

ANALYZING PERSUASIVENESS IN YOUTUBE VIDEOS TO COUNTERACT VACCINE HESITANCY

García-Oliva, A. Open University of Catalonia (UOC), Ph.D. Candidate, Spain, agarciaoliva@uoc.edu

Armayones, M., Open University of Catalonia (UOC),, Spain, marmayones@uoc.edu

Abstract

Vaccination prevents an estimated 2.5 million deaths worldwide each year (European Commission and World Health Organization, 2019). Nowadays in countries with high vaccination levels, parents ponder about vaccinating their children (Domínguez et al., 2018; Moran, Lucas, Everhart, Morgan, & Prickett, 2016). This is a global problem that risks 90% national minimum vaccination coverage (95% for measles) (WHO Library Cataloguing-in-Publication, 2013). It involves a hazard for children and adults' life who cannot be vaccinated as well as for those people who reject vaccination.

Non-vaccination advocacy people strive to persuade hesitant parents through online videos, a communication source whose consumption is increasing. This research aims to unveil persuasive traits in pro-vaccination and anti-vaccination Youtube videos to provide some hints for future online campaigns to counteract vaccine hesitancy. We will go through nine analysis layers of the content of the videos with pro-vaccination content and with non-vaccination content to compare them.

Keywords: Digital Health Literacy; Vaccine Hesitancy; Persuasiveness; Video; Social Media; Pro-vaccination; Anti-vaccination.

Introduction

Previous studies on anti-vaccination and pro-vaccination messages set that effective communication campaigns to counteract vaccine hesitancy are needed. State campaigns to date, have not been successful (Faasse, Chatman, & Martin, 2016; Glatman-Freedman & Nichols, 2012b; Guadagno, Rempala, Murphy, & Okdie, 2013; Kang et al., 2017; Moran et al., 2016). Alerting parents to the deceptive messages anti-vaccination movement spread on social media would reinforce vaccination (Salleras, 2018). Most previous pro-vaccination communication trials have been built from the values and concepts of health institutions or health professionals. Even some communication campaigns are thought of as "action-counteraction," in the sense that if anti-vaccination people claim that vaccines cause autism, then, health institutions deny it, but explain little on vaccines side effects.

At present, we all spend more and more time watching YouTube videos. We even invest more than half of this watching time using a Tv screen (Alto Analytics, 2020; Think with Google, 2016). The Internet is the third most shared domain in general conversations and the most shared area for anti-vaxxers (Alto Analytics, 2020).

Hesitant parents, those with severe doubts on vaccination, represent about 20-30%, and 2-27% of parents practice selective protection. These two groups of parents are our target public for the communication campaign. Non-vaccination promoters reach about 2% of the parents (Torres González, 2018)

Methodology

For the state of the art, I do a review of the literature on vaccination issues. Video selection was intended to follow the search any person would do on the internet (Meneses, Boixadós, Valiente, Vivas, & Armayones, 2005). We only consider videos made in Spain and Spanish language, setting apart videos from USA and Latam, because the effect of social determinants is different according to countries (Glatman-Freedman & Nichols, 2012a). We have gone through different search stages from August 2019 to March 2020. We have used keywords related to vaccines (autism vaccine; meningitis; vaccine danger; whooping cough; triple viral MMR; aluminum vaccine; rubella vaccine; measles vaccine; vaccine side effects; childhood immunization; diphtheria vaccine; chickenpox vaccine). Previously we sought most used words in Google Trends. When surfing for videos, first, I cleaned the browser, open session as a guest, and select videos in Spanish made in Spain. The purpose is to come across those videos any Spaniard would do. I kept trace and data of the search process. There are 943 videos in the sample, 314 are non repeated and 629 are repeated. From the non repeated videos 182 videos are from Spain and 132 from latam. Most

repeated videos rank up to 34, 36 and 67 times For the inductive analysis I have chosen the most relevant and repeated videos.

We have started with an inductive analysis using Straussian grounded theory. We codified every concept that arises from the text and the video. We did repeated reading of each text and watching of each video until all possible codes and categories have emerged. We used MAXQDA. We wrote and kept the description of each code and category. We also wrote notes on codes related to codified segments of the text. Once we have codified a video thoroughly, we add a new video to codify, and so on. When by adding new videos, we did not find new categories; we consider the analysis has reached saturation. In Grounded Theory, the investigation has reached saturation when, after adding more new documents, one cannot find any new category (Corbin & Strauss, 2008). Anti-vaccination videos and pro-vaccination videos were analyzed separately.

As the reading of the text and watching the video went forward, new concepts showed up related to persuasive traits. Traits from Cialdini's influence and pre-suasive principals (Cialdini, 2017), Haidt's Moral Foundations (Amin et al., 2017; Haidt, 2012), the Inoculation Theory (Compton, Jackson, & Dimmock, 2016). In some videos, we have found traces of Monroes' Motivated Sequence (Haugen & Lucas, 2019). Since we watch and listen to the video, non-verbal language needs to be considered (Hung, 2019).

When we have codified the videos, we have considered the impact of the speaker's communication style and the text of the speech. Pro-vaccination videos and anti-vaccination videos are studied separately. At the end of the study, we will compare each group to each other to find out what are the factors that build the ideology in each group and what persuasive traits are involved. In this paper, we explain the first data from antivaccination videos.

Results

According to the result of the search stages, one can say that there is not a massive amount of videos in Spain that refer to vaccines. We have chosen videos made in Spain in the Spanish language, but the browser returns videos from Latam countries and the Hispanic community in the USA. 42% of the no repeated sample is from Latam countries. There are 182 videos in Spanish language and made in Spain, 42 of these videos have antivaccination content. Anti-vaccination videos get repeated several times, no matter the selected keyword. In total, all anti-vaccination videos have shown up 294 times.

There are four main channels, all of them related to hidden truth, natural medicine, and occultism. Youtube has closed the Channel with highest content. There are five main speakers; four of them are doctors who practice alternative medicine. The fifth one is a writer and a therapist in alternative medicine.

On the side of videos with pro-vaccination content, most of the videos are from news channels and TV news. News is the most frequent channel, 68 records. There is one communication campaign from the Health Ministry: "V"de vacuna "V"de vida. Las vacunas salvan vidas" (Video 3 PV, Pos. 2). "V" for vaccine "V" for life. Vaccines save lives, and another one from the Science Ministry that tells people to validate medical information before believing it: "No te la juegues, #coNprueba" (Video 5 PV, Pos. 2). "Don't put your life at stake." Nevertheless, these videos were not frequently showed during the searches.

The main categories in anti-vaccination videos, so far are "Author", "Speech", "Vaccines are a scam" and "Freedom to decide."

In the category of "Author," there are the following codes: everyday language, hollow speech, mixed concepts, positions himself as an expert, expert on the subject, Storytelling. In Storytelling, there are two codes: personal success story, own pain story. "Author" is one of the largest categories.

"Speech" has the following codes: Harm, Degradation, Cheat, Oppression, Purity, Freedom

"Vaccines are a scam" has these codes: Vaccines are a danger for health, Side effects of vaccines are not recognized, Vaccines produce autism, Heavy metals, Vaccines are useless, Vaccines do not prevent infection.

In the category of "Freedom to decide," the codes are Parents' own decision, Chased by the State, Cases to accept vaccines, Coerced parents, Voluntary vaccine Libertarians. In "Libertarians," there are three codes: The State commands, The State cheats, The University cheats.

Discussion

Pro-vaccination videos are mostly showed in News channels. These videos in News channels inform, provide data, and give advice. We have found pro-vaccination videos in Educational and Health Institution's channels. These videos recommend vaccinating children, explain the history of vaccines, the way they work, the danger of not protecting, and provide lots of data to support this information.

For antivaccination videos, we have come across Natural medicine channels, channels of occultism, and hidden truth and channels of independent journalists. Nearly the content in all antivaccination videos are congresses where a doctor or a therapist in natural medicine gives a speech, an interview to one of these authors, or the presentation of a book written by one of these authors. The author is the mainstay in the videos, but in the collective, as well.

Antivaccination videos, try to persuade people to get into alternative medicines: “Que luego queréis darle algún reforzador, que la vitamina c y todos estos dárselo, estupendo el zinc me parece muy bien, pero sobre todo el afecto. (AP1. Pos. 45). *“If later on, you want to give him some reinforcer, that vitamin C and all these give it to him, great zinc seems very good to me, but above all the affection.”* They promote their products (books and natural medicine products) and their services as therapists or doctors in alternative medicine. In one of the most repeated video: “(...) en un libro que acabo de publicar (AP1.Pos. 13).” *(...) in a book, I have just published”.*

When having a close look at the codes found in anti-vaccination videos, the strength lies in **the speaker**, the author of the video. These authors are considered experts in medicine and natural medicine and think of themselves as experts. They adopt the role of the wise person who tells other people what is best for them. Their words, voice, and attitude positions themselves as a sort of gurú. They are the ones who know “the real truth” that the State hides to the people. They say the State chases and oppresses them because they spread this “truth.” The State and the Universities conceals the dangerous components in vaccines to allow pharma companies benefits: “es importante que ustedes esto puedan contrastar lo que dice la administración con sus publicaciones universitarias” (XU1), Pos. 53) *“It is important that you can contrast what the administration says with its university publications.”*

They say, that as experts in medicine, they bring the real medicine to people: “El microorganismo que estamos hablando de la difteria sería un microorganismo descubierto por la escuela de Koch. Sabemos que la escuela de Koch es en la que se clasifica a partir de 1860 todos los microorganismos son los los creadores de la bacteriología. Pues en 1890 se descubre, a través de las diferentes epidemias de difteria, se descubre y se clasifica este microorganismo” (XU1 Pos. 31). *“The microorganism we are talking about diphtheria would be a microorganism discovered by the Koch school. We know that the Koch school is the one in which, from 1860 on, all microorganisms are classified as the creators of bacteriology. Well, in 1890 it was discovered, through the different diphtheria epidemics, this microorganism was discovered and classified”.*

In their words and speech, there are some incongruences when talking about medicine. These incongruences range from pseudomedicine to false claims (“fake news”) in medicine.

Harm is a constant concept in their speech. In this extract “harm” is express with fake news as autoimmune diseases are caused by vaccines: **Harm:** “(...) que de cada mil diez mil dosis 1 persona tendrá un efecto adverso. En un 50% será lesiones tipo encefalopatía, en un 30 por ciento serán alergias y el 20 por ciento repartidas entre lesiones renales, vasculitis autoinmunes, manifestaciones digestivas, endocrinas, sobre todo, fijémonos, relacionado con el aluminio, diabetes por aluminio, metabólicas” (XU1 Pos. 52). *“(...)that out of each one thousand ten thousand doses 1 person will have an adverse effect. In 50% it will be encephalopathy-type lesions, in 30 percent it will be allergies and 20 percent divided between kidney injuries, autoimmune vasculitis, digestive manifestations, endocrine, especially, let's look at, related to aluminum, aluminum diabetes, metabolic.”*

Vaccines are a danger for health/pseudocientific: “Consecuencia de este engaño el sistema inmunitario, con el paso de los años, se empieza con intolerancias alimentarias, sensibilidad química cruzada en enfermedades autoinmunes, alergias, todas las enfermedades que involucran el sistema inmunitario, hiperactividad entre ellas.por ejemplo autismos.” (V1AP, Pos. 41). *“As a consequence of this deception, the immune system, over the years, begins with food intolerances, cross chemical sensitivity in autoimmune diseases, allergies, all diseases involving the immune system, hyperactivity among them, for example, autism.”* “(..) fijémonos en los cambios en calcio fósforo debido a que el aluminio hace competencia con el calcio y nos cambia todo el funcionamiento de la tiroides y para-tiroides, aparato locomotor aparato muscular y cambios a nivel cardiovascular, sobre todo en la tensión arterial y en la transmisión de la electricidad cardíaca.” (XU1, Pos. 52). *“(..) look at the changes in*

calcium-phosphorus because aluminum competes with calcium and turns all the functioning of the thyroid and parathyroid, musculoskeletal apparatus, and alterations at the cardiovascular level, especially in the blood pressure and the transmission of cardiac electricity. "

Mix concepts: "(...) pero un método preventivo de una enfermedad que quizás no cojas nunca no son para evitar...Puede ser para evitar enfermedades... Y todo eso es cuestionable." (V1AP, Pos. 7). "*(...) but a preventive method of a disease that perhaps you never catch is not to avoid ... It can be to avoid diseases ... And all that is questionable.*"

Fake News/ Pseudocientífic: "Las vacunas, nadie sabe qué ocurrió, que se excluyeron del grupo de medicamento."(V1AP. Pos. 10). "*Vaccines, nobody knows what happened, but they were excluded from the medicament group. "* "(...) el sistema inmunitario de un anciano es precoz, no vale. Es como el del niño." (V1AP, Pos. 39). "*(...) The immune system of an older adult is precocious. It is of no use. It's like the one of a child.*" Lack of health literacy and lack of health literacy is a fact that makes people ignore that fake news and rely on the way they tell them (the form more than the content)

They do not focus on data but **emotional stories**. Tragical experiences of parents whose children suffered the side effects of vaccines. **Storytelling** (the mother of a child with autism due to vaccines): "(..) cuando justamente es en nuestras propias familias donde tenemos niños enfermos de por vida a consecuencia de una vacuna" (XU1, Pos. 15). "*(..) when it is precisely in our own families where we have children who are sick for life as a result of a vaccine.*". They build **an alarming speech** around the harming effects of vaccines on children. Vaccine coadjuvants degrade the purity of a child. We have found that the alarm tone and the claim for the purity of a child, to care for them, are two very repeated concepts along the speeches. **Alarm & Purity:** "(...) te lo puede inyectar en un niño!". (V1AP,Pos. 10). "*(...) it can be injected into a child!*". "Y lo más grave: en niños recién nacidos!". (V1AP, Pos. 12). "*And the most serious: in newborn children!*".

In few documentaries on vaccines, promoting vaccination, use personal experiences, but they do not deep emotionally into the terrible story of the child affected by an infectious disease. "Lo que empezó como una rinitis y un ligero resfriado se ha convertido en una sucesión de episodios aterradores en los que el bebé en lucha por respirar." (Video 2 PV, Pos. 62-68). "*What started as rhinitis and a slight cold has become a succession of terrifying episodes where the baby struggles to breathe.*"

Apart from the concepts of "harm" and "purity," we have also found that for proper life conditions keeps diseases away. **Disease is up to life conditions:** "(...) y sobre todo a partir de 1950, en la que se ve que depende las condiciones de vida como son: hambre, como son inmunosupresión es, como son vacunaciones masivas, como son antibióticos y como son situaciones de distrés,.. puede recibir una información que lo haga de saprófito o que lo haga patógeno o parasitario." (XU1, Pos. 35). "*(...) and especially from 1950, on which it is seen that living conditions depend on how they are: hunger, how they are immunosuppression is, how they are mass vaccinations, how they are antibiotics and how they are distress situations. it can receive information that makes it a saprophyte or that makes it pathogenic or parasitic. "*

Speakers tell parents not to vaccinate their children and show easy ways to avoid vaccines. **Inoculation:** "Y me acuerdo que en el colegio de mis hijos tocaba para vacuna."Toca vacuna mañana,papá". "No te firmo papel que no". "El médico quiere hablar contigo". "Pues voy a hablar con el médico". Colaboro con el médico. Explicué mi punto de vista de la medicina natural y me dice bueno es su responsabilidad; Me parece muy bien. Ya está fíjate que médico más encantador encontré". (AP1, Pos. 29). "*And I remember that at my children's school it was time for the vaccine.*" Tomorrow is vaccination day, dad. " "I don't sign that paper for you." "The doctor wants to talk to you." "Well, I'm going to talk to the doctor." I collaborate with the doctor. I explained my point of view of natural medicine and he says, "good is his responsibility". Sounds good to me. What a charming doctor I found.

We have detected that the concept "the State Cheats us." is a constant along the speeches. The authors in these antivaccination videos depict that we are living a false reality. the State has created. .The State, Pharma companies, Doctors, and Universities are fooling us. They want us to consume Pharma drugs.

The State commands & cheats_ "(...) estoy en contra de la manipulación que se hace a las personas y en especial a los padres para que vacunen a sus hijos. Y les amenazan con exclusive les del sistema docente (V1AP. Pos. 24-25). "*(...) I am against the manipulation of people and especially to parents to vaccinate their children. And they threaten to exclude them from the educational system.*". "Y todavía parece ser que querrán que nos vacunemos todavía más de la difteria". (XU1, Pos. 47) "*And it still seems like they want us to get even more vaccinated for diphtheria.*". (...) no se crean ustedes, no se crean que las vacunas no tienen mercurio tienen lo que pasa que

unos están publicadas las cantidad es y otras no estarían publicadas”. (XU1 Pos. 49). (...) *do not believe, do not believe that vaccines do not have mercury. What happens is that some are published, the quantity, and others would not be published.* ”

We have discovered that linked to the concepts of “harm,” “purity,” and “return to natural medicine,” there is a concept that wraps up all the speeches. The idea is “ freedom to decide.” In this way, freedom to choose to vaccinate or not. Following their statements, the story they build is that the State cheats us and harms our children to raise Pharma benefits. The State oppress them because they know this truth and are telling people.

Freedom to decide: “ (...) después de reflexionar de forma sopesada, decidimos, evidentemente, no vacunar”. (XU1, Pos. 12) “(...) *after reflecting carefully, we decided, obviously, not to vaccinate.* ”

From codes and categories, we find Five Axes: (1) Deciding is a right in our society (SAMPEDRO, 2020) (2) Lack of health literacy and lack of digital health literacy is a factor to evaluate (Lorini et al., 2018). When parents have doubts, they do not have the proper resources to find reliable information. (3) Trust. Natural medicine practitioners get the trust of hesitance parents. Paterson et al. (2016), in their study on USA citizens, found that in 79,9% of cases, there was a lack of trust between the physician and patient. (4) Communication skills and communication styles of health professionals will open the way to a trusting relationship between parents and public health professionals. (Lorini et al., 2018). (5) Faith versus Science (Linde, 2015). Reason versus believing. Post-truth. They consider as real something they believe in even without having any proof about it, just by word of mouth. The power of blind faith and group identity. They gather in conferences, congresses, and meetings to record their messages.

Limitations

It is a small pilot research. The study aims to get the first results on this subject of persuasive traits for campaigns to counteract vaccine hesitancy. The research analyses antivaccination videos to find out what are the features that make hesitance parents not to vaccinate.

The whole research needs to be under the umbrella of the Public Health Administration. This sort of analysis would involve different groups of multidisciplinary investigators with expertise in the fields involved. Such research needs economics resources and Public support that goes beyond the present conditions.

At present this small pilot research with limited resources and no economic support

Conclusions

From the analyzed videos, it may not be possible to suggest definite conclusions on hints for a communication campaign to counteract vaccine hesitancy. Further research needs to be done. In this first approach, we have identified some pieces of advice for communication campaigns: use storytelling, where Spaniards explain their own stories. Stories of pain with their children due to infectious diseases. Stories of happiness where children play and have fun together. Use an understandable, everyday language to explain medical issues. Make medicine easy for the citizens. Be an expert, closed, and friendly. Allow the citizen to be experts and participants as well. Be emotional. Criticize, the same as the citizens, the State, and the System if they are not working correctly.

On the other side, we consider that actions to improve health literacy and digital health literacy would be of great help for parents and the population in general when having to make decisions on health.

References

- Alto Analytics. (2020). *The Influential Role of Anti-Vaccine Narratives in the Digital Public Sphere*. Retrieved from https://www.alto-analytics.com/en_US/the-influential-role-of-anti-vaccine-narratives/
- Amin, A. B., Bednarczyk, R. A., Ray, C. E., Melchiori, K. J., Graham, J., Huntsinger, J. R., & Omer, S. B. (2017). Association of moral values with vaccine hesitancy. *Nature Human Behaviour*, 1(12), 873–880. <https://doi.org/10.1038/s41562-017-0256-5>
- Cialdini, R. (2017). *Pre-suasión. Un método revolucionario para influir y persuadir*. Penguin Random House Grupo Editorial, S. A. U. <https://doi.org/10.1017/CBO9781107415324.004>

- Compton, J., Jackson, B., & Dimmock, J. A. (2016). Persuading others to avoid persuasion: Inoculation theory and resistant health attitudes. *Frontiers in Psychology*, 7(February), 1–9. <https://doi.org/10.3389/fpsyg.2016.00122>
- Corbin, J., & Strauss, A. L. (2008). Juliet M.
- Domínguez, A., Astray, J., Castilla, J., Godoy, P., Tuells, J., & Barrabeig, I. (2018). False beliefs about vaccines. *Atencion Primaria*. <https://doi.org/10.1016/j.aprim.2018.05.004>
- European Commission and World Health Organization. (2019). *Global Vaccination Summit*. Retrieved from <https://ec.europa.eu/digital-single-market/en/news/communication-tackling-online-disinformation-european-approach>
- Faasse, K., Chatman, C. J., & Martin, L. R. (2016). A comparison of language use in pro- and anti-vaccination comments in response to a high profile Facebook post. *Vaccine*, 34(47), 5808–5814. <https://doi.org/10.1016/j.vaccine.2016.09.029>
- Glatman-Freedman, A., & Nichols, K. (2012a). The effect of social determinants on immunization programs. *Human Vaccines & Immunotherapeutics*, 8(3), 293–301. <https://doi.org/10.4161/hv.19003>
- Glatman-Freedman, A., & Nichols, K. A. (2012b). The effect of social determinants on immunization programs. *Human Vaccines and Immunotherapeutics*. <https://doi.org/10.4161/hv.8.3.19003>
- Guadagno, R. E., Rempala, D. M., Murphy, S., & Okdie, B. M. (2013). What makes a video go viral? An analysis of emotional contagion and Internet memes. *Computers in Human Behavior*, 29(6), 2312–2319. <https://doi.org/10.1016/j.chb.2013.04.016>
- Haidt, J. (2012). *The Righteous Mind: Why Good People are Divided by Politics and Religion*. *The Moral Foundations of Politics*. <https://doi.org/10.1080/03612759.2003.10527541>
- Haugen, J., & Lucas, K. (2019). Unify and present: Using Monroe’s Motivated Sequence to teach team presentation skills. *Communication Teacher*, 33(2), 112–116. <https://doi.org/10.1080/17404622.2018.1502886>
- Hung, D. (2019). The Science of Body Language When Delivering Diagnoses to Patients, 1–6.
- Kang, G. J., Ewing-Nelson, S. R., Mackey, L., Schlitt, J. T., Marathe, A., Abbas, K. M., & Swarup, S. (2017). Semantic network analysis of vaccine sentiment in online social media. *Vaccine*, 35(29), 3621–3638. <https://doi.org/10.1016/j.vaccine.2017.05.052>
- Linde, P. (2015). Quiénes son los antivacunas | Planeta Futuro | EL PAÍS. Retrieved February 7, 2020, from https://elpais.com/elpais/2015/06/02/planeta_futuro/1433262146_575760.html
- Lorini, C., Santomauro, F., Donzellini, M., Capecchi, L., Bechini, A., Boccalini, S., ... Bonaccorsi, G. (2018). Health literacy and vaccination: A systematic review. *Human Vaccines & Immunotherapeutics*, 14(2), 478–488. <https://doi.org/10.1080/21645515.2017.1392423>
- Meneses, J., Boixadós, M., Valiente, L., Vivas, P., & Armayones, M. (2005). Construcción de estrategias sistemáticas para la búsqueda exhaustiva de información en Internet: Un marco de toma de decisiones aplicado a la información sobre psicología de la salud. *Information Research*.
- Moran, M. B., Lucas, M., Everhart, K., Morgan, A., & Prickett, E. (2016). What makes anti-vaccine websites persuasive? A content analysis of techniques used by anti-vaccine websites to engender anti-vaccine sentiment What makes anti-vaccine websites persuasive? A content analysis of techniques used by anti-vaccine websites t. *Journal of Communication in Healthcare*, 9(3), 151–163. <https://doi.org/10.1080/17538068.2016.1235531>
- Paterson, P., Meurice, F., Stanberry, L. R., Glismann, S., Rosenthal, S. L., & Larson, H. J. (2016). Vaccine hesitancy and healthcare providers. *Vaccine*, 34(52), 6700–6706.

<https://doi.org/10.1016/j.vaccine.2016.10.042>

Salleras, L. (2018). Anti-vaccination movements: A call to action Movimientos antivacunas: una llamada a la acción. *Vacunas (English Edition)*, 19(1), 1–3. <https://doi.org/10.1016/j.vacun.2018.03.001>

SAMPEDRO, J. (2020). Antivacunas: Un mundo feliz | Opinión | EL PAÍS. *El País*. Retrieved from https://elpais.com/elpais/2019/12/04/opinion/1575476049_955045.html

Think with Google. (2016). *¿YouTube en la televisión o la televisión en YouTube?* Retrieved from <https://www.thinkwithgoogle.com/intl/es-es/canales-de-publicidad/video/youtube-en-la-television-o-la-television-en-youtube/>

Torres González, O. (2018). Claves para comprender la resistencia de los colectivos antivacunas: una controversia científico-tecnológica pública. *Revista de Humanidades de Valparaíso*, 0(11), 7. <https://doi.org/10.22370/rhv.2018.11.1194>

WHO Library Cataloguing-in-Publication. (2013). *World health statistics 2013*. (Vol. 2). Retrieved from https://www.who.int/gho/publications/world_health_statistics/EN_WHS2013%0A_Full.pdf%0A