

Table 2. Topics drawn from Phase 1 (05/18/2020–12/17/2020)

Topic # (prevalance)	Subject	Words
1 (6%)	Global Responses to COVID-19	world, minister, Japan, UK, economy, summit, response, emphasis, conference, countries
2 (3.9%)		North Korea, minister, thought, government, claims, situation, information, media, South and North Korea, article
3 (4.1%)		Trump, president, US, presidential election, Donald, Pouch, major general, elected, White House, candidate
4 (11.5%)	The acquisition and supply of vaccines around the world	China, procure, government, provision, US, contract, purchase, justification, next year, AstraZeneca
5 (18.5%)	Results of the vaccines' clinical trials	clinical, test, US, result, effect, virus, AstraZeneca, candidate, progress, antibody
6 (4.1%)	Hacking the vaccine distribution network	company, US, economy, hacking, China, information, stock, market, Korea, world
7 (4.2%)		production, transportation, storage, Korean Air, transportation, company, pharmaceutical, representative, enterprise, distribution
8 (13%)	Status of infection and quarantine	COVID-19 cases, infection, situation, degree, quarantine, level, occurrence, patient, thought, mask
9 (6%)	The development of treatments in Korea	SK, Korea, president, medicine, cooperation, Bill Gates, support, Bioscience, CEO, production
10 (10.8%)		rise, US, stock market, market, economy, point, fall, outlook, recovery
11 (4.6%)	Stabilization of people's livelihoods in Korea	budget, support, citizen, payment, relief fund, government, national assembly, budget bill, next year, supplementary
12 (4.2%)		president, government, citizen, economy, policy, quarantine, secure, lawmaker, situation, Seoul
13 (5.1%)	Emergency use of vaccines	US, usage, emergence, start, next year, UK, BioNTech, FDA, food, CDC
14 (3.8%)	The start of vaccination	Russia, Sputnik, world, test, clinical, president, Putin, registration, Brazil, center

Table 3. Topics drawn from Phase 2 (12/18/2020–02/25/2021)

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Topic # (prevalance)	Subject	Words
1 (6.6%)	Production of vaccine	China, production, US, SK, company, shot, Korea, world
2 (1.9%)	North Korea's attempt and suspicions to hack into treatment information	North Korea, hacking, National Intelligence Service, medicine, Israel, Pope, member, extortion, information, cyber
3 (7.6%)	Vaccination of United States Forces Korea	economy, US army, USFK, world, US, government, Korea, recovery, KATUSA citizen, president, government, minister, opposition, idea, real estate, representative
4 (11.5%)	Initiation and side effects of vaccination	US, Trump, start, allergy, CDC, side-effect, people, reaction, local time
5 (4.7%)	Vaccine clinical trials and results	($\lambda=1$) virus, UK, effect, clinical, infection, result, test, variant, US, immune
6 (9.2%)		($\lambda=0.4$) variant, protein, cell, identified in the UK, Republic of South Africa, gene, human body, RNA, spike, mutation
7 (6.1%)		confirmed patient, quarantine, situation, distance, infection, degree, test, thought, patient, stage
8 (7.8%)		president, Cheong Wa Dae, citizen, investigation, approval rating, minister, prosecutor, representative
9 (3.3%)		doctor, lawmaker, medical association, citizen, license, nurse, Olympics, candidate, election, cancellation
10 (8.4%)	Status of vaccine acquisition in Korea	government, procure, citizen, quarantine, member, Japan, criticism, situation, comment, president
11 (4.5%)		market, rise, stock, forecast, US, index, interest rate, economy, next year
12 (14.2%)	Sequential vaccination plan in Korea	prevention, government, start, AstraZeneca, plan, subject, medical, work, hospital
13 (2.4%)	Transportation of vaccine	transport, temperature, storage, maintenance, sub-zero, freight, cold chain, distribution, Korean Air
14 (11.7%)	Plan on acquisition and supply of vaccine	government, procure, contract, provision, next year, AstraZeneca, justification, supply, US, start

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Table 4. Topics drawn from Phase 3 (02/26/2021 – 03/31/2021)

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Topic # (prevalance)	Subject	Words
1 (11.9%)	The international situation	infection, quarantine, confirmation, degree, start, new, inoculated, test, situation
2 (7.3%)		president, US, China, summit, government, Trump, cooperation, minister, Japan, conference
3 (9.6%)		interest rate, rising, US, market, economy, outlook, government bond, economy, recovery, stock market
4 (2.4%)	Vaccination and the occurrence of side effects	authorization, clinical, outcome, verification, virus, Ministry of Food and Drug Safety, Janssen, advisory group, trial, clinical trial
5 (24.7%)		reaction, AstraZeneca, death, case, hospital, prevention, side-effect, vaccinated, symptom, occurrence
6 (7%)		Adjusting amounts of AstraZeneca in Korea and overseas countries' interest in vaccine effects for mutant viruses
7 (2.8%)	Vaccination and consequent social change	provision, EU, production, UK, supply, AstraZeneca, government, SK, export, justification
8 (3.8%)	Domestic political issues and vaccine transportation	China, Japan, Seocho, passport, border, clinical, Russia, progress, North Korea, issuance
9 (3.1%)	Vaccination and its side effect	candidate, transport, mayor, Korean Air, election, president, citizen, thought, Seoul, member
10 (9.3%)		service, enterprise, government, information, company, guarantee, start, insurance, block, payment
11 (2%)		US, effect, virus, clinical, result, infection, human, antibody, prevention, test
12 (3.7%)	Vaccine storage and transportation	storage, temperature, Daegu department store, transport, freezer, refrigerator, keeping, situation, underlying, distribution
13 (8.4%)	Transportation of vaccine	police, intelligence, fake, fake news, China, false, dissemination, response, Olympics, investigation
14 (4%)		government, support, leave, people, support, parliament, payment, president, size, budget start, transport, virus, arrival, Genexine, storage, progress, center, immune, ingredient

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Table 5. Topics drawn from Phase 4 (04/01/2021 – 09/25/2021)

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Topic # (prevalance)	Subject	Words
1 (8.8%)	The issue of securing domestic vaccine supplies	government, procure, president, citizen, supply, provision, portion, contract, situation, supply and demand
2 (6.1%)	Concerns about infection due to the holidays	Japan, vacation, information, thought, government, people, certification, offer, citizen
3 (3.1%)		company, semiconductor, Samsung Electronics, vice chairman, chairman, soldier, Ministry of National Defense, employee, inflation, Cheonghae Unit
4 (7.5%)		candidate, thought, people, president, congressmen, representative, Democrats, election, the opposition party, politics
5 (8.1%)		China, India, US, Russia, world, North Korea, supply, ash, Sputnik, EU
6 (2.8%)		temperature, UN, film, storage, performance, mobile, police, maintenance, distribution, Mrs.
7 (5%)	Infection status and clinical trials of vaccine	virus, infection, effect, antibody, result, professor, immune, prevention, people, gene
8 (7.1%)	The level of quarantine in Korea	situation, quarantine, degree, government, thought, saying, COVID-19 case, possible, distance, professor
9 (6.3%)	Vaccination	reservation, vaccinated, COVID-19 case, new, test, case, region
10 (9.3%)		US, president, Korea, cooperation, summit, support, diplomacy, Korea and USA, government
11 (8.6%)		rising, market, economy, US, outlook, record, price, contrast, performance, recovery
12 (10.4%)	Debate over the vaccine passport system	US, mask, UK, travel, Israel, Delta, human, CDC, population, infection
13 (8.4%)	Side effects of vaccine	side-effect, AZ, AstraZeneca, case, thrombosis, reaction, Janssen, hospital, occurrence, death
14 (8.6%)	Clinical trials of vaccine	production, clinical, SK, company, global, support, test, progress, Novavax, plan

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