

AMERICA, VACCINATED!

**How behavioral
science can be used to
drive near-universal
vaccinations against
SARS-COV-2 in the US.**



**SPECIAL REPORT
DEVELOPED BY**

newristics

April 22, 2021

*Newristics is a leader in the use of
behavioral science in healthcare, focusing
on behavior change messaging.*



Executive summary

The US did not handle the COVID pandemic like an advanced nation is expected to, and there were more than 31 million cases and 580,000 deaths in the US as of April 16, 2021. The US pharmaceutical industry did, however, outperform the world in commercializing vaccines for COVID at warp speed.

With 3 vaccines already approved in the US, and several others in clinical testing or waiting approval, the US is in a position to return to normalcy if it can achieve a high vaccination rate and do it quickly.

Vaccination should be a no-brainer for all Americans because it presents the most efficient way of returning to normalcy in 2021. Almost all the vaccine trials showed 100% protection against severe disease, hospitalization and death resulting from COVID. A significant reduction in all 3 metrics would give public health officials confidence to lift restrictions even if the number of cases keep going up.

As of April 16, 2021, less than 25% of Americans had been fully vaccinated. While the vaccination program has picked up momentum recently and vaccine supply is about to expand significantly in coming weeks, there is still a sizable population of Americans who are not ready to accept a COVID vaccine quite yet.

Getting America vaccinated is as much a behavioral challenge as it is a logistical challenge. In this special report, we present a comprehensive set of recommendations to use behavioral science to drive NEAR UNIVERSAL vaccination in the US.

The report starts with a thoughtful analysis of barriers to universal vaccinations, as explained by behavioral science principles. Each barrier is explained using specific decision heuristics and biases that are likely to drive consumer decisions on vaccination.



The Special Report outlines specific recommendations on how to change behavior:



Strategies for public health organizations to change citizen behaviors using behavioral science based incentives, messaging and nudge interventions.



Strategies for employers to change employee behaviors using behavioral science based employee programs.



Strategies to convince the last 10-20% of the most vaccine hesitant citizens who won't respond to incentives or messaging.

BEHAVIORAL SCIENCE STRATEGIES *to drive* COVID VACCINATIONS

VALUED INCENTIVES

Top 5 incentive strategies recommended

1

Direct financial incentives

2

Bonus add-ons

3

Awards and recognition

4

Reduction of effort

5

Negation of penalties

SMART NUDGES

Top 5 nudging strategies recommended

1

Availability Heuristic

2

Social Proof

3

Fear Of Missing Out

4

Scarcity

5

Affect/Attentional Bias

MINDFUL MESSAGING

Top 5 messaging heuristics recommended

1

Framing Effect

2

Illusion Of Control

3

Loss Aversion

4

Pseudocertainty Effect

5

Verbal Nudging

EMPLOYER INTERVENTIONS

Top 6 strategies to drive vaccinations indirectly through employers



1

STRATEGY 1

Make the vaccine easily accessible and free

HEURISTIC: Fluency Heuristic, Availability Heuristic

2

STRATEGY 2

Use trusted authorities and leaders to endorse vaccine

HEURISTIC: Authority Effect, Halo Effect, Attribute Substitution

3

STRATEGY 3

Offer additional employee benefits based on vaccination

HEURISTIC: Behavioral Contingencies, Hyperbolic Discounting

4

STRATEGY 4

Provide priority vaccine access to frontline employees

HEURISTIC: Adaptive Bias

5

STRATEGY 5

Offer presale commitments to employees

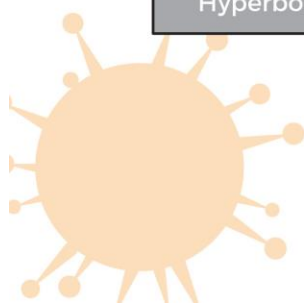
HEURISTIC: Illusion of Control

6

STRATEGY 6

Convert individual vaccination into a public health act

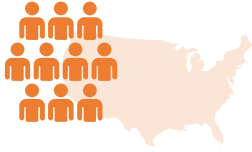
HEURISTIC: Meta personal self-construal, Construal level theory



Current Situation

Why taking the COVID vaccine
should be a no-brainer,
but it's not.

Why taking the COVID vaccine should be a no-brainer



As of April 16, 2021, [2.9 million people](#) have died from COVID-19 worldwide, with the US accounting for almost [580,000 deaths](#). That's 20% of all reported deaths worldwide even when the United States' population is just [4.5% of the world's total population](#).

Almost 10 million Americans are still out of work and major sectors of the economy are still operating in a limited capacity. The US has, however, led the world in development and commercialization of COVID vaccines. The shortest path to getting America back to normal, is to reduce hospitalizations and deaths from COVID down to flu levels, with the vaccines showing near perfect efficacy in reducing severe disease and hospitalizations.

Getting the United States vaccinated should be a no-brainer, but less than 25% of Americans had been fully vaccinated as of April 16, 2021.

1



Vaccines are very effective in reducing covid infections.

Since the primary endpoints in most COVID vaccine trials were not based on transmission of the disease, the FDA has not allowed claims about transmission to be in the label for most vaccines. However, follow-up data from trials and even real world evidence from countries like Israel shows that vaccines reduced transmission by 65%-95%.

2



Getting vaccinated reduces hospitalization to almost zero.

[Even a single dose of the Pfizer vaccine](#) can reduce hospitalization among the elderly by 80%. If the United States turbocharges its vaccine drive to get maximum people vaccinated, COVID related hospitalizations could drop to virtually nearly zero. For example, Israel has started returning to normal because [real-world data shows](#) the Pfizer vaccine has already reduced deaths and hospitalization by 95.8%.

3



A drop in hospitalization means the country could return to normal.

Lockdowns aim to [flatten the curve](#) by slowing down the spread of the disease. They make sure that hospitals are not overwhelmed by an influx of more daily cases than they can handle. Another goal of a lockdown is to ensure that stakeholders have enough time to mobilize resources as the pandemic progresses. Speeding up the vaccination process would reduce hospitalizations dramatically. And when they stay low, public health experts are able to lift curfews and lockdowns and allow people to resume normal social mobility and economic activity. Therefore a low hospitalization rate is the key to getting the United States back to normal functioning.

A difficult part of 2020 was the lack of available ventilators for those who needed them. Having access to one became a matter of life and death for many. Fortunately, [data from Israel](#) showed that the vaccine reduced the severity of the disease so much, that the number of patients over 70 who needed a ventilator dropped by 67% by February 2021. This means that ventilators would be available for all those who need them, if only people just take the vaccine. Getting jabbed is a sure-shot way to ensure no one has to suffer due to limited medical resources.

Why are Americans not motivated to take the vaccine?



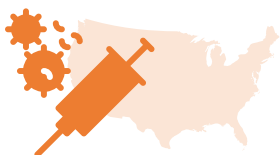
In a [Pew Research Center survey](#) between Sept 8-13 (6 months after WHO declared a pandemic), about 50% of Americans in a 10,000+ nationally representative sample said they would either definitely or probably get the vaccine if it were available. That also means 50% said they would definitely or probably not get the Vaccine. 21% said they would definitely get it, and 24% said they definitely wouldn't get it. Among those who were definitely or probably interested in getting the vaccine, most of them would be demotivated if the vaccine costs too much, shows many side effects, or has low effectiveness.

[One study](#) on a sample of 1971 Americans from July 2020 found that political characteristics and vaccine attributes affected American's hypothetical motivation to get the vaccine. For example, the probability of getting the vaccine increased by 20% when the hypothetical vaccine's efficacy increased from 50% to 90%. Today, we know that vaccines are over 90% efficacious in preventing symptomatic COVID-19 after 2 doses.

Fortunately, Americans are [trending toward](#) reduced hesitancy as vaccinations ramp up. Only 17% (as opposed to 50% 6 months ago) probably or definitely won't get vaccinated, according to a survey done on 80,000 people early in March 2021.

In summary, a lack of knowledge about vaccinations and concerns about side effects were the main reasons people were less motivated to take a vaccine, but hesitancy is going down.

Current state of COVID vaccination in the US must improve



The US has been a market leader in vaccine development, but it is falling short when it comes to COVID-19 immunization. While the current state is not terrible considering the size of the country, it can definitely be improved. As of April 16, 2021, [Israel has delivered](#) 116 doses per 100 people, with 56% of its population fully vaccinated. The US has delivered 59 doses per 100 people, with 24% of the population being fully vaccinated. [U.A.E, Chile, and U.K](#), among a few others, are ahead of the US. [At the same time](#), 78% of the vaccine supply has been used up, with most states in the 70%-85% range. This means that states are prepared with enough doses to have a higher vaccination rate in the US than they do currently.

The vaccine is already successful in the US and showing trends of higher success as the months go by. A single dose of the Pfizer and Moderna Vaccine can prevent hospitalization. Over 9% of Americans received at least a single dose between February and March 2021, a vast undertaking. The US had nearly 130,000 COVID patients in hospitals on Jan 6, 2021. Fast forward two months later and that number has reduced by 70%. Vaccine uptake has driven hospitalization numbers down and will continue to do so at an exponential rate.

Considering that the vaccine is incredibly successful and the United States is prepared to handle higher vaccine uptake, Americans should get vaccinated faster than they currently are.

BARRIERS TO UNIVERSAL VACCINATION AND HOW TO OVERCOME THEM

Barrier # 1

Ambiguity surrounding the vaccine



People don't know where, when, and how to get vaccinated.

1. People are not yet clear on where and when they should get vaccinated.
2. Many don't know where to search for relevant information that pertains to their specific case.



People don't know how to overcome common problems while getting vaccinated.

1. People don't have ready solutions to the most common logistical problems like large travel distances and mobilizing priority groups.
2. People don't know how to secure their vaccines and book appointments.



People don't know how to choose between vaccines.

1. Most people have never had to evaluate and choose from a variety of vaccine technologies, like mRNA vaccines, peptide vaccines, etc.
2. Historically, people didn't have to pay attention to the "efficacy" of a vaccine, and definitely didn't have to compare the efficacy of multiple vaccines. Now some who have a choice are forced into such decisions and could face many unknowns that threaten to paralyze decision making.



Solution 1

Make relevant information available in digital and non-digital forms to tap into the Availability Heuristic.

These problems above arise due to a lack of awareness and improper information targeting. When the right information isn't present in one's awareness frequently, it's likely to become a barrier to getting vaccinated. Availability Heuristic can be deployed to overcome these barriers. This heuristic is all about making information available to our collective awareness, since we tend to base decisions on what is readily available to us.



Solution 2

Develop trust in authorities to trigger Attribute Substitution and Authority Bias.

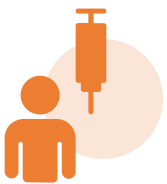
The volume of decisions a person has to make to get vaccinated may seem overwhelming, but they can rely on authorities to simplify decision-making. People subconsciously use attribute substitution, which is a tendency to substitute a complex decision space with a simpler one. Instead of burdening people with heavy information and expecting them to go through a tedious decision-making process, authorities, influencers, and experts can make recommendations for the general public to follow. To enable this solution, it is vital to build trust between authorities and the general population.

Barrier # 2

Some people don't want to take the vaccine immediately and want to play the wait and watch game.

In a poll conducted in January 2021 with 1563 American adults, 41% wanted to get the vaccine as soon as possible. 31% wanted to wait and observe how vaccinations work out before deciding whether or not to opt for it. Only 13% had no intention of getting vaccinated. **Waiting and watching puts people at the risk of home quarantining for 10 days or spending days in a hospital - a stressful, undesirable period for most people.**

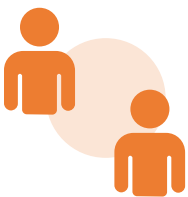
But why do some people hesitate when the vaccine has proven to be so effective?



Vaccine skepticism: People have a global tendency to be skeptical of something new and unknown. They resist change. They demonstrate **Ambiguity Aversion**, which describes our tendency to avoid those options which have an unknown likelihood of positive outcomes. Skepticism, manifesting as anti-vaccination attitudes due to conspiracy or misinformation, is related to poor scientific thinking skills. Helping the public look through a scientific lens could help reduce skepticism.



Healthcare distrust: The intention to get vaccinated is much lesser among marginalized groups like Black Americans and Hispanic Americans when compared to white Americans. One reason for this is a deep-seated distrust in the healthcare system (and authority), which has demonstrated systemic racism and prejudice. This has created a **Negative Halo Effect**, where marginalized groups infer that authorities don't have their best interests in mind.



Mental inertia: Over a year has gone by since people began adjusting to the “new normal”, in which our best defense has been a lockdown, social distancing, mask-wearing, and regular sanitizing. These new habits and adjustments took time and effort to feel normal. Now, people are inclined to feel a sense of stability, and one way they do this is by resisting any form of change to keep things the way they were in 2020 (i.e., maintain their status quo). That's the Status Quo Bias that makes people resist change, even if the change is good - like preparing to get vaccinated to be able to return to normal.



Safety concerns: Misinformation about the vaccine, despite the demonstrated success, plays into our negative biases and causes concern. Skeptics might believe misinformation easily, if it confirms their skepticism. Humans also exhibit the **Neglect of Probability Bias**, which is our tendency to selectively overvalue rare events and fail to compare their likelihood with the most typical events. This makes some people believe that the highly improbable worst-case scenarios like bad side effects, vaccine failure, and allergies are likely to happen to them. People may jump to conclusions, with an emotional reaction to unlikely events. **Research corroborates** the idea that jumping to conclusions is related to irrational beliefs, understanding probability, and impaired decision-making.

Focusing on a singular undesirable case of a bad allergic reaction could induce **Dread Risk**. It describes people's tendency to let their fears of extreme catastrophic events guide their decisions to avoid even the remotest possibility of such events coming to pass. Dread risk may be fuelled by **Availability Heuristic**, which is readily available extreme examples from the news or the internet that fuel this dread.

Pfizer, for example, is already testing if their vaccine is useful against new sars-cov-2 variants, although there is **no evidence** to suggest that the vaccine is ineffective against new strains. Such examples are essential to foster trust and the sense that authorities are preparing well to ensure worst-case-scenarios don't play out.



Solution 1

Highlight the probability of success.

Influencers, authorities, and news reporters should emphatically focus on the vaccine's success instead of the unlikely scenario of getting mild side-effects or re-infection. People tend to value loss more than equivalent gains, so they try to avoid the side-effects (loss) more than seeking immunity (gain). They may be incorrectly overvaluing the loss they are trying to prevent because adverse outcomes from getting vaccinated are virtually non-existent.



Solution 2

Improve trust between authorities and the public.

Addressing vaccine skepticism, healthcare distrust, and safety concerns will most likely reduce the frequency of people who want to "wait and see how things turn out." Media can help counter the over-representation of negative stories that show a breach of trust or unwarranted skepticism, so as to not negatively influence people. We need to avoid the **Negativity Bias**, wherein negative stories have a stronger impact than positive stories of equal intensity.

Barrier # 3

Some people don't think they need a vaccine.

There are 3 common reasons why someone would conclude they don't need a vaccine:



Overconfidence

People have irrational beliefs like, "My immunity is better than others" or "I am extra safe." This overconfidence is based on inherent biases. **Optimism bias** tells us that 80% of people think good things will happen to them while they can miraculously avoid bad things. **The better-than-average effect** tells us that people rate themselves better than most other people on various traits, even ones like immunity and safety adherence.



Alternative medicine

Some people are likely to adopt strictly alternative medical routes with the confidence that they are already in control. Their alternative medical choices create an illusion of control that makes them feel safe and secure.



Perceived immunity

Lack of existing symptoms in some people could falsely feed the notion that they are healthy. Some may even presume that they've already been exposed and developed immunity. While this immunity could last for a few months, it is not as good an option as getting vaccinated. When people believe they are healthy, they will seek-out evidence to support that notion, which is their **confirmation bias** at work. In this case however, the absence of evidence is not evidence of absence, so perceived immunity doesn't indicate actual immunity.



Solution 1

Acknowledge people's reasons and offer compatible reasoning to encourage vaccines.

People may show an escalation of commitment bias while defending their position of not getting vaccinated. The bias is our tendency to commit to a prior decision hoping that this additional investment will lead to a successful outcome. This may simply offer an illusion of control. However, multiple "appeals" can be made to counter this resistance by doing the following:

- Highlight what getting vaccinated is a non-zero-sum game where each vaccinated person technically reduces the chances of other people getting COVID-19.
- Appeal to social proof to show what the majority is choosing to get vaccinated.
- Indicate that it's an altruistic act to get vaccinated to prevent the less fortunate from getting infected.
- Appeal to the **egocentric bias**, where people tend to take more credit for their group's positive outcome by telling them their decision to get vaccinated is responsible for their group's improved health.



Solution 2

Don't counter people's self-beliefs and faith in alternative medicine; position their beliefs as a psychological "booster" instead.

Status quo bias suggests that people may seek alternative medicine and hold on to irrational beliefs to feel in control and stick to their current way of life and thinking. Marketers and medical staff can reassure them how their beliefs can have additional positive effects on top of the vaccine's effects, because positive psychological states improve immunity and ability to cope. Show how the combined effects can achieve their personal goal of staying healthy.

Barrier # 4

Some people want to get the vaccine but have immediate, practical concerns.

2 practical barriers could create problems in taking a vaccine dose.



Not enough time or money

Although governments are trying to keep the cost of an individual vaccine low, many people have lost a reliable revenue stream. Many are living paycheck to paycheck to even put food on the table. Losing 1 or 2 day's revenue to get vaccinated may not be a luxury everyone can afford.



No means to physically get the vaccine

A lack of transport, inappropriate timings, and unavailable childcare options are common logistical barriers people may face. Even if the motivation to get vaccinated is high, these barriers may create an unnecessary delay.



Solution 1

Let authorities recommend a majority of vaccine-related decisions, so people don't have the burden of decision-making.

People can rely on Attribute substitution, which occurs when we unconsciously substitute a complex, difficult judgment (or attribute) with an easier one. Instead of expecting people to overcome these barriers themselves, stakeholders can employ familiar or authoritative people to announce answers to common questions, via live-streamed FAQs or viral posts on social media. Then people don't have to take the burden of solving their problems and can base their decisions on what authorities suggest.

- If logistics are a problem, a neighborhood helpline or a friendly chat bot can give easy-to-follow instructions.
- If timing is a problem, allow flexible timings for a person to commit to a vaccine appointment. Avoid penalizing people for missing or rescheduling appointments. The system should ideally make the process as easy as possible.

If people have to make too many decisions, they may show Choice Overload, or our tendency to become indecisive when presented with too many options or details. Authorities need to circumvent this by simplifying the process.



Solution 2

Make specific, targeted information available.

People tend to rely on the most available information to make their decisions. The availability of information or Availability Heuristic is commonly used to solve one's problems and make appropriate evaluations. Focus on the specifics of solutions that people can relate to, so that they can latch-on to the most relevant information.



Solution 3

Create flexible access to getting vaccinated.

Clinics can offer time-based flexibility along with monetary flexibility. This can be done by offering a vaccine that can be paid off in the future. Another possibility is to provide paid leave to get vaccinated. Such flexibility will make it easier for those who have daily commitments that are hard to readjust.

Barrier # 5

Some people don't think the risk/reward balance of the vaccine justifies taking it.

There is poor communication about the vaccine's efficacy and some people are questioning the risk/reward trade off of taking the vaccine. According to Dr. Cevik, public communication about the vaccine has been inadequate and possibly misleading.

One major problem is that people tend to focus a lot on possibilities and not probabilities. For example, people have strong emotional reactions to the highly unlikely possibility of getting infected in the future despite vaccinating.

People demonstrate a cognitive bias called the **Neglect of Probability** - a tendency to neglect the *probability* of an event happening. Even if the probability is very low, our attention overvalues it and fixates on the low probability as if it were high probability. For example, the Pfizer vaccine reduces the chance of getting COVID-19 by over 95%. Yet, people mistakenly believe that there is a good chance that the vaccine is useless just because it is not a 100% chance of avoiding the disease.

Base Rate Fallacy creates more complications. Some people may fixate on individual cases where a vaccine gave a severe allergic reaction, but they may neglect the rate at which such an event occurs. The base rate fallacy occurs when people ignore the actual likelihood of something happening and focus on a single case that misrepresents the most likely scenario.

In addition to this, people also experience the **Ambiguity Aversion**, which is our tendency to reject options where the probability of something good happening is unknown. If we don't know the probability of developing immunity with the vaccine, we may refuse the vaccine simply because the probability is unknown. However, unknown doesn't mean the vaccine is harmful. Current research shows the vaccine is highly effective in combating COVID-19.

Neglect of probability, base rate fallacy, and the Ambiguity effect may fuel skepticism that is not based on conspiracy theories but is a flawed interpretation of probabilities. Collectively, they induce dread risk, which describes people's tendency to let their fears of extreme catastrophic events guide their decisions to avoid the remotest possibility of such events coming to pass.


Countering this requires helping people assess probabilities and not possibilities. Overcoming two biases can help us achieve that.



Certainty illusion:
Humans have an overvalued desire for 100% confidence or certainty. People incorrectly expect that the vaccine is a sure-shot way to stay safe from COVID-19.



Certainty effect:
Humans value certainty and are more displeased if the probability of a sure thing, rather than an uncertainty, decreases. If people think about vaccines as a 100% savior, learning it is 95% effective can be disheartening.



Solution

Help people assess the probabilities better without getting stuck about possibilities. Overanalyzing unlikely scenarios can reduce vaccine uptake, so stakeholders should primarily focus on likely/typical scenarios.

- 1 Help those around you compare probabilities, especially when they are close to 1 or 0. For example, a probability of 0.5 is a 50-50 chance, but a probability of 0.01 is a 1 in 100 chance.
- 2 Help others realize that most scientific calculations are done statistically, and absolute certainty rarely exists in science.
- 3 Instead of letting a possibility create fear, people should be encouraged to take more control of their lives by dealing with probabilities. Thinking "if I do this, my chance of getting infected can go down" could help people regain control over their lives.
- 4 Help people control their probabilities by taking simpler actions like ensuring better personal hygiene, staying healthy, resting before and after vaccinating, mask-wearing, social distancing, fewer trips to stores, etc.
- 5 Focus more on the typical outcomes, not extreme and unlikely ones.

RECOMMENDED INCENTIVE STRATEGIES FOR PUBLIC HEALTH ORGANIZATIONS TO AFFECT BEHAVIOR CHANGE

Using the power of behavior
change incentives

32 ways to incentivize and nudge people to take the vaccine

We have too many vaccines, but not enough takers.

As of March 24, 2021, the US was facing a surprising problem - a surplus of vaccines because there weren't enough takers. The US's current trend is to widen the eligibility criteria, so more people could book an appointment. A way to overcome this problem is to incentivize people to not hold back mainly because of the previously mentioned barriers.

These incentives are likely to work best if they occur in a critical time window that coincides with government-mandated eligibility criteria at any given point of time.

The goal of using incentives is 3-fold:

- 1 **Motivate people to get the vaccine.**
- 2 **Create an atmosphere of positivity around vaccination drives.**
- 3 **Show how easy it is to earn extra privileges for a community-serving act.**

Effective use of the following incentives means making incentives publicly apparent and boldly visible - either by amplifying the incentive's value at the start or blending them with marketing efforts.



Direct financial Incentives

- 1 Employers can offer a paid day off to employees who wish to get the vaccine. The government offers these employers a fund that goes toward complying with government regulations.
- 2 Homeless people can redeem free coffees and burgers if they vaccinate. These vaccinations can be reciprocity at no/minimal costs, and homeless people can refer more like them for additional discounts.
- 3 Children's insurance can be cheaper for parents who showcase a completed, verified vaccine passport.
- 4 Car insurance companies can provide safe driver discounts for additional health precautions such as pro-vaccine behaviors like immunization against COVID and other diseases.
- 5 Banks can offer lowered EMI rates for large purchases, if earning members have their immediate family fully vaccinated.
- 6 Verifying vaccination on e-wallets can let customers choose interest categories for discounts from different retailers.
- 7 Happy hours at bars can be extended for fully vaccinated patrons.
- 8 Grocery chains could use the vaccine revenue if the vaccine is available to them. Maybe people get X% off their grocery purchases on the day they get the vaccine in the store.
- 9 Vaccine centers can tie up with garage sales and made-in-America products at high discounts to promote local entrepreneurs who hustle.
- 10 Banks can issue special credit cards with unique cashback offers and discount tie-ups.



Service add-on Incentives

- 11 Airlines and tourism stakeholders can offer significant benefits to kick-start tourism again. Frequent flyer miles, hotel package discounts, free a la carte dinners, discounted travel insurance, etc., can motivate people.
- 12 OTT services can upgrade their individual plans to family plans at a discount with a verified passport instead of bundling OTTs with other less critical purchases.
- 13 Amazon and other e-commerce sites can offer extended free delivery or prime/pro memberships at the end of the current paid cycle.



Reward and Recognition Incentives

- 14 Social media platforms can give a shareable badge of vaccination that can be highlighted as a post, embed, or a photo filter. People can seed a fun, creative trend.
- 15 Create an affiliate marketing scheme where a person helping other people get vaccines can have a token economy for benefits across various platforms.
- 16 Recognize every vaccine volunteer with a vaccine hall of fame recognition, and the top few contributors can get featured with their favorite sports teams and get a timeless photo with them.
- 17 Digital platforms can create digital swag like vaccine-related humor, trendy emoticons, stickers, cover photos, Snapchat filters, etc., to prime thoughts about vaccinating.
- 18 Big chain restaurants and food outlets with routine discounts can instead offer discounts to fully vaccinated patron groups that visit the store.
- 19 Starbucks can offer free upgrades on drinks, and others can offer equivalent benefits like 2 free donuts on a purchase of 4 for a limited period, if the paying consumer is vaccinated.
- 20 Lottery tickets can be distributed at vaccine centers, and TV/Radio lottery numbers can have extra conditional "final" digits that increase the odds of winning but only for those who are vaccinated at the time of watching.



Emotional Incentives

- 21 Food discount messages can be framed for emotional appeal - "Are you a giving person who loves to help the community? Show us your vaccine passport and get 50% off on any weekday!"
- 22 Feature happy couples to model in advertisements through a lucky draw.
- 23 Encourage competition and cooperation via online forums, apps, and discord servers to help civilians who voluntarily help with vaccine drives.
- 24 Beloved celebrities can endorse the vaccine.
- 25 Dating apps can offer a vaccination "blue tick" that allows people a more comfortable dating & hook-up experience in a safe way.
- 26 Any vaccine promotion can appeal to people's need for safety and security by making it salient.



Effort-reduction Incentives

- 27 Vaccination clinics can be deployed near supermarkets, malls, and gas-stations
- 28 Vaccination clinics can give privileged access to factory and industrial workers and their families by setting-up clinics near official locations, so it is easy for many people to overcome logistical hurdles.
- 29 Supermarkets and medical stores, via insurers, can bundle vaccine assistance with a range of unrelated benefits like priority home deliveries and discounts on walkers, catheters, adult diapers, etc., to help older people ease their day-to-day difficulties.



Negation-of-penalty incentives

- 30 A vaccine passport can extend expiration dates for frequent flyer miles, redeemable offers from digital wallets, and discount coupons on e-commerce sites. A blanket extension of expiry dates can be strong enough to help people rush to get the vaccine.
- 31 Offenders eligible for community service can be granted a lenient schedule to return to their family, if they participate in vaccine drives as community service.
- 32 Juvenile offenders can be recruited to spread digital awareness about vaccine drives and answer FAQs on social media.

RECOMMENDED INCENTIVE STRATEGIES FOR PUBLIC HEALTH ORGANIZATIONS TO AFFECT BEHAVIOR CHANGE

Using the power of behavior
change messaging

Mindful Messaging:

5 strategies to deliver vaccine messages that will work

The way we present a vaccine campaign's messaging or how someone perceives that messaging plays a significant role in how effectively an 'intention to get vaccinated' converts into successfully getting vaccinated.

1 **Framing effect:** Frame messages to show success and gains with appropriate context.

Framing effect describes how positive or negative wording of the same objective information can create positive or negative emotional responses. For example, people are more likely to adopt a new medicine if 90% of people feel better after using it, when compared to 10% not feeling better after using it. Positive framing of a marketing or sales message can make all the difference when people are somewhat motivated, but are second-guessing their decision. Both "frames" of the message can activate various memories or news examples that confirm fear or hope.

From a vaccine drive point of view, positive framing of media titles, marketing messages, and sales pitches would encourage most people to favor a vaccine.

Example strategies to frame messages



During advertisement retargeting, present 2 simultaneous frames, so people are likely to choose one of the two even though the outcome of both frames is the same.



Tell people how most people can easily manage the side effects and how miniscule they are when compared to the potential danger of COVID-19.



Use numbers that highlight the magnitude of success and minimize the magnitude of failures. Choose larger numbers instead of smaller numbers. For example, "a vaccine can save 98% of people from disease symptoms" instead of "only 2% people will show symptoms".



Show how people can choose to help their society, family, and friends by vaccinating or help the coronavirus spread by not vaccinating.



Use culturally and linguistically suitable frames to appeal to specific demographics.



Portray most side effects as a good thing because they indicate that the vaccine is successfully "training" the immune system to fight back.

Positive framing motivates people to avoid risk, but negative framing motivates people to take a risk. Framing would affect people's decision to avoid the risk of infection or take the chances of getting infected. If a vaccine message is framed poorly, people might choose to rely on other measures such as boosting immunity, following social distance, or leaving it up to fate, instead of getting vaccinated.

2

Illusion of control: Consider the vaccine as a comprehensive pandemic response, not a savior.

Researchers highlight a critical message framing approach that influences attitudes toward the vaccine. They suggest that people consider the vaccine a “comprehensive pandemic response” rather than “a savior”. This need for control that motivates us to do activities that make us feel in control as much as possible, even if we are overestimating our ability to influence outcomes is called **Illusion of Control**.

Illusion of control is helpful in 3 ways to increase vaccine uptake:

1. People actively participate in defending against the disease.
2. People won't blindly ignore safety protocols because a vaccine will save them from the disease, no matter what.
3. It returns control over health to the public instead of passively accepting uncertainty. Because having control is a common psychological need (seeking ways to control health outcomes), making this point salient would tap into an already existing motivation.

We cannot consider the *illusion* of control as absolute control over the pandemic, but getting vaccinated is the best way to convert the illusion into reality. Moreover, those who are desperate to control the situation and help out can channel their energy to mobilize disadvantaged people by spreading trustworthy information and helping those around them as per official guidelines. This would also provide a healthy form of illusion of control.

Getting vaccinated empowers people to regain the control they lost in 2020.

Because people lost their sense of control during the pandemic through health, economic, and social uncertainty, they might adopt behaviors to get control of their lives back. A golden opportunity to show how people can regain control and stability in their life is to sell the vaccine as a means to do that. Eventually, the higher the number of vaccinated people, the higher the control most people will have over their lives. This no longer stays as an “illusion”; it becomes actual control.

The COVID Vaccine is not a get-out-of-covid-free card, but wording it appropriately can help people feel safer and in control of their lives.

Not everyone will get a vaccine on time, so the ones who have the opportunity should take it as soon as possible.

Not everyone is medically suited to get a vaccine, so their loved ones can get vaccinated to keep them safe.

Some people will have to rely on social distancing and mask-wearing more to compensate for other risks.

Choosing to get vaccinated also does not mean that other safety precautions should be ignored. While most can get vaccinated, we still need to multiply its benefits by using supporting habits like social distancing, mask-wearing, and frequent sanitation - until the whole community is deemed safe. The attitude change to accept the vaccine as a “comprehensive pandemic response” will avoid risk compensation and cognitive dissonance.



Risk compensation in this context refers to our tendency to increase risk-taking behavior after feeling safer. People could take reckless actions because they are vaccinated, thinking they are safe. Perceived immunity becomes a decision-criteria to engage in **risk-taking behavior** that may lead to problems like infecting others, catching different diseases, splurging money, and motivating others to take risks. Wearing a mask and using disinfectants can only help to counter risk compensation.



Cognitive dissonance is a mental state where two conflicting thoughts and behaviors exist at the same time. Cognitive dissonance can cause stress and a decision-paralysis. This may happen when a person getting vaccinated feels that the pandemic is not receding and people are suffering. Here, getting vaccinated and the pandemic not receding are conflicting, incompatible thoughts.

A way to feel in control is to delay cognitive dissonance and risk compensation which can be accomplished by wearing masks, physically distancing from others, and disinfecting after risky contact.

3

The Pseudocertainty effect: Bring winning against COVID-19 into the spotlight.

Vaccine messaging can also evoke the pseudocertainty effect in people. It describes how people tend to make risk-averse choices if the expected outcome is positive but make risk-seeking choices to avoid negative outcomes.

If people are overly worried about side-effects, they will choose to take the risk-seeking choice of not getting vaccinated.

If people focus on avoiding COVID-19, they will make the risk-averse choice of getting vaccinated.


If people are told about how they can go back to normal with no lockdowns, go for their social plans, hug others, and travel-they are likely to choose the risk-averse choice of getting vaccinated.

Although this seems obvious to most people, the information that remains in awareness would influence if they go for a risk-seeking or risk-averse choice. A successful vaccine drive would then need to focus on minimizing the threat of vaccine side effects and maximizing the success of avoiding COVID-19. The easiest way to do this is to simply highlight words and images that make people visualize avoiding COVID-19.


4

Loss-Aversion: Make losing what you have salient, while showing a better future.

A complementary way to frame vaccine messages is to make **Loss-aversion** salient. We tend to avoid losing something we already have instead of getting something better or newer. People might avoid losing one's control, existing health, and existing stability. People also have something opposite - **an Optimism Bias** where they believe good things will happen to them in the future, even when the chances of bad things happening are 50-50. To increase vaccine uptake, combine loss-aversion tendency with optimism bias.



Example:
Show people they are likely to lose their existing stability as lockdowns are lifted, and fewer "rules" would exist to guide behavior. They may have the security of staying at home, but as people start going out, they may lose their distance from the coronavirus (loss-aversion). Highlight how the vaccine can help them stay safer in a more socially active world (optimism).



Example:
Many people have strained personal relationships due to weak boundaries between work and home life, a lack of space from a relationship, and a lack of diversity in activities. Losing a good relationship can boost loss-aversion tendencies. The faster people get inoculated, the faster they will regain those boundaries in a more spaced-out world.

People often consider future regrets while making a decision. This anticipated regret can promote decisions that avoid that regret. In the case of getting vaccinated, people may consider guilt or regret that might arise in the future for not getting vaccinated. Showing people the cost of future regret from not vaccinating - infecting family and friends and spending 15 days in isolation - can motivate them to avoid it. Missing the opportunity to get vaccinated could be a major regret in the future because it delays safety and vaccines run out of stock. The regret they anticipate is a loss in the future, and our loss-aversion tendency can counter it if stakeholders make the anticipated regret apparent. Other losses people might want to avoid are hospital bills, instability due to quarantining, and the psychological stress of being too anxious.

5

Verbal nudging: Use specific words to make people more receptive toward a vaccine.

The content of messaging can be used to nudge people to ensure they are regularly primed to think about getting a vaccine, add emotional value to it, and simultaneously become aware of how easy it is to get immunized.



Prime the vaccine's associative memory network to activate memory units that represent vaccine related information.

1. Talk about the vaccine without trying to sell it.
2. Talk about immunity.
3. Talk about medical advancements.
4. Talk about no one feeling sick and spreading the disease.
5. Talk about the positives and successes.



Appeal to emotions to motivate a change in behavior from inaction to action.

1. Use rhyming words or catchphrases like "Jab the Rona" and "Vax it to Axe it."
2. Highlight emotional rewards that people have missed - going on vacations, hugging family members, dating, socializing, etc.
3. Messaging campaigns should include multiple languages and cultural idiosyncrasies that appeal to a minority who feel a disconnect with the "system."



Access to easy information so the brain is aware of the steps involved in vaccination process.

1. Highlight how easy it is to get the vaccine.
2. Use a standardized set of steps for vaccinating that feel easy.
3. Repeat standardized steps across digital and offline media, so the steps feel familiar.

RECOMMENDED NUDGE STRATEGIES FOR PUBLIC HEALTH ORGANIZATIONS TO AFFECT BEHAVIOR CHANGE

7 smart nudge strategies to enable
the general public make better
vaccination decisions

Strategy 1: Use the Availability Heuristic to Motivate people to vaccinate.



There are two levels of access to the vaccine that are important.
Level 1 access depends on production and logistics.
Level 2 access depends on the **Availability Heuristic**.

Availability Heuristic is our tendency to base judgments, predictions, and decisions on information that is readily and currently available to us. We use available information to form a context for making future decisions. With only 17% of Americans fully vaccinated and many showing concerns about vaccine information, we can use Availability Heuristic to bring useful information into awareness. The decision to take a vaccine will depend on how our Availability Heuristic aligns with reliable and trustworthy information about vaccines, vaccine drives, and the consequences of taking a vaccine.

How Availability Heuristic can improve vaccine uptake

- ▶ Stakeholders, like the general public, clinics, politicians, and insurance companies, can make attractive campaign slogans, visuals, memes, social media campaigns, Instagram challenges, Instagram reels, etc., to create a high level of awareness about trustworthy and responsibly worded information.
- ▶ High awareness of information will most likely engage the Availability Heuristic, and people will think of things they saw while talking to others taking a vaccine.
- ▶ This background awareness creates a sense of familiarity, which will create the **Mere-exposure effect** Or our preference for familiar things.
- ▶ The Availability Heuristic will enable the mere-exposure effect to create a more positive attitude toward vaccine-related information.

Strategy 2: Use Social Proof to accelerate large-scale pro-vaccine behavior.



[In a poll](#) conducted in January 2021 with 1563 American adults, 41% wanted to get the vaccine as soon as possible. 31% wanted to wait and observe how vaccinations work out before they decide to opt for it and only 13% had no intention to get vaccinated. The interesting finding here is that half of the 41% knew someone who is already vaccinated. That is why Social Proof can be leveraged to change large-scale behavior.

Social proof refers to the human tendency to make a decision that many people endorse. People usually do what others are doing. In a way, watching others trust the vaccine gets more people on board. [Research shows](#) that observing others display intrinsic motivation can intrinsically motivate the observer.

Action plan for all stakeholders to use Social proof to increase vaccine uptake:

- 1 Share “getting vaccinated” stories or photos on social media.
- 2 Explicitly like, share, and comment on other similar posts. This increases the reach of such posts on social media. Again, this will feed into the Availability Heuristic and doubly motivate people to automatically think - “let’s get the vaccine; everyone is getting it.”
- 3 Casually bring up the intention to vaccinate in conversations.

Strategy 3:

Use FOMO to motivate people out of mental inertia.



FOMO (**Fear of Missing Out**) occurs when people want to do what others are doing to avoid missing out on it. FOMO is a powerful motivation propagated via social media. For example, encourage people to use vaccine campaign hashtags and upload photos taking a shot, so others see it and feel FOMO.

Vaccine uptake needs a push because humans have mental inertia that FOMO can overcome. People prefer to let things be the way they are instead of adopting changes. This is the Status Quo Bias (mental inertia). When people have adapted to work-from-home, they might want to continue doing that because that is the new normal. Change requires active effort, and the Status Quo Bias creates a tendency to be passive and let things stay the way they are. If people have gotten used to waiting for a vaccine, they'll continue waiting instead of taking the first vaccination chance they get. FOMO can encourage people to let go of their mental inertia and become actively engaged in getting a community vaccinated. Creating hype on social media with trends, photos, status messages, hashtags, check-ins, etc., can ignite FOMO.

Strategy 4:

Give options regarding the vaccine.



Humans generally don't like being told what to do. Giving them a choice to make regarding the cost, type of vaccine (either of the 3), time slots, family packages, referral discount/benefits, etc., fosters a sense of control over choosing to vaccinate themselves. The **illusion of control** can give people the mental satisfaction of making their choice, preferably between 2 or more desirable choices - not 1 desirable and 1 undesirable choice. This will be valuable in the US because some Americans want to pick and choose their vaccine, possibly because the ability to choose is associated with equity and autonomy.

Strategy 5:

Announce vaccines are limited in supply.



People have demonstrated hoarding behaviors during lockdowns because of the **Scarcity Heuristic** - our tendency to want something more if it is limited in supply. The same behavior can occur for vaccines when they are limited. People are likely to put in additional effort to secure a vaccine for themselves and their families before they run out. Strategically creating the narrative that vaccines are currently available but can quickly get scarce would prompt people to prioritize inoculation sooner than later.

2 Ways to leverage the Scarcity Heuristic:

It was previously scarce; people had to wait for weeks, drive for hours, and wait in queues to get the vaccine. Now it is streamlined and can be done quickly.

The vaccine is getting scarce because it is highly successful, and people can't wait to grab the jab.

Strategy 6:

Appeal to emotions to get people to act.



Humans often use the [Affect Heuristic](#), which describes our tendency to think based on emotions and gut feelings instead of rationality. People also remember emotional and personally relevant information more than non-emotional information (**the Attentional Bias**). Emotions themselves become primary motivators. And, it can turbocharge Availability Heuristic can keep the most relevant information in awareness.

- 1 Safety:** Basic psychological needs of safety, security, and freedom of movement have been threatened. Priming people with the idea that immunization and make them feel safer in day-to-day living can trigger an innate motivation to do anything that ensures their safety.
- 2 Humor & arousal:** Apart from appealing to fear and concern, advertisers can also appeal to sexual arousal, humor, and goofy fun to create more impressionable advertisements that stay in one's awareness. That informational content can inform one's emotions, which, in turn, affect decision-making. Making people feel better activates the Happy-People-Happy-Choices tendency where a good mood motivates positive decisions.
- 3 Love:** Another line of nudging can appeal to love and caring - "don't you want to hug your grandma without risking her life?" Sexually available people can be motivated to get back in the dating game by highlighting how immunization will make intimate contact better.
- 4 Pride:** Marketing stakeholders can also tap into patriotism and feelings associated with the constitution of the United States by highlighting that Pfizer is an American company and the vaccine is developed with American resources. This would appeal to the in-Group Bias, where people tend to prefer objects made and endorsed by their own group members.
- 5 Altruism:** Most people depend a lot on essential workers like medical staff, housekeeping employees, drivers, and delivery agents who have no other option but to work in risky situations due to their proximity to other people run-on. Stakeholders can highlight how getting vaccinated reduces the risk of infecting essential workers (via reduced cough droplets) whose work we may take for granted and depend on, especially in a crisis. If they fall ill and can't work, everyone suffers even more.

Strategy 7:

Focus on the attributes of the vaccine and vaccination protocols, not just the benefits.



When people have to choose a marketed product (like a vaccine), benefits can usually persuade them, but characteristics/attributes can be more persuasive if it is an [immediate purchase](#). The words used while persuading can maximize conversion by doing the following:

- 1** Make the vaccine's characteristics appealing - how efficacious it is, what authorities are making it, how long it takes to show effects, how easy the process is, etc. Videos and photos can maximize this appeal-to-attributes.
- 2** Showcase the benefits to trigger what they are getting into and simultaneously showcase what negative things they'll avoid and what positive things they'll gain after getting vaccinated. Losses and gains could be everything from health benefits, insurance coverage, employee benefits, reduced hospital dues, etc.

RECOMMENDED STRATEGIES FOR EMPLOYERS TO DRIVE EMPLOYEE BEHAVIORS

How employers can use
behavioral science to increase
vaccine uptake

Some of the key stakeholders who can drive behavior change to increase vaccine uptake are employers and business executives. They have potential influence on 120 million [employed Americans](#) and 300 million American patrons/consumers/clients of those employees. Based on the recommendations made by notable doctors Kevin G. Volpp, George Loewenstein, and Alison M. Buttenheim in their [opinion paper](#), here are 6 implementations of their ideas. These can be used by employers to get their workforce and patrons vaccinated over and above the other recommendations made in this report. The heuristics given below are ways to amplify the effectiveness of these recommendations.

1

The vaccine should be free and easily accessible as much as possible.

Employers in the US can make purchases or offer bonuses for their employees and their family members. Employers can offer discounted vaccine rates and on-site vaccination booths through novel partnerships that foster economic growth in the future. They can also notify employees of all relevant vaccination information even if they do not sponsor them. This raises employees' awareness of how to get vaccinated. Making the process stress-free, easy, and free would enable more employees to get vaccinated.



Fluency Heuristic:
We tend to choose options that are easy to think about. Knowing that vaccines are accessible and free with minimal concerns creates fluency, and people are likely to favor those easy options.




Availability Heuristic:
Our tendency to base decisions on the most readily available information is important alongside getting the vaccine for free (or low cost) without much difficulty. If information regarding the schedule of getting the vaccine is readily available, it will help planning or to get friends and family an appointment.

Example: [The Marriott hotel chain](#) in the US and Canada is offering 4 hours of pay to housekeeping staff that gets vaccinated. [Retailer ALDI](#) is planning to open on-site vaccination booths for its employees and ensure no one loses pay or has to take extra effort to get vaccinated.


2

Trusted authorities and leaders can endorse vaccine drives.


People generally love trusting, pleasantly attractive people. Authorities who go on video can take extra effort to present themselves in appealing ways.



Authority Bias:
Humans tend to follow those in positions of authority blindly. Those who disseminate information or give instructions should appear like authorities.



Halo Effect:
Humans often let their positive impressions (either overall or a specific quality) of something "spill over" to other aspects. Stakeholders and other faces involved repeatedly in any drive or clinic's work should be caring and warm. People will judge their intentions favorably based on their appearances.



Attribute Substitution:
When people find it hard to base a decision on complex information, they often switch to something simpler to evaluate to make a decision. Influencers on social media, famous content creators, actors known for community work, etc., are easy to follow. People will likely make vaccine plans based on what the influencers and authorities say instead of evaluating the science.

Example: [Biden's "We can do this"](#) ad campaign is aimed at reducing vaccine hesitancy with celebrity, authority, and influencer partners.

3

Access to social and economic privileges, perks, and goodies depend on vaccination.

Popular dating restaurants and bars, gyms and sporting centers, couple-centric vacation spot hotels, etc., can offer sponsored vaccines to kick-start their business with the incentive of using their facilities. However, they can also make patron vaccination mandatory to avail their services. For example, these locations could help set up vaccination booths in their locality to foster it. It can be branded as a “vaxi-cation” where hotels offer extended holiday for those who vaccinate at their locations. Businesses can offer perks to patrons to hype vaccine messaging.



Behavioral Contingencies:

Getting vaccinated can give privileges that act as additional rewards to appeal to a person’s emotions. These If-then conditions can become deployable systems to encourage those who are ambivalent about getting the vaccine immediately.



Hyperbolic Discounting:

Humans usually prefer smaller immediate rewards (privileges) over larger-long term rewards (better public health). Employers, insurers, banks, and clinics can create reward schemes that give immediate pay-offs for choosing to get vaccinated. Those with a weaker motivation to get vaccinated may use those immediate pay-offs as additional motivation. Offering delayed pay-offs or long-term benefits may not work as well as immediate privileges.

Example: [Krispy Kreme](#) is giving away 1 free daily donut to anyone who shows a vaccine passport from a US location.

4

Provide priority vaccine access for hospitality and educational staff.

Providing priority access to vaccinations beyond the eligibility criteria can help save businesses from losses, help employees retain the funding necessary for their payroll, and simultaneously make their employees and patrons feel safer. Specific categories of employees such as hospitality staff (hotels, airlines), educational staff (teachers, administrators), and store employees can get priority vaccines to ensure their patrons feel safe enough to avail their services and secure their own employment through uncertain tourism and educational trends. This helps the businesses achieve their economic and business goals or recover from the uncertainty and loss that came with the pandemic.



Adaptive Bias:

People typically show a tendency to play it safe than be sorry. This motivation from patrons becomes an incentive for employers to ensure their services are as safe as possible and one way to do this is to vaccinate employees who need to come in close contact with patrons.

Example: [United Airlines](#), [American Airlines](#), and [Southwest Airlines](#) strongly encourage their flight crew to get vaccinated.

5

Offer presale commitments to employees.

There are categories of people who want the vaccine in many locations in the US but are not yet eligible. Employers can partner with clinics and book their vaccinations, almost guaranteeing early access for the motivated ones. This will speed up the vaccination drive enough to accelerate other strategies like creating FOMO and social proof.



Illusion of Control:

For those who are highly motivated to get a vaccine, it will be helpful to give them a pre-sale or a provisional appointment to feel more in control of their health before things take an unexpected turn for the worse. A basic psychological need for control fuels the illusion of control. This bias makes us act in a way to reduce uncertainty and feel more secure.

Example: [A clinic from Des Moines](#) attempted a first-come-first-served vaccine roll-out and quickly ran out of doses. Scaling such a distribution model in a few select locations as an on-site tie-up with a bigger company can ensure vaccine security for employers who may not have easy alternatives based on eligibility criteria.

6

Convert the idea of individual vaccination into a public health act.

Most executives would agree that a company creates a sense of community that goes beyond just the employees; it creates a vision, and a healthy company usually means the workforce acts as a single organism. This sentiment created by employees aligning with a company's identity is the key reason people are motivated to act as a single organism. Making healthcare and COVID-19 vaccination a part of this "vision" will make it easy for employers to get their workforce onboard any vaccination drive without enforcing it.



Meta-personal Self-construal:

The meta-personal self-construal is our identity that goes beyond professions & relationships. Aligning with the greater good or moral/spiritual obligation toward society is a meta-personal level of identity. It is a powerful motivator to engage in behavior that affects a whole community positively. If people are led to focus on their part in society and how they are "collectively" a single unit, it will bias them to favor decisions that help other people.



Construal level theory:

Behaviors can be construed at many levels ranging from abstract to concrete. At the most narrow, concrete level, individual vaccination is a self-serving act. At a broad, abstract level, it is a small part of public health. If people are encouraged to think in general, broad terms and not specific terms, it will get people to value community health.

Example: [CEOs](#) are becoming vaccine activists and offering cash or time-off incentives, and leading by example as part of their pro-vaccine "vision" for the workforce. Budweiser, for the first time in 40 years, did not show an ad during the Super Bowl and instead donated the allocated spending to a pro-vaccine ad campaign.

Managing the Last 10-20% of the Most Hesitant

Messaging and incentives might not work
on a small percentage of people;
what do we do then?

Realistically speaking, not all humans will be pro-vaccine. Some may be neutrally hesitant or just misinformed about side effects and risks, but some may discourage others. Some have little trust in authorities and follow conspiracy theories, and a few even try to disrupt vaccine drives. [Research suggests](#) people endorse coronavirus conspiracy theories because they jump to conclusions without gathering enough information (jumping-to-conclusions bias) and commit to pre-held notions even if they are wrong (bias against disconfirmatory evidence), but they may also think they might be wrong in their beliefs. The overall effect of this is that **a small percentage of the population will remain unvaccinated despite all messaging optimizations and incentives. They might prolong the pandemic by giving the virus a chance to infect, mutate, and spread.** People show the [reactance effect](#) where they rebel when they feel rules and policies interfere with their freedoms and authorities take away their choices unjustly.

In such cases, many tend to rebel and try to defy authorities. Vaccine skepticism manifests when that happens. In some cases, the reactance effect is strong enough to motivate skeptics to disrupt logistics, others' motivation to vaccinate, and even influence the primary narrative around a sensitive topic. For example, a small percentage of skeptics may control 50% of the narrative and over-represent the negatives of something very good.

Managing the last 10-20% of people means telling everyone why we need to be in this fight together, psychologically inoculating people against misinformation, encouraging the mildly hesitant through careful persuasion, and countering the disruptive effects of anti-vax ideologies.

Barrier:
Skeptics may try to disrupt smooth operations, spread misinformation, and discourage others from vaccinating. The cost of managing the last 10-20% of unvaccinated people might increase but with diminishing returns.

Solution:
Minimize the damage caused by them and try to encourage the mildly hesitant (after messaging and incentives fail) instead of converting the most hesitant. Messaging and incentives would ideally convert some of the highly hesitant to mildly hesitant. We'll look at the solution in depth across a few parameters.



Tell skeptics and hesitant people why everyone should be on the same page for improved public health

Highlight the non-zero-sum game: Getting a vaccine is always a win-win for everyone.

A successful vaccine drive means a whole community gets vaccinated. A concept called “the zero-sum game” is often embedded in our thinking. For example, running to a store to buy something before others get it is a zero-sum game. Here, one person’s gain is another person’s loss. It also happens in parking lots where the first person to find the last empty slot wins, and the person trailing behind you usually loses. However, **the pandemic and getting vaccinated are not zero-sum games - one person’s gain is everyone else’s gain, and one person’s loss is everyone else’s loss.** One person getting infected (a loss) can infect someone else (another loss) - a loss-loss scenario and the enemy disease by disrupting the economy, perceived freedom, and public health. One person getting vaccinated (a gain) means someone else might not get infected (a gain) - a win-win scenario. This is the reason why a successful vaccine drive cannot exclude people who are demotivated or engage in conspiracy theories to justify their lack of intention to get vaccinated.

Messaging should highlight whom we are fighting - COVID-19, not people, not authorities, not doctors.

Getting vaccinated means someone else will not have to suffer a 15-day quarantine.

More vaccines mean fewer people would need to go to a hospital, pay money, or enable lockdowns and curfews.

Following safety protocols means tired doctors, frontline workers, and technical experts can rest a little bit longer after a year of struggle.

Getting vaccinated counters the reactance effect, and people regain control and freedom as soon as possible.

If everyone depends on herd immunity, no one gets the vaccine, and no one gets “herd” immunity.

People may think - “Let others get the vaccine, and I will be protected by herd immunity.” While this may work if only a few people don’t vaccinate, it can’t work if no one gets vaccinated. People often show **diffusion of responsibility**, where they take less and less personal responsibility as the group’s size increases. Here they may choose not to vaccinate themselves just because so many others can take the burden of vaccinating and building herd immunity for everyone else. Herd immunity cannot develop without a majority of a population becoming immune. A reasonable goal of vaccinating 80-90% of a population can ensure the virus hardly gets a chance to spread and possibly safeguard exactly those people for whom the vaccine is medically unsuited. Stakeholders can reduce the diffusion of responsibility by focusing on smaller groups instead of whole states to ensure there is lesser diffusion - office colleagues, neighborhoods, counties, sports friends, etc., are small enough groups that preserve individuality. Focusing on a smaller group can be more relatable and will not drown out the value of each person’s immunization.



How to reduce the number of vaccine skeptics, conspiracy theorists, and misinformed stakeholders

Use Psychological inoculation: A way to vaccinate a person psychologically to reject and battle virus-like misinformation.

Psychological inoculation is a process similar to biological inoculation. Inoculation triggers the immune system to create defenses using a weakened dose of the virus/compound instead of a strong dose that could overwhelm the immune system. Small doses create a chain reaction to build enough immunity so that the immune system is prepared to fend off future exposure to the same (or similar) virus. If we treat misinformation like a virus, psychological inoculation can create a similar defense and preparedness to manage more persuasive misinformation. Psychological inoculation begins with delivering small doses of misinformation and facilitating people’s ability to counter them with evidence and theoretical explanations that make sense to them. These weakened misinformation doses can help protect people from future, stronger misinformation that could be a threat. Psychological inoculation can be effective if it comes from both doctors and non-healthcare individuals because a doctor’s authority and an individual’s relatability can have a powerful effect.



How to encourage mildly skeptical people to immunize themselves

Navigate the Latitude of Acceptance: Meet people where they are and walk toward a vaccine using empathy and acceptance

Most people hold attitudes and beliefs with little flexibility. If people believe a vaccine is 95% effective, they are likely to believe it is 85-99% effective. However, they are unlikely to accept that vaccines are only 25% effective. The range of flexibility or variation in statements that people consider believable or acceptable is called the **Latitude of Acceptance (LoA)**. Here the range 85%-99% is a hypothetical LoA for those who believe vaccines are 95% effective. 25% is far outside that range, and when information is far outside the LoA, it is often dismissed, hard to accept, or unfathomable.

The LoA opens the door to 2 types of biases: **The Semmelweis Effect & the Confirmation Bias.**

When a salesman or a “persuader” talks to someone within their LoA, it facilitates **Confirmation Bias**. A customer who is being persuaded may resonate with the salesperson if the conversational content is within the LoA because it can confirm one’s preconceived notions.

Suppose the conversational content is outside the LoA. In that case, it facilitates the **Semmelweis effect**, where a person reflexively rejects the conversational content if it disagrees with one’s preconceived notions and beliefs.

Convincing a vaccine skeptic to vaccinate would typically require effort to understand their base attitudes and beliefs. Slowly persuade them to accept less vaccine-averse beliefs such as “not all vaccines cause problems, but there are some instances where they have caused more damage than good; like a severe allergic reaction.” Instead of attacking their beliefs, show empathy. Those beliefs offer an acceptable and plausible explanation for emotional or unexplained adverse events in one’s life. To shift the LoA to include a positive attitude toward vaccines, address the emotional concerns, and focus on the most likely scenarios with concrete examples at the favorable end of the LoA. Avoid making general remarks about vaccinations or the sciences. Encourage taking a chance with a specific vaccine that has ample anecdotal support. Incrementally giving relatable pro-vaccine information at the edge of one’s LoA will shift the LoA from a hypothetical “vaccines are 75-90% useless” to “The COVID-19 vaccine is only 5% useless.”

The coronavirus vaccine is 90%+ effective, but people have been taking a 50% effective flu shot routinely.



Reduce the disruptive action of anti-vaxxers by focusing on damage control

Counter the narrative and influence: Limit the spread of misinformation give people ground-reality insights

At one point, not more than a small percentage of “the last mile” will vaccinate. Part of the reason is a dual-action of anti-vaxxers - not getting vaccinated themselves and disrupting others’ opportunity and motivation to vaccinate.

One blanket solution to do some damage control is to reduce misinformation, fear-mongering, and skepticism in daily conversations, news, and social media. This will restrict the **emotional contagion** (viral spread of emotions between people) of negative information and not feed the skeptic/hesitant person’s confirmation bias or the Availability Heuristic. It will ensure skeptics don’t control the popular narrative to devalue vaccine drives and their successes.

Why?

The **Illusory Truth Effect** occurs - Repeatedly hearing vaccines are bad makes it easy to process those statements, making them appear more accurate.

The **Survivorship Bias** occurs - Bad news, which seems more “news-worthy,” survives in our awareness and neutral news goes unnoticed. This amplifies the illusory truth effect. That over-represents negative stories about the vaccine making people believe vaccine failures/complications are the norm.

“87% percent of COVID-19 news stories by U.S. major media outlets are negative in tone versus 50% for non-U.S. major sources.”

According to a recent study, news in the US may be more negatively biased than in other countries. A possible reason for this is that Americans may have a higher negativity bias - negative information readily grabs our attention. That encourages media agencies to tailor the tone of the news to pull their attention even more. Competition between multiple news sources may have also led to more extreme “cautionary” sensationalism where reporting more negative news implied better coverage of the ground reality.

Specific tips to reduce skepticism-induced damage:

- 1 News agencies can focus more on painting a positive image of vaccines instead of a negative one just for sensationalism.
- 2 Just like people were nudged to wear a mask habitually, people can be encouraged to ward off misinformation habitually. This would mean the media doses the audience with bits of “reality checks” with field-level pictures and videos. The goal here would be to ensure that ambiguous narratives from skeptics cannot disrupt something most people can see with their own eyes.
- 3 Demonstrate how the freedom of not getting vaccinated is no different from the freedom to deny services to those who aren’t vaccinated.



Concluding Remarks

The 1918 influenza pandemic killed over 50 million people around the world over the next two years. There were no vaccines or antibiotics to help patients and since the pandemic happened in the middle of WWI, attempts in social distancing and isolation were not very successful.

Fast forward roughly 100 years to 2019 when the SARS-CoV-2 pandemic started and has since then killed 3.2 million people worldwide.

In less than 12 months, pharmaceutical companies in many countries have worked at warp speed to develop, test and commercialize vaccines for COVID. All the vaccines have shown near perfect protection against severe disease, hospitalizations and death resulting from COVID. Real world data on many vaccines has also shown 60-90% reduction in transmission of the virus.

Based on facts alone, the risk/reward benefit analysis should be in favor of taking the vaccine for most Americans. Yet, 30-40% of people in the US are hesitant and while they may not outright reject the vaccine, they are also not eager to get it right now.

Vaccine hesitancy can't be overcome with education alone; it's a behavioral science problem that requires use of all behavioral science tools available to us. By using a combination of mindful messaging, valued incentives and smart nudges, Americans can be persuaded to get COVID vaccine protection ASAP.

While the majority of behavior change has to be driven by public health organizations and the government, employers can also play a big role in nudging people at work towards vaccination, thereby accelerating America's return to normalcy.

We hope this special report provides a detailed roadmap to all stakeholders involved in the COVID vaccination program.