

Appendix A. Tables

A1. Phrases for searching vaccine opinions

Opinion	Keywords
Anti-vax	lying politicians, plandemic, so called vaccine, I will not be taking, I do not trust all these vaccines, I don't trust all these vaccines, I do not trust vaccines, I don't trust vaccines, will I allow, no way in hell, I am anti vaccine, I am anti-vac, I am anti-anti-vax, I will not be inoculated, I am anti vax, globalists I am anti mandatory vaccine, I am anti unnecessary vax, I am anti-deadly-vaccine, I am antivaxxer, no vaccine for me, I am anti covid vax, I am anti bill gates vaccines, I am anti-COVID-19 vaccine, I am anti covid vaccine, I am anti-covid vax, I will *not* take, do not have it, i rather die, not me, will not receive a vaccin, will never take, I'm not going to take, I'm not getting the COVID vaccine, NoCoincidence, man-made, population control, manmade, to control us, micro chip, microchip, micro-chip, tracking chip, open your eyes, poison, making BIG money, making money, RFID chip, GPS tracking, aborted baby, poison vaccine, we dont want, fake vaccine, freemason, depopulisation, political game, covid lie, nazis, political gameplay, anti-vaccine bullshit, never going to get, no thanks, make billions, doesn't exist, premeditated, makes money, kill us all, man made virus, fertility, make trillions, to force man, mandatory covid vaccine, don't get vaccinated, cause autism, make money, no way I take a vaccine, no to covid 19 vaccine, no to covid vaccine, mandated vaccine, mandatory vaccine, brain washing, no thank you, forced vaccin, going to get rich, coronavirus was invented, vaccine doesn't stop transmission, we do not need, dirty vaccine, scare us, force us, I don't trust vaccine, won't be getting, was planned, i decline, 5G, bioweapons, profits, reject any covid, don't be deceived, do not accept the vaccine
Hesitant	should be tested, should I risk it, should be properly tested, Can they even develop a vaccine, would you take it, until I am satisfied, No vaccine for me until, unlikely to be effective, allergic reaction, allergy warning, allergy history, allergy alert, anaphylaxis, side effects, wont be safe, crazy to take it, unproven vaccine, what if, it's odd, Weird, Will you take, I doubt it, guinea pigs, GuineaPigs, test dummies, take that?, Are they dangerous, I will be suspicious, doubt on, something strange, suspicious, not ready for the vaccine
Pro-vax	I am proud, ready for human trial, vaccine is out, some good news, vaccine is developed, Amazing News, the good news, better future, going to be getting, COVID Vaccine Works, vaccineswork, vaxwithme, vaccinessavelives, Volunteers line-up, brings hope, I'm getting the vaccine, promising news, breakthrough idiots who refuse

A2. Frequent hashtags and mentions for positive and negative polarities

Sentiment Polarity	Category	Keywords
Positives	hashtags	patents, biotech, India, medicine, pharmaceutical, innovation NHS (National Health Service), biontech, research
	mentions	justintrudeau, cepivaccines, GAVI (Global Alliance for Vaccines and Immunizations), CNBC (Consumer News and Business Channel)
Negatives	hashtags	plandemic, MAGA (Make the America Great Again), covididiots, social-distancing, trumpvirus, biden, id2020, fauci, bigpharma, agenda21
	mentions	foxnews, GOP (republican group), skynews

A3. Most polarized users in vaccine-related tweets

Sentiment Polarity	Users
Positives	Reuters, business, cnnphilippines, TimesNow
Negatives	paul_kangas, PiePony1, JohnstonSharon, PositivelyJoan