

# “Anti-vaccinationists&Anti-vax”: Linguistic Means of Actualizing Assessment in the Headlines and Leads of Ukrainian Text Media

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## Abstract

Since the beginning of the global Covid-19 pandemic, text media materials are full of the word “vax”, and after the appearance of vaccines against the coronavirus and the start of the vaccination campaign around the world, “anti-vax” has also been added. In the article, it is singled out the linguistic means of updating the evaluation in the headlines and leads of the text media of Ukraine in the materials dedicated to opponents of vaccination against Covid-19, and the possibility of its automatic recognition with the help of machine methods is also considered. It was found that among the language means of expressing assessment, colloquial vocabulary (jargonisms and slang) and phraseology come to the fore.

## Keywords

Pres, Vax, Anti-vaxxer, Anti-vax, assessment, tonality

## 1. Introduction

Every year, the lexicographers of The Oxford English Dictionary choose the words that have made the most impact during the year, and in 2021 it was the word *Vax*. For the sake of fairness, it should be noted that the uniqueness of the year became the reason for the nomination expansion, and for the first time there are several such words, namely *vax*, *lockdown*, *bushfires*, *Covid-19*, *Black Lives Matter*, *WFH*, *keyworkers* and *furlough*. Fiona McPherson, a senior editor of The Oxford English Dictionary, points out that “it appeared at least in the 1980s, but according to our data it had been rarely used before this year. If we add to this its universality in the formation of other words such as *vaxxie*, *vax-a-thon*, *vaxinista*, it becomes clear that *vax* stands out from the crowd” [1].

Since the beginning of the global Covid-19 pandemic, text media materials, radio broadcasts and TV programs are full of the word *vax*, and after the appearance of the first vaccines against the coronavirus infection and the start of the vaccination campaign around the world, *anti-vaxxer* was also added. The tonality of the texts about vaccination and anti-vaccination movements is different: from neutral, as a rule, in information materials, with the preservation of journalism standards, to vividly evaluative, usually in journalistic genres, which, considering the significant influence of mass media among the state and public institutions (2021 – 45.4% [2]), was often decisive for the audience's decision to vaccinate.

**The purpose of the research** is to distinguish the linguistic means of updating the evaluation in the headlines and leads of the text mass media of Ukraine on the topic of opposition to vaccination, as well as to consider the possibility of its automatic recognition using machine methods.

**The object of the research** is the opposition to vaccination evaluation in the broadcast headlines and leads of the Ukrainian text media.

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**The subject of the research** is the means of evaluation of expressing the anti-vaccination sentiments in journalistic texts.

The texts consisting of words and not numbers using a statistical linear mixed model was investigated by L. Geybels [3], the evaluative modifiers of advertising texts were singled out by A. De Mulder, L. Fonteyn and M. Kestemont [4], a new type of deep contextualized word representation that models both complex characteristics of word use (e.g., syntax and semantics), and how these uses vary across linguistic contexts (e.g., to model polysemy) were studied by M. Peters, M. Neumann, M. Iyyer, M. Gardner, C. Clark, K. Lee and L. Zettlemoyer [5]. A method to automatically identify shared perspectives stemming from a common background on a corpus of texts in English and Italian was proposed by M. Fell, S. Akhtar and V. Basile [6], in English and Hindi by K. Maity, A. Kumar and S. Saha [7]. A review of representative machine learning algorithms in applied linguistics was made by Zhiqing Lin [8] and he noted that machine learning algorithms demonstrate greater suitability than traditional linear regression and have an advantage in solving complex linguistic problems.

**The methodological foundation.** For the multi-aspect analysis of words with the base *vaccine-*, a complex of scientific research methods was applied: *the descriptive method* made it possible to provide an accurate description of lexemes with the base *vaccine-*, to systematize and inventory the factual material; *the comparative method* revealed common, identical and distinctive features in neologisms with the base *vaccine-* and the words from which they are formed; *the structural method* and *the method of direct components* deepened the understanding of the importance of the vaccine formant in neologisms; *the method of component analysis* made it possible to determine the semantics of the analyzed innovations; *the functional analysis method* determined the functions of using such words in the language of online publications; *the method of contextual and semantic analysis* allowed to determine the pragmatics and expressiveness of the researched innovations depending on their lexical compatibility. The results of our research were verified using the Textrics web interface software product, its feature is the definition of essences, relations and semantics in the text and its classification into positive, negative, and neutral one with the display of the probability of the text belonging to a certain emotion. *The induction method* was used to generalize the research results.

The classification of the emotional coloring of messages is very important for the analysis of society's attitude to the products and services of companies to determine their advantages and disadvantages, the analysis of reactions to world events, news, and TV programs to increase the rating of the channel, etc. Such a classification provides a closer interaction with users and helps to make decisions about further development in directions that are in greater demand.

The classical methods of evaluating the text tonality work on a certain set of given rules, which determine whether the text belongs to a certain class of emotions. The use of rule sets for evaluation requires a detailed analysis of a large amount of data to add new or adjust old rules according to changes in society. An alternative method for determining emotions in text is the use of machine learning techniques and methods. In machine learning, the problem of analyzing the text tonality is not solved by using a specific set of programmed rules, but by creating a specific model that can analyze and evaluate the data to classify the emotions. The tool works on its own database, which is periodically updated. Textrics is able to analyze the text regardless of the source from which it was obtained, and the topic displayed in it. The software works to recognize the tonality of English text and requires converting the file to CSV format, which makes it difficult to use. CSV files (comma-separated values files) are a special type of file that you can create and edit in Excel. In CSV files, data is not stored in columns, but separated by commas. Text and numbers saved in a CSV file can be easily transferred from one program to another. CSV is considered as a text format and is intended to provide tabular data. A file type with the CSV extension contains information that can be imported into a database, and a similar text file can contain data needed to organize tables.

## 2. Etymology of the Word “Anti-Vaccinationist”

Researchers Patricia T. O'Connor and Stewart Kellerman believe that the word “anti-vaccinationist” first appeared in scientific literature in the early 19th century in a book review in the British scientific journal *Philosophical Magazine* in 1806. The concept anti-vaccinationist, according to the authors,

appeared even later in the 19th century: they recorded it in the 1876 issue of the British medical journal *Lancet*. In addition, they believe that the informal abbreviations such as anti-vaccer, anti-vax and anti-vaxxer appeared only in the last 10 years to refer to opponents of flu, MMR, and other vaccines [9].

The concept is a compound word based on the word “vaccine” and the prefix “anti” of a foreign origin. In the texts of the English-language media, it can be found different spellings of the word vaccination – *vax* (- States press forward on *vax* passports without Biden's guidance [10], - Anti-vax Groups Use Carrot Emojis to Hide Facebook Posts [11]) and *vaxx* (- Anti-Vaxx Celebrities Are Coming Out of the Woodwork [12], - Why Anti-vaxxers Spread Story of Woman Who Lost Legs from Covid [13]). Both are acceptable, but the single *x* form is more common and is used to refer to a vaccine or vaccination process. The word was first recorded in the English language in 1799, while its derivatives *vaccinate*, and *vaccination* appeared in 1800. It is known that all of them come from the Latin word – *vacca*, which means a cow.

In the Ukrainian language, the synonyms for the word “vaccination” are щеплення – “vaccination”, прищеплення – “inoculation” [14, p. 473] and in media materials they can be often met, even in the headlines of journalistic texts, in particular: In Kropyvnytskyi, doctors issued vaccination certificates without vaccination [15]; Got vaccinated but got sick with Covid [16].

In 2021, the use of vaccine-related words increased due to Covid-19, and words such as double-vaxxed, unvaxxed and anti-vaxxer are increasingly being used.

The Oxford English Dictionary singles out the following words with the base *vax*: “*vax*” (noun) – a vaccine or vaccination; “*vax*” (verb) – to inject (someone) with a vaccine; “*vaxxie*” (noun) – a photo of yourself that you take during or immediately before or after vaccination; “*anti-vax*” (adjective) – anti-vaccination; “*antivaxxer*” (noun) – an anti-vaccinator, a person who opposes vaccination; “*double-vaxxed*” (adverb) – twice vaccinated [1].

A word-forming nest is a clearly organized hierarchical system of complexes of common root units, which has the simplest word-forming pair formed by the opposition “creative (*vax*) → derivative (*anti-vax*)”. The leading method of creating derivatives in word-forming nests is morphological, among its sub methods the suffixation and prefixation dominate. Among the prefixed adjectives, the derived units with the prefix *-anti* are the most productive [17, p. 84]. The use of the prefix *anti-* in the neologisms of the COVID-19 pandemic period is one of the linguistic manifestations of the division of society into opposite groups in the perception / non-perception of the pandemic fact, in attitude to prevention measures against the spread of the disease. Words with the formant *anti-* are an important means of discourse constructing, their connotations indicate the presence of polar positions, show interaction or opposition between them [18, pp. 207-208].

The prefix *-anti* (Greek *ἀντι...*) means opposite, opposition, hostility, replacement [19, p. 83] and is one of the most productive negative lexemes. So, “*anti-vaxxer*” is “a person who opposes the use of vaccines or regulations mandating vaccination” [20]. The Cambridge Dictionary defines the term “*anti-vax*” as “it is used to describe a person or group that does not agree with vaccinating people (= giving them injections to prevent disease) and spreads and encourages opinions against vaccines” [21]. And the words “*anti-vaxx*”, “*antivax*”, “*antivaxx*” are indicated as synonyms. From the various abbreviations, only “*anti-vaxxer*” and “*anti-vax*” entered the classic dictionaries, as the most frequently used words in search engines. Merriam-Webster's online dictionary lists only the noun “*anti-vaxxer*”, while Oxford Dictionaries Online has the noun “*anti-vaxxer*” as well as the adjective “*anti-vax*” [22] and denotes the two terms as informal, they do not belong to the literary language, and refer to the colloquial lexical layer (slang, jargonisms, dialectisms) used by journalists to express the material, attract attention, or convey their position. The substandard is opposed to the norm, which is a part of the language system, and because of the prescriptive metalinguistic communication has the rating as correct, and most often it has a negative connotation.

As noted by M. Stepanenko, instead of phraseologised phrases, in which the role of a semantic marker of the coronavirus disease COVID-19 and the means of combating it are performed by the nouns as *corona*, *covid*, *quarantine*, *mask*, *antiseptic*, *distance* have been replaced by the established compounds with another indicator of this global disease that is the substantive lexeme “vaccine” and the formations derived from it (sometimes the lexeme of vaccination). The scientist proposes to divide them into groups, from which we single out only those relevant to our research: 1) benefits of the vaccinated: *For one vaccinated, two non-vaccinated are given; It is better to lose with the vaccinated than to find with the unvaccinated*; 2) compulsory vaccination: *Antivaxam is a battle*. The anti-pandemic

fund is a vivid example of ethno-reflection, the operative response of people to the coronavirus pandemic on a global scale. In anti-proverbs, anti-expressions, anti-utterances, anti-slogans, on the one hand, the linguistic law of expressiveness is accumulated and implemented, and on the other hand, the creative resource of the people in general and the creative potential of individual representatives are realized. Transformation, conscious transfiguration, creative reimagining of folk wisdom based on the model of existing or occasional models in the language, the constructive center of which is primarily the thematically heterogeneous coronavirus vocabulary and phraseology, is a regular manifestation of a language game with its typical purpose – the creation of humorous, parodic, ironic, satirical or any other effect from the comic genre [23, p. 78].

The analysis of the sentiments expressed in the text is a very difficult task that involves the use of natural language processing technologies, and that is why it remains a relevant topic of research.

### 3. Language Means of Expressing Evaluation in Journalistic Materials

In the post-truth era, media materials are increasingly gaining emotional and psychological significance, which previously had peripheral positions, strengthening the impact on the emotions and will of the audience. As Yu. Kaluzhynska noted [24, p.7], the vocabulary with an evaluative value is a problem of modern linguistics, since there is no single classification, definition, and order of its interpretation.

The connection between the title of the journalistic material and the text emphasizes the main functions of the title: nominal, informative, appealing (establishing contact between the author and the addressee), emotional (reflecting the author's attitude to the message), advertising-attractive (attracting the attention of the recipient). The certain requirements for the formation of the title have been developed, such as brevity, economy, ambiguity, adequacy, evaluation, expressiveness, advertising, the combination of the elements of the title complex [25], however, in the texts of the new media, the formation of the title of the article occurs according to slightly different rules than in the printed media. This is largely explained by the fact that when viewing the feed of an online publication, the reader primarily sees only the headlines, which are presented in a larger and bolder font, and therefore it depends on them whether the user will continue to read the news in more detail. With this purpose, the authors try to include as much information as possible in the headline, violating the length specified by scientists as optimal for perception: a text of 12 words is remembered for 100%, and only the first seven words of the larger sentences remain in memory [26]. Therefore, a title of up to 12 words is considered optimal for perception, although modern Internet journalists often neglect this rule, trying to cram all its brief content into the title of the material. A title of any structure and length is considered as a sentence. According to the structural classification of sentences, all headings are divided into simple and complex sentences. Simple syntactic structures make up most names of journalistic texts in both print media and Internet media. Such titles contain the main information of the material, mostly in a neutral tonality they declare the content of the publication [27]. Researchers point to the psychological effect of the press headline, which affects feelings and emotions, inclines the reader to read and, with a high probability to accept the author's position [28, 29, 30, 31].

In the headlines of Ukrainian media texts, we find both the term “*anti-vaccinationists*” (- Antyvaktsynatsiia po-ukrainsky: mify, motyvatsiia, dzhherela (Anti-vaccination in Ukrainian: myths, motivation, sources) [32] (further – Article 1), - Yak antyvaktsynatory vplyvaly na istoriiu liudstva (How anti-vaccinationists influenced human history) [33]) and “*anti-vaxes*” (- Polityky – “antyvaksy”. Yaki yikhni shansy staty vladoiu v Ukraini? (Politicians are “anti-vaxxers”. What are their chances of becoming the government in Ukraine?) [34] (further – Article 2), - “Vovyna tysiacha” proty antyvaksiv. Shcho kazhut pro tysiachu za vaktsynatsiiu (“Vovina thousand” against anti-vaxxers. What do they say about a thousand for vaccination) [35]) (further – Article 3).

For the analysis, headlines and leads of three materials were chosen posted on the platform of the Ukrainian editorial office of Radio Svoboda, Hromadske and BBC Ukraine, the subject is opponents to vaccination.

The publications are made in the informative style of the Ukrainian language. It implements the linguistic function of notification, informing, while in actual journalistic texts the function of influence or appealing one is actualized. Informational style operates in the field of mass communication (mass

media, Internet) and aims to inform about objective phenomena, events and is implemented in specific linguistic means such as a standard scheme of text organization, a high frequency of use of terminological vocabulary, active personification, use of expressive means together with the usual means of linguistic expression.

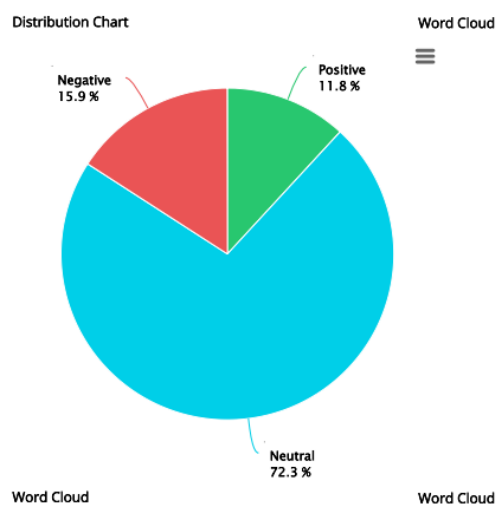
The basis of the informational style is colloquial and popular scientific vocabulary. The nature of the information style language is determined by the fact that it expresses complete information, thought out and organized in advance.

Since the task of the newspaper-informational style is the need to report facts that require precise definition of concepts and phenomena, the role of terms, names, and titles that directly, without ambiguity, would indicate the subject of thought is extremely important. In the phraseological aspect, the newspaper-informational style is characterized by the wide use of standardized formulas or clichés.

The probability of reading the title is 90%, because if the reader opens the media, then they choose materials for reading primarily based on the title. Lead (from English it means to rule, to be at the head of, to take first place, to be in front) is a brief summary of the journalistic material, placed after the headline and before the main text, is an intermediate stage of the reader's perception of the information, the main idea, which is of crucial importance for the advancement of the news into the mind of the reader.

There is not set the goal of characterizing a type and a kind of headline and lead, the correctness of their wording and structure, as from the standpoint of legal norms, corporate ethics, or journalistic standards. We investigate the tonality of that part of the journalistic material, which has a high probability of being read and perceived by the audience's consciousness and will have an impact on the formation of its attitude to the subject of the material.

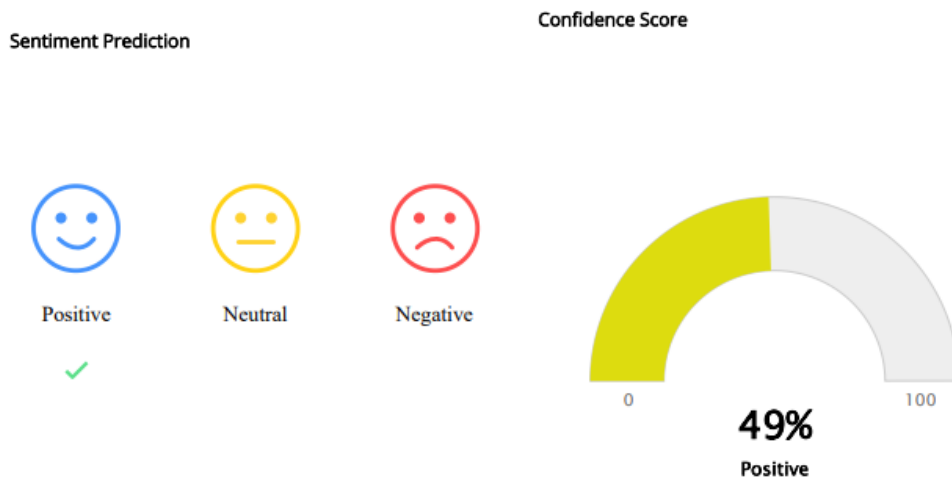
The logical and content structure of the article “Antyvaktsynatsiia po-ukrainsky: mify, motyvatsiia, dzherela” (Anti-vaccination in Ukrainian: myths, motivation, sources), taking into account its stylistic features, is as follows: a title, a lead and three parts – “Anti-vaccination: who are they?”, “The most popular myths”, “Why is there a violation of rights”. The material is illustrated with four photographs in which we see the participants of the anti-vaccination rally that took place on November 3, 2021, near the walls of the Verkhovna Rada of Ukraine. In addition, an infographic is presented that shows the results of a survey by the sociological group *Rating* regarding the question of the willingness to get vaccinated against the coronavirus in dynamics (from November 2020 to October 2021). That is, each part of the material contains an illustration – the first two are supplemented with photos, the last ones – with infographics. The title is a complex sentence, the dependent part of which expands and clarifies the information presented in the main part, and therefore such titles always consist of many words, which goes against the requirement for brevity and accuracy in names.



**Figure 1:** Verification using the Textrics system of research results (Article 1)

In the title of the material (Article 1), the word “*anti-vaccinationists*” is used to denote opponents of vaccination, and in the subtitle, it is “*anti-vaxes*”. In the abstract to the material, which consists of three sentences, in the second and third one, it is observed the use of spatial words and phrases that form a

clear evaluative attitude towards the protesters, in particular the following ones: – *перекрили* (“blocked”) (to stand in the way of someone, something, for some reason, blocking off something or placing an ambush [36, p. 206]), *зблокували* (“blocked”) (from the word block – to block, to surround, to isolate [36, p. 202]); – *ці люди* (“these people”) (colloquial form) – an intensifying demonstrative pronoun expressing irony), – *підживлює* (“give fertilizer”) (colloquial form, in this context used as a synonym for enrich [36, p. 426]), – *міфи продукують* (“myths produce”) (from the word produce – to develop, make, let out something [36, p. 175]) (myth is used figuratively as something invented, non-existent, fantastic [36, p. 756], used three times in the article). So, having got acquainted with the first three sentences of the material, the reader develops a negative attitude towards the opponents of vaccination, because they block, surround, isolate, enrich themselves, and, in addition, they are guided by fiction, non-existence, fantastic ones (Fig. 1-2).



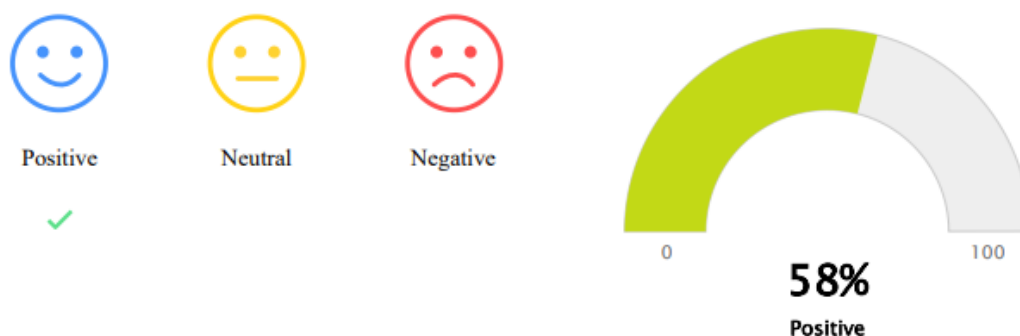
**Figure 2:** Example figure Verification using the Textrics system of research results (Article 1)

The structure of the title uses the technique of parcellation, which is a stylistic figure based on the division of sentences into segments for the purpose of their expression, expressiveness, dynamism, accentuation of speech. The phrase “*in Ukrainian*” is stylistically correct, but it has gone out of use in its direct meaning, it is obsolete and is used in the meaning as “in Ukrainian style”, “in Ukrainian manner”, such as, for example, “in Kyiv style”, “in a human way”, “in a brotherly way”, that is, it is used metaphorically, in a figurative sense. In addition, in such a complex title, apart from the topic, it can be also seen the author's attitude to the problem expressed in the use of the word “myths”. The use of colloquial style in the language of the media performs evaluative and expressive functions, contributes to the implementation of the dialogic speech principle, establishing contact with the reader, since the use of such words is a means of stylizing informal, casual, familiar communication. This form attracts the attention of an information consumer and is therefore quite common and quite a natural phenomenon for its development. It, contrasting with the neutral stylistic background of the journalistic style, helps the main functions of the language of periodicals – both to inform and to convince readers. In Ukrainian society at the beginning of the current century, the attitude towards the stylistically reduced vocabulary in the language of periodicals has changed, it is perceived as a source of particularly expressive, emotional words and expressions, which allows you to draw the audience into your field of understanding the problem and influence it.

Logical and substantive construction of the article “Polityky – “antyvaksy”. Yaki yikhni shansy staty vladouiu v Ukraini?” (Politicians are “anti-vaxxers”. What are their chances of becoming the government in Ukraine?), taking into account its stylistic features, as a headline, a lead and four parts – “The SBU came for the “Ukrainian Kennedy”, “Prospects of the anti-vaxxers party”, “Fighters for rights”, “There will be no second Kennedy among Ukrainian “anti-vaxxers”. The material is illustrated with five photos: the one is between the title and the lead, and two others are in the first two parts. The title of the article consists of two sentences: the first is “anti-vaxx politicians” (a narrative sentence combining the term and a neologism, the title is a business card), the second is “what are their chances of becoming the government in Ukraine?” (interrogative sentence). Interrogative sentences in the role of a title perform slightly different functions than questions within the text, because “their informative function

becomes secondary one, bringing to the fore the evaluative-expressive, prognostic, motivational function with the aim of attracting the audience to familiarize themselves with the material, ensuring interactivity” [37, 127] Such question titles contain an intriguing component, drawing the reader’s attention to the proposed publication. In addition, quesitives convey the modality of doubt, which finds confirmation or refutation in the text, designed to soften the negative information embedded in their content and “blocks, softens the impact of negative information... The interrogative formula in the title of the text leaves hope for the possibility of a positive option answer, an alternative solution to the problem” [38, p. 289]. In addition, the interrogative form of the title may indicate that the author of the article invites discussion, he is not completely sure of the facts that are depicted in the article, or this information is not sufficiently studied. If the title in the form of a narrative sentence is usually emotionally neutral, then the interrogative title (or its independent part), which carries expressive saturation, is a motive, prompts reflection, and expresses a certain assumption. Journalists call such headlines as “headlines-hooks” because, as a rule, they instantly “catch” the reader. Politicians are one of the categories with the lowest trust rating among Ukrainians – more than 70% of people do not trust them [2], and the addition of the informal (colloquial (slang) “anti-vax” as a clarification to the previous word creates a negative attitude in the reader. In addition, quotation marks are an independent means of attracting attention, which emphasizes the convention of the metaphor and gives it a sarcastic meaning. Due to such a selection, the reader already forms their attitude towards such politicians, and the journalist, due to the use of the word both literally and figuratively, intrigues, plays with the reader, causing emotions. So, in the chosen structure of the title (complicated one) and the selection of words (colloquial, jargonisms), the author of the material broadcasts a negative attitude towards those who oppose vaccination. The lead of the publication contains 12 sentences (4 paragraphs), the word “anti-vaxes” appears here three times in combination with theses about “*попри те, що в країні один із найвищих у світі рівень смертності від COVID-19*” (despite the fact that the country has one of the highest mortality rates from COVID-19 in the world), “*поширені карантинні обмеження для невакцинованих*” (strengthened quarantine restrictions for the unvaccinated), “*великий простір для маніпуляцій, зокрема політичних*” (a large space for manipulations, in particular political ones). Furthermore, the author points to the inability of anti-vaccinationist leaders in theses: “*намагалися обратися до рад різних рівнів*” (tried to appeal to councils at different levels), “*їм не вдалося отримати значної підтримки виборців*” (they failed to gain significant voter support). The use of phraseological units “*взяти під контроль ситуацію*” (take control of the situation), “*узяти владу у свої руки*” (take power into your own hands) (- subjugate someone to your will) as expressive language units help the author convey the attitude to anti-vaccinationist politicians (Fig. 3).

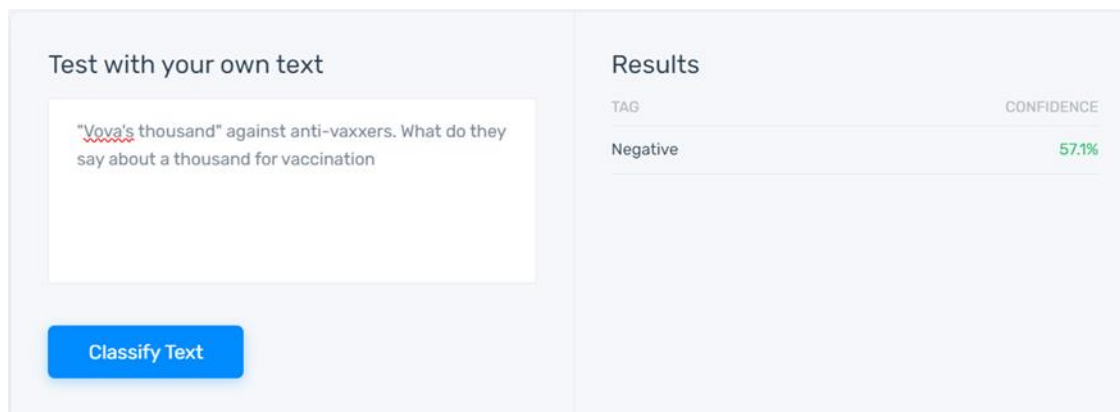
#### Sentiment Prediction



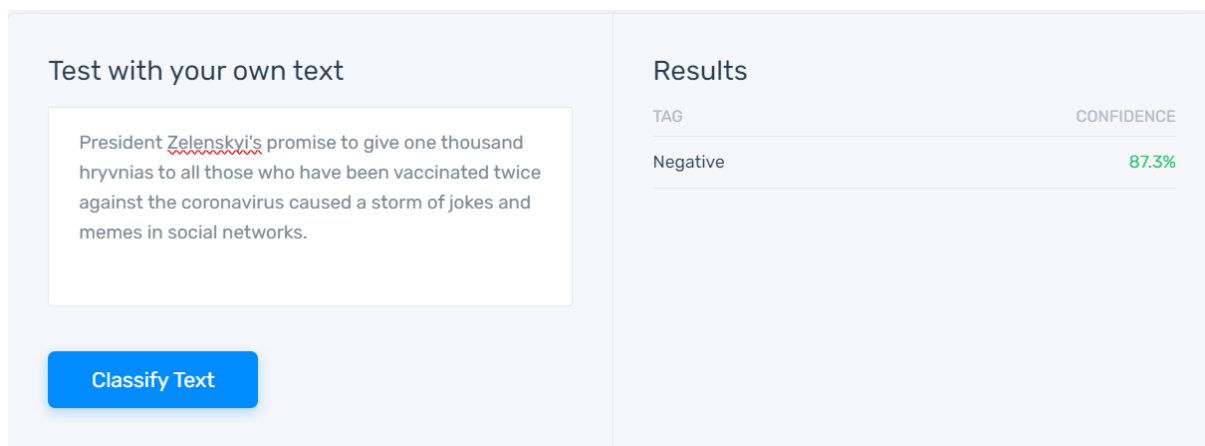
**Figure 3:** Verification using the Textrics system of research results (Article 2)

Material “Vovyna tysyacha” proty antyvaksiv. Shcho kazhut pro tysyachu za vaksynatsiiu” (“Vovyna thousand” against anti-vaxxers. What do they say about a thousand for vaccination”) is dedicated to the reaction of the Ukrainians in social networks to President Volodymyr Zelenskyi’s decision to pay one thousand hryvnias to every citizen who received the second dose of vaccination against coronavirus

infection. The first such payment (for other reasons) was made by Yulia Tymoshenko's government in the early 2000s and was popularly called “Yuli's thousand”. The journalist singled out the posts that received the highest support from the audience and compared these two payments in dollar terms and about “the difficult choice now faced by the opponents of vaccination” [34]. The title of the article is complex, it includes two sentences, the second of which is a question, but without a question mark. Lead is formed from one sentence. One of the most effective language tools that creates the expressiveness of headlines is a metaphor that is a trope built on the use of words in a figurative sense based on similarities in color, shape, and purpose. Apt metaphors contribute to the figurative characterization of the phenomenon, as if emphasizing the hidden properties of the object.



**Figure 4:** Sentiment analysis for message “Vova's thousand” against anti-vaxxers. What do they say about a thousand for vaccination” using MonkeyLearn text analyzer



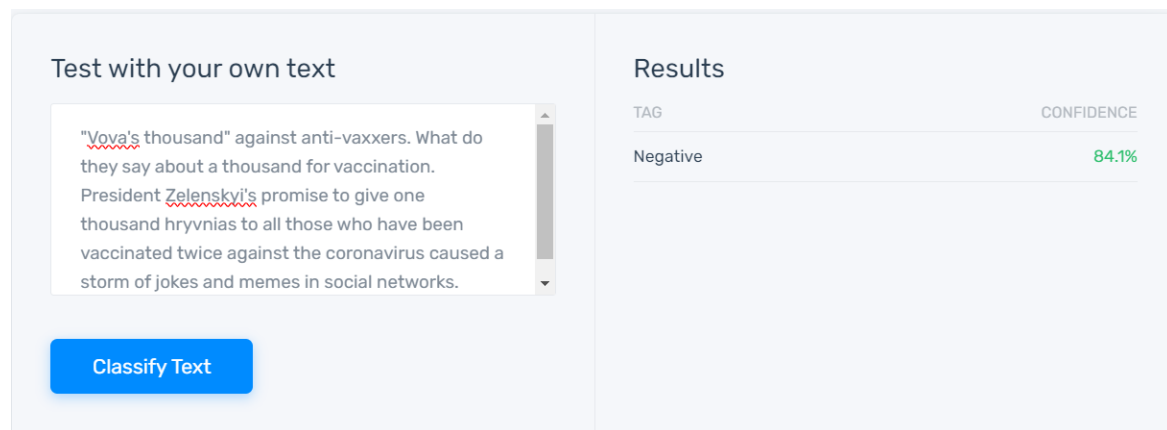
**Figure 5:** Sentiment analysis for message “President Zelenskyi's promise to give one thousand hryvnias to all those who have been vaccinated twice against the coronavirus caused a storm of jokes and memes in social networks.” using MonkeyLearn text analyzer

Researcher O. Pavlova notes that term creation by metaphorical transfer of meanings is characterized by the fact that the object of the term has some common feature with the subject or phenomenon whose name is used as a term [39, p. 133]. A significant part of research determines that metaphorical jargon creation is a regular and natural linguistic phenomenon, because of which full value motivated terms arise, in which scientific concepts expressed by these terms are combined with real life experience. The meaning of the metaphorization process is to strengthen the emotional expressiveness of the language and enrich it with new lexemes that have figurative meaning. Popular Ukrainian names have several colloquial variants, so-called hypocorisms, which express the familiar, friendly attitude of the speaker to the person named, and in the first part of the title we see a hypocoristic variant of the president's name, formed by truncation of the unstressed part of the full name and joining one irrelevant formant in the final part to this reduction, i.e., instead of Volodymyr, it is Vova. The construction “Vovina thousand”, which is a formal grammatical plagiarism in the component chain of the structural model



“numeral ‘thousand’ + noun – ‘Vova’”, conveys a different way of seducing the authorities, which is not related to unfulfilled promises by the high officials, compared to “Yulina thousand”. Possible implicit expressions of the negative connotation of the described established turn are its secondary nominations actively used in the researched discourse, oppositions such as “against anti-vaxxers”, that is, money on one side of the scale (Vovyna thousand [35]), and on the other side are opponents of vaccination (anti-vaxxers). The lead also uses the metaphor “caused a storm of jokes and memes”, which causes ambiguous emotions: negative (natural disaster is storm) and positive (memes and jokes).

Choosing an application for sentimental text analysis is quite a complicated procedure. That is why we check the results of our research using several applications. The next convenient tool that allows you to analyze text is the MonkeyLearn application. In fact, it is a platform that allows you to analyze various data and visualize the results [40]. Google Sheets add-on allows you to analyze texts to find out the sentiments according to three options as positive, negative, and neutral load. The functionality of the application is based on machine learning models, which allow you to determine the mood expressed in the text and visualize the obtained results in a matter of seconds. At the same time, it is enough for the user to choose a pre-trained and ready-to-use model, which undoubtedly greatly simplifies the text analysis procedure. The results of text research obtained using MonkeyLearn applications are shown in Fig. 4-6.



**Figure 6:** Sentiment analysis for a news message with title and the main text together using MonkeyLearn text analyzer

## 4. Results/Discussions

The Covid-19 epidemic is continuing, and therefore the issue of vaccination and the anti-vaccination movement will exist and be covered in the media. We did not try to find out the reasons for the emergence of people who oppose vaccination and what arguments they put forward; the purpose of our research was to distinguish the linguistic means of expressing the author's assessment of the journalistic material and study the possibility of their recognition using machine methods. The anti-vaccination movement in our country has practically stopped. The number of media materials dedicated to it has reached a level that is rare.

It is expedient to direct further research of media materials on the topic of opponents of vaccination in the direction of classification of the main linguistic means of text expression to form the possibility of their automatic search.

## 5. Conclusions

Having analyzed the scientific literature and conducted an analysis of the headlines and leads of journalistic materials dedicated to opponents of vaccination against Covid-19, it has been found out that, the text tonality on the subject of anti-vaccination is different from neutral, as a rule, in informational materials, with the preservation of journalistic standards, to strongly evaluative ones,

usually in journalistic genres. Among the main language means of expressing evaluation, it has been singled out the following ones:

- the use of colloquial vocabulary (jargonisms and slang, such as *ці люди* [these people], *підживлює* [give fertilizer], *анти-вахх, міфи продукують* [myths produce]);
- the use of phraseology (*взяти під контроль ситуацію* [take control of the situation], *взяти владу в свої руки* [take power into your own hands]);
- spatial words and phrases (*перекрили* [blocked], *заблокували* [blocked]);
- repeats of the word – *анти-вахх* along with phrases that carry a unequivocally negative assessment (“*попри те, що в країні один із найвищих у світі рівень смертності від COVID-19*” [despite the fact that the country has one of the highest mortality rates from COVID-19 in the world], “*посилені карантинні обмеження для невакцинованих*” [strengthened quarantine restrictions for the unvaccinated], “*великий простір для маніпуляцій, зокрема політичних*” [a large space for manipulations, in particular political ones]).
- metaphors (“*Вовина тисяча*” [Vovina thousand], “*буря жартів і мемів*” [storm of memes and jokes]).

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