouns:** In what follows, we aim at providing the frequency of nouns occurred in President Biden’s inaugural address. Table 1 indicates the frequency of nouns used in the inaugural address:

**Table 1** Frequency of words

Value	Frequency	Proportion	Cumulative Proportion
1.0	220	0.705	0.705
2.0	42	0.135	0.84
3.0	16	0.051	0.891
4.0	13	0.042	0.933
5.0	8	0.026	0.958
6.0	5	0.016	0.974
7.0	1	0.003	0.978
9.0	4	0.013	0.99
11.0	1	0.003	0.994
12.0	1	0.003	0.997
17.0	1	0.003	1
Total	312	1	

It is worth noting that there is one word whose frequency is 220 tokens. Its proportion and its cumulative proportion are 0.705 and 0.705, respectively. Perhaps it is worthwhile saying that there are two words whose frequency is 42 tokens.

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Table 3 Topic Info

	1st Keyword	2nd Keyword	3rd Keyword	4th Keyword	5th Keyword
Topic-1	nation	Americans	thing	truth	history
Topic-2	day	way	work	moment	story
Topic-3	person	America	democracy	cause	truth
Topic-4	America	democracy	person	day	unity
Topic-5	day	story	year	work	unity
Topic-6	America	person	President	story	democracy

Table 4 Frequency of topics

	# of sentences
Topic-1	37
Topic-2	32
Topic-3	21
Topic-4	32
Topic-5	36
Topic-6	37

Table 5. Probability to become the 1<sup>st</sup> keyword, the 2<sup>nd</sup> keyword, and the 3<sup>rd</sup> keyword

	1st Keyword	1st Prob	2nd Keyword	2nd Prob	3rd Keyword	3rd Prob
Topic-1	nation	0.065	Americans	0.025	thing	0.015
Topic-2	day	0.018	way	0.018	work	0.016
Topic-3	person	0.021	America	0.018	democracy	0.017
Topic-4	America	0.08	democracy	0.021	person	0.018
Topic-5	day	0.045	story	0.012	year	0.012
Topic-6	America	0.028	person	0.026	President	0.024

Attention is paid to the frequency of each topic. As indicated in Table 4, each topic consist of a document (the inaugural address) in which each topic frequently occur: It is interesting to point out that topic 1 and topic 6 occurred 37 times. As observed earlier, the keywords *nation*, *Americans*, *thing*, *truth*, and *history* are made up of topic 1, whereas the keywords *America*, *person*, *President*, *story*, and *democracy* consist of topic 6. That topic 1 and topic 6 occurred 37 times implies that these two topics were the most preferred ones in President Biden’s inaugural address. Quite interestingly, topic 1 and topic 6 are followed by topic 5. When it comes to topic 5, it appeared 36 times. As exemplified in Table 3, the keywords *day*, *story*, *year*, *work*, and *unity* are made up of topic 5. It is interesting to consider topic 2 and topic 4. Interestingly, they appeared 32 times. As illustrated in Table 3, the keywords *day*, *way*, *work*, *moment*, and *story* consist of topic 2, while the keywords *America*, *democracy*, *person*, *day*, and *unity* constitute topic 4. From all of this, it seems clear that topic 1 and topic 6 were the most frequently used ones in President Biden’s inaugural address, followed by topic 5, and topic 2 (topic 4), in that order. The following graph shows the frequency of each topic in the inaugural address:

It can thus be inferred that the word *America* was the most preferred one for President Biden, followed by the word *nation*, the word *day*, and the word *person*, in descending order. It is worth reconsidering topic 4. As observed earlier, the keywords *America*, *democracy*, *person*, *day*, and *unity* constitute topic 4. More interestingly, the following word cloud provides confirming evidence for this fact, as shown in Figure 3:

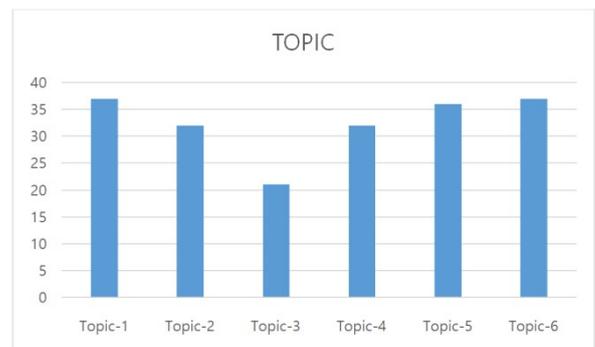


Figure 2 Frequency of topics

Now we aim to calculate the probability to become the 1<sup>st</sup> keyword, the 2<sup>nd</sup> keyword, and the 3<sup>rd</sup> keyword in each topic:

In topic 1, the probability to be the 1<sup>st</sup> keyword (*nation*) is 0.065. In topic 2 and topic 5, on the other hand, the probability to become 1<sup>st</sup> keyword (*day*) is 0.018 and 0.045, respectively. This in turn shows that the word *nation* (0.065) is preferred over the word *day* (0.018 and 0.045) as the 1<sup>st</sup> keyword. Quite interestingly, in topic 3, the probability to become the 1<sup>st</sup> keyword (*person*) is 0.021, while in topic 4, the probability to be the 1<sup>st</sup> keyword (*America*) is 0.08. This in turn implies that the word *America* (0.08) is favored over the word *person* (0.021) as the 1<sup>st</sup> keyword.



Figure 3. Word cloud of topic 4

As exemplified in Figure 3, the word *America* is the biggest in size, which in turn implies that it is the most widely used one and thus it is the 1<sup>st</sup> keyword. It is worth mentioning, on the other hand, that the word *democracy* is the second biggest in size, thereby revealing that the word *democracy* is the second most widely used keyword in topic 4. It must be noted that the word *person* is the third biggest in size, as indicated in Figure 3. This in turn shows that the word *person* is the third most frequently used one in topic 4. Thus, this provides confirming evidence for the fact that the word *America* is the most preferred one in topic 4, followed by the word *democracy*, and the word *person*, in that order. Now we turn our inquiry to the visualization of six topics and their keywords:

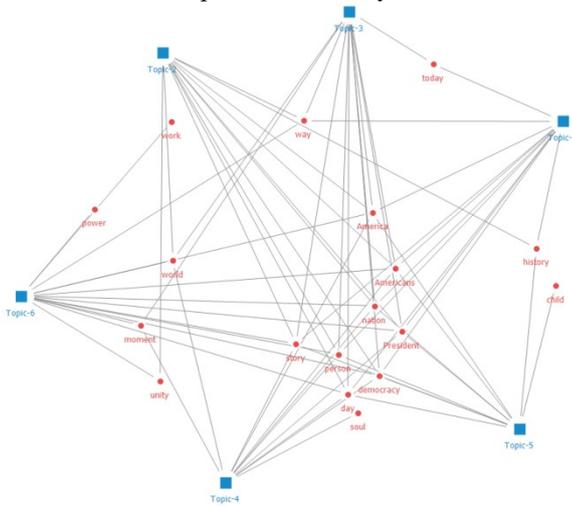


Figure 4 Visualization of six topics and their keywords

It is probably worthwhile pointing out that the keyword *America* is linked to all topics. Exactly the same can be said of the keywords *nation* and *democracy*. They are linked to all the topics. It should be noted, however, that the keyword *unity* is only linked to topic 2 and topic 6. Similarly, the keyword *world* is only linked to topic 2, topic 3, topic 4, and topic 6. It can thus be concluded that the keywords *America*, *nation*, *democracy*, etc. were the ones emphasized by President Biden.

2.5. Frequency of words in sentences

This section is focused on looking into the use of words. The following list was cut off in the top 50:

It is significant to note that the word *America* occurred 16 times (the highest). Quite interestingly, the word *America* is followed by the word *nation*. It occurred 12 times. Perhaps it is worthwhile saying that the word *day* appeared 11 times (the third highest). It is also interesting to consider the word *story*. It occurred 9 times. It is important to note that the word *democracy* also appeared 9 times. Exactly the same can be said of the word *Americans*. This word also occurred 9 times in President Biden’s inaugural address. From all of this, it seems reasonable to assume that the word *America* was the most occurred one in President Biden’s inaugural address, followed by the word *nation*, the word *day*, and the word *story* (the word *democracy* and *Americans*), in that order. Additionally, it is noteworthy that the word *truth* ranks thirteenth. It occurred 5 times. It can thus be concluded that the word *America* was the most widely used one in President Biden’s inaugural address.

Table 6. Degree

		Degree
1	America	16
2	nation	12
3	day	11
4	story	9
5	democracy	9
6	Americans	9
7	person	8
8	world	6
9	unity	6
10	moment	6
11	history	6
12	President	6
13	work	5
14	way	5
15	truth	5
16	today	5
17	thing	5
18	soul	5
19	heart	5
20	year	4
21	virus	4
22	time	4
23	prayer	4
24	power	4
25	peace	4
26	justice	4
27	country	4
28	child	4
29	challenge	4
30	century	4
31	American	4
32	war	3
33	violence	3
34	strength	3
35	life	3
36	job	3
37	hope	3
38	future	3
39	force	3
40	fear	3
41	faith	3
42	cry	3
43	crisis	3
44	cause	3
45	War	3
46	God	3
47	Constitution	3
48	word	2
49	woman	2
50	winter	2

**Visualization of words:** In what follows, we aim at providing the visualization of the links among the relevant words. Figure 5 shows the visualization of the links among major words occurred in President Biden’s inaugural address:

More importantly, as exemplified in Figure 5, the words *history*, *today*, *Americans*, *prayer*, etc. are directly linked to the word *President*. It is interesting to note, on the other hand, that the words *violence*, *cause*, *justice*, etc. are linked to the word *democracy*. More interestingly, the words *Constitution*, *nation*, *Americans*, *justice*, etc. are directly linked to the word *truth*. Finally, the words *strength*, *century*, *Americans*, *truth*, etc. are linked to the word *nation*. For the visualization of synonyms and keywords, see Kang (2022a, 2022b, 2022c, 2022d, 2023a, 2023b). To sum up, this visualization provides the links among the relevant keywords occurred in President Biden’s inaugural address.

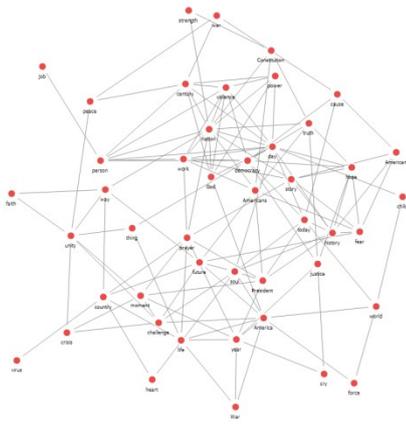


Figure 5. Visualization of the links among the relevant words

## CONCLUSION

To sum up, we have analyzed President Biden's inaugural address in terms of the software package Net Miner. In section 2.1, we have shown that one noun that occurs in the inaugural address has the highest frequency (220 tokens) and the highest proportion (0.705). In section 2.2, we have also shown that the seven-word language (expression) has the highest frequency (55 tokens) and the highest proportion (0.176) in President Biden's inaugural address. In section 2.3, we have argued that topic 1 and topic 6 were the most frequently used ones in President Biden's inaugural address, followed by topic 5, and topic 2 (topic 4), in that order.

We have further argued that the word *America* was the most occurred one in President Biden's inaugural address, followed by the word *nation*, the word *day*, and the word *person*, in descending order.

We have also maintained that the word *America* in the word cloud is the biggest in size. This in turn implies that it is the most frequently used one and thus it is the 1<sup>st</sup> keyword. We have contended that the keywords *America*, *nation*, *democracy*, etc. were the ones emphasized by President Biden. In section 2.5, we have argued that the word *America* was the most occurred one in President Biden's inaugural address, followed by the word *nation*, the word *day*, and the word *story* (the word *democracy*), in that order. Finally, we have provided the links among the relevant keywords occurred in President Biden's inaugural address.

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