Translational Research Project: Vaccine Hesitancy in People Who Inject Drugs (PWID)

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(Recorded by KB. On Pirates of the Caribbean: The Curse Of the Black Pearl"/Score. Location: Walt Disney Records;
Vaccine Hesitancy. Retrieved from https://pharmaceutical-journal.com/article/opinion/were-running-out-of-time-to-tackle-covid-19-vaccine-hesitancy)

Learning Objectives

- What is Vaccine Hesitancy?
- Understand driving forces of this project
  - Theories
  - Population
  - Literature
- The Study
  - Design
  - Findings
  - Application of Results
- What it all means

Practice Problem: Vaccine Hesitancy

"…delay in acceptance or refusal of vaccination despite the availability of vaccination services" (MacDonald, 2015, p.4161)

- Vaccine Hesitancy World Threat (WHO, n.d.)
  - Viewpoint
  - Leads to Unnecessary Hospitalizations
  - 2018-2019 Flu Season
    - 158 million adults Immunized
    - 35 million symptomatic
    - 500,000 hospitalizations
    - 34,000 died
      - (CDC, 2020)
- Why is this important?
  - Flu- Another world threat (WHO, n.d.)
  - Requires yearly vaccination- mutations (Mayo Clinic, 2021)
  - $1.8 Trillion in savings since 1994 (Kadets, 2019)
  - Herd Immunity-
    - "Creating a barrier of immunized individuals who protect others who are either unable or unwilling to be vaccinated from preventable diseases"
      - (Gavi: The Vaccine Alliance, 2020)

↑ vaccine hesitancy = ↓ herd Immunity

(Screening. Retrieved from https://www.students4bestevidence.net/blog/2013/04/29/why-dont-we-screen-for-more-diseases/)

Project Purpose

Show education decreases vaccine hesitancy in PWID

- Promoting public health
- Herd Immunity

Decrease Vaccine Hesitancy in PWID

- Reinforce need for proper medical decisions
- Education

PWID recognize their risk from the influenza virus

- Risky behaviors increase risk of comorbidities
- Decrease influenza risk with proper actions
  - Vaccines and Handwashing

PICO

Question to lead the research

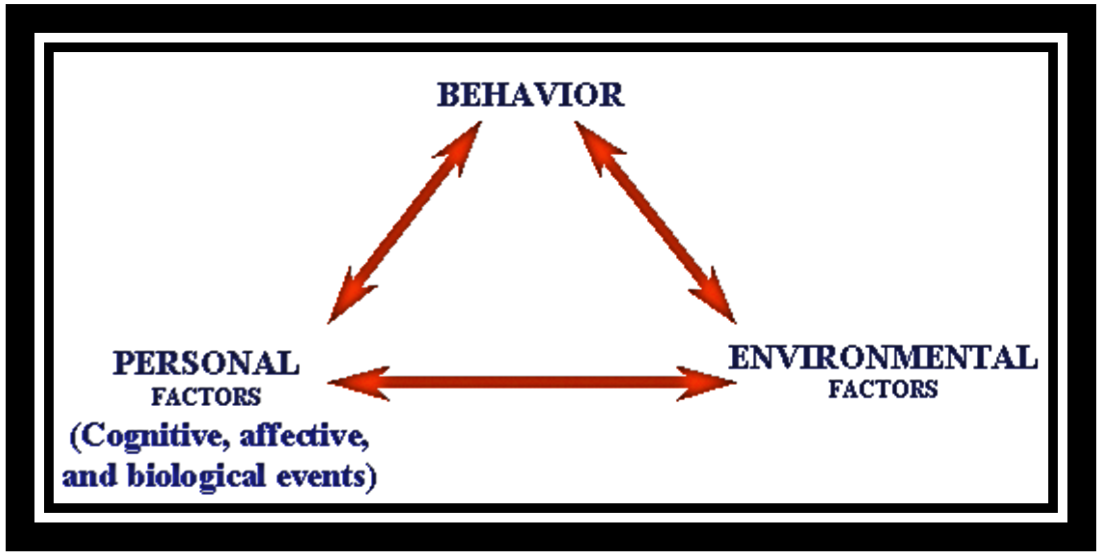
Do PWID who are educated about the influenza's vaccine compared to their current beliefs show a change in vaccine hesitancy?

Theoretical Framework: Cognitive Learning Theory (CLT)

(Braungart & Braungart, 2018)

- **Gestalt Theory**
  - Focus on others previous experience
  - People who **know** people who have had the vaccine and consistently not had the flu
    - More likely to seek out vaccine
  - (Akdeniz et al., 2016; The Editors of Encyclopedia Britannica, 2019; Wertheimer, 1923)
- **Social Learning Theory**
  - Focus on reinforcement
  - People **see others** around them receiving the vaccine
    - More likely to seek out vaccine
  - (Bandura, 1971; Braungart & Braungart, 2018)
- **Social Constructionism / Social Constructivism**
  - Both focus on social structure
  - Constructionism focuses adopting new information **with peers**
  - Constructivism focuses on a population adopting education **prior to the topic being taught**
  - (Berger and Luckmann, 1966; Braungart & Braungart, 2018; Oxford University Press, n.d.)

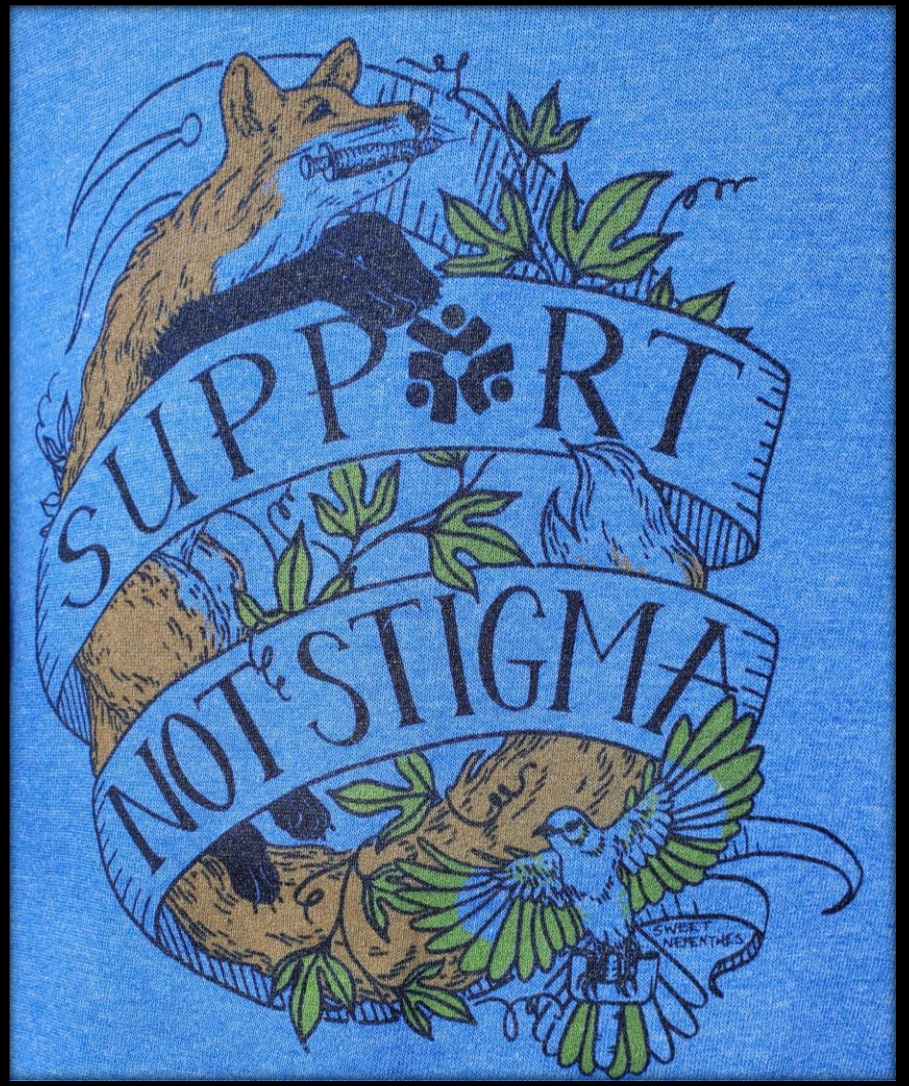
Focus on Learning



(Cognitive Learning Theory. Retrieved from https://cdn-0.explorable.com/images/social-cognitive-theory.gif /)

Organization

- Syringe Exchange Program in TN
- Trained volunteers and staff
- Interested in using research to increase access to vaccines for clients
- Medical Care Offered
  - Syringe Exchange
  - Chronic Disease Management
  - Hepatitis Screening and Treatment
  - HIV Prevention
  - Interested in flu vaccine
    - Difficult to obtain due to cost



(Syringes. Retrieved from https://news.miami.edu/stories/2016/12/new-needle-exchange-program-launches-on-world-aids-day.html)

Population:
People Who Inject Drugs

High risk population for influenza

- Lack access to health care
- Distrust of authorities and medical personnel
- Lack access to running water

- (Vasylyeva, Smyrnov, Strathdee, & Friedman, 2020).

Comorbidities increase risk of flu complications

- HIV
- TB
- Hepatitis
- Immunocompromised

- (Day et al., 2010; Sira, Brown, Ambegaokar, Modin, & Kelly, 2019)

Complications

- Pneumonia
- Hospitalizations
  - Cost

- (Mayo Clinic, 2021; O'Brien, 2017)

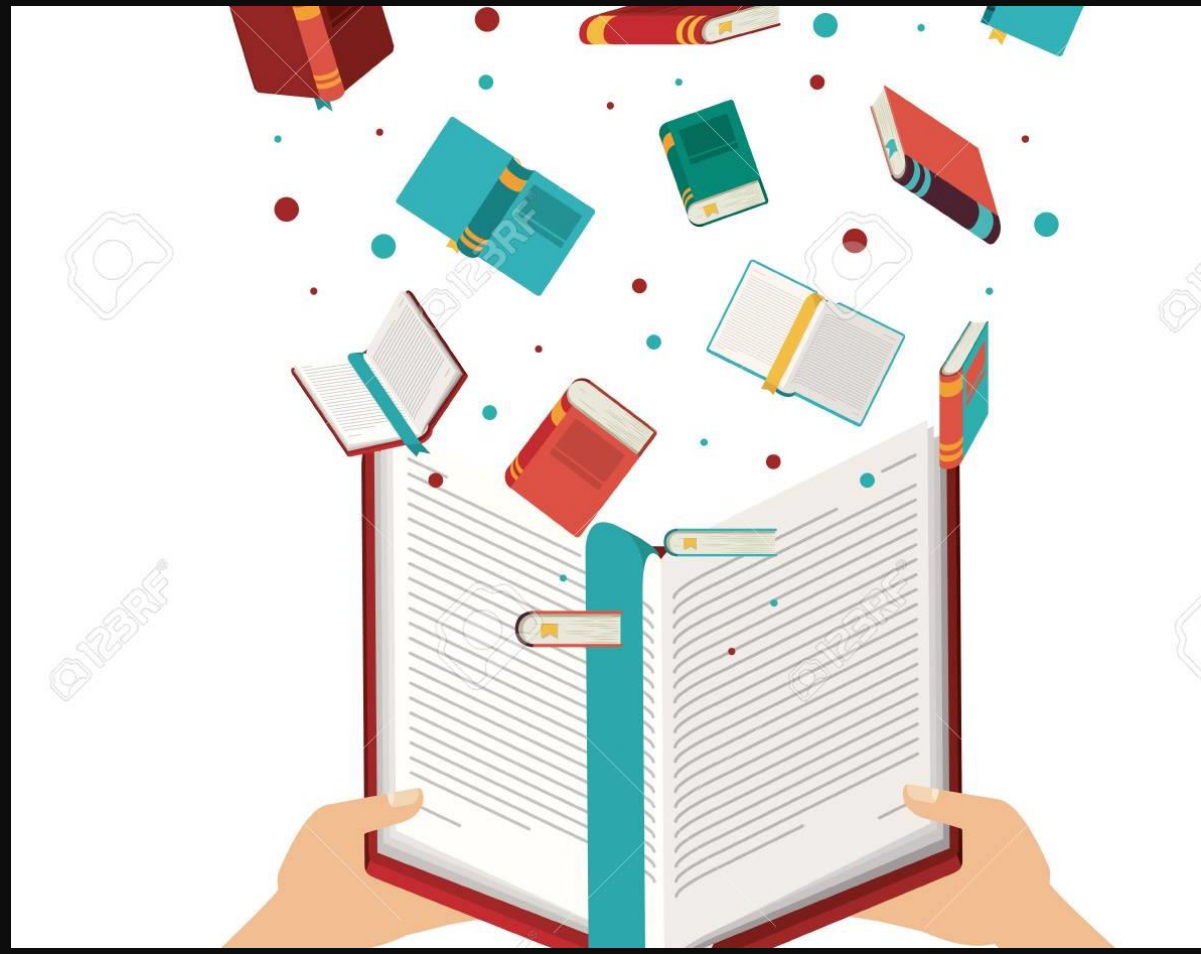
Literature Review

- CINAHL and Cochrane Databases
  - “Vaccine Hesitancy” & “Adults” & “ NOT Children”
  - RANGE: 2010-2020
    - 2016-2020 did not yield enough results
  - 17 total unique articles found
  - **Inclusion**:
    - Opinions on vaccine by public and providers
    - Compulsory vaccine views
    - Vaccine uptake in people with comorbidities
    - Education related to vaccine uptake
  - **Exclusion**:
    - Pharmacy interventions r/t vaccine administration
    - Pediatric fears of pain and needles

10 total articles fell into the criteria for review

Literature Analysis

- Vaccines are effective and controversial
- Mandatory vaccines are not the answer, neither is Google
- No education level is free from bias about vaccines
  - Low importance in daily life
  - Feel safe without them
  - Vaccines are high risk
  - Educated can make their own decisions
  - Herd Immunity is not needed
- Education and Trust is Key
  - Research is contradictory
    - Education works better compared to mandating
    - Vaccine hesitancy was not affected with education
    - Education worked well in adolescents
    - Trust of some providers, but not vaccines themselves



(Literature. Retrieved from https://www.123rf.com/photo_62362026_stock-vector-book-open-set-hand-read-library-literature-learning-knowledge-icon-colorful-design-vector-illustrati.html)

Literature Analysis (Continued)

- Gaps
  - PWID not common in research
  - Unique stressors
    - Fear of legal repercussions
    - Fear of being reported
    - Mistrust of those in authority
- Next Logical Step
  - Research with PWID ONLY
  - Ensure material is designed for PWID
- Translation into Practice
  - Trust of medicine
  - Show education can work to overcome vaccine hesitancy

(Analysis. Retrieved from https://www.register-herald.com/news/state_region/a-better-than-nothing-response-amid-an-hiv-outbreak-in-wv-needle-exchange-rules-increase/article_a8336f16-5b9c-5089-a9c3-1b48a0b76276.html)

Project Design and Implementation Plan

- **Design**: **Pre- and Post-Intervention Survey**
- **Procedures-** Three Phases
  - 1) Pre-intervention Survey
    - Identify Themes for Education
    - Demographics
    - Data for comparison
  - 2) Educational Intervention
    - Poster
    - Pamphlet
  - 3) Post-Intervention Survey
    - Measure any change in vaccine hesitancy
- **Sample-** n=310
  - Convenience Sample
  - Implied Consent
  - CDC Guidance
    - Masks, Social Distancing, Hand washing, Research equipment
    - (CDC, 2020a)

Figure 1. Syringe Exchange Truck, Tennessee (Own Photo)

Figure 2. Syringe Exchange Truck no dog, Tennessee (Own Photo)

Project Design and Implementation Plan (continued)

<u>Setting</u>

- Syringe Exchange Clinic in Tennessee
  - Scheduled appointments
  - Walk-up opened during second and third phase

<u>Timeline</u>

- Implementation:

December 2020 ➔ February 2021

Figure 3. Syringe Exchange Setup, Tennessee (Own Photo)

Pre- and Post-Intervention Survey

Questions 2-4: Demographics

Question 5- Study Differences

Question 6- Topic Identification

Figure 4. Syringe Puppy, Tennessee (Own Photo)

Visible Gender?

MALE

FEMALE

1) "Are you willing to answer a few questions today?"
   a) YES
   b) NO (Do not ask anymore questions)
2) What is your age range?
   a) 18-28 (If under 18 do not ask anymore questions)
   b) 29-39
   c) 40-50
   d) Over 50
3) Highest level of education completed?
   a) Elementary
   b) Middle School/Junior High
   c) High School
   d) College
4) Did you receive the flu vaccine last year (2019)?
   a) Yes
   b) No
   c) Unsure
5) Do you feel that the yearly the flu vaccine is necessary?
   a) Yes
   b) No
   c) Unsure
6) Tell me your thoughts about you receiving the flu vaccine? (OPEN)

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Survey

Reliability- Consistent Results

Validity- True Results

sample vs population

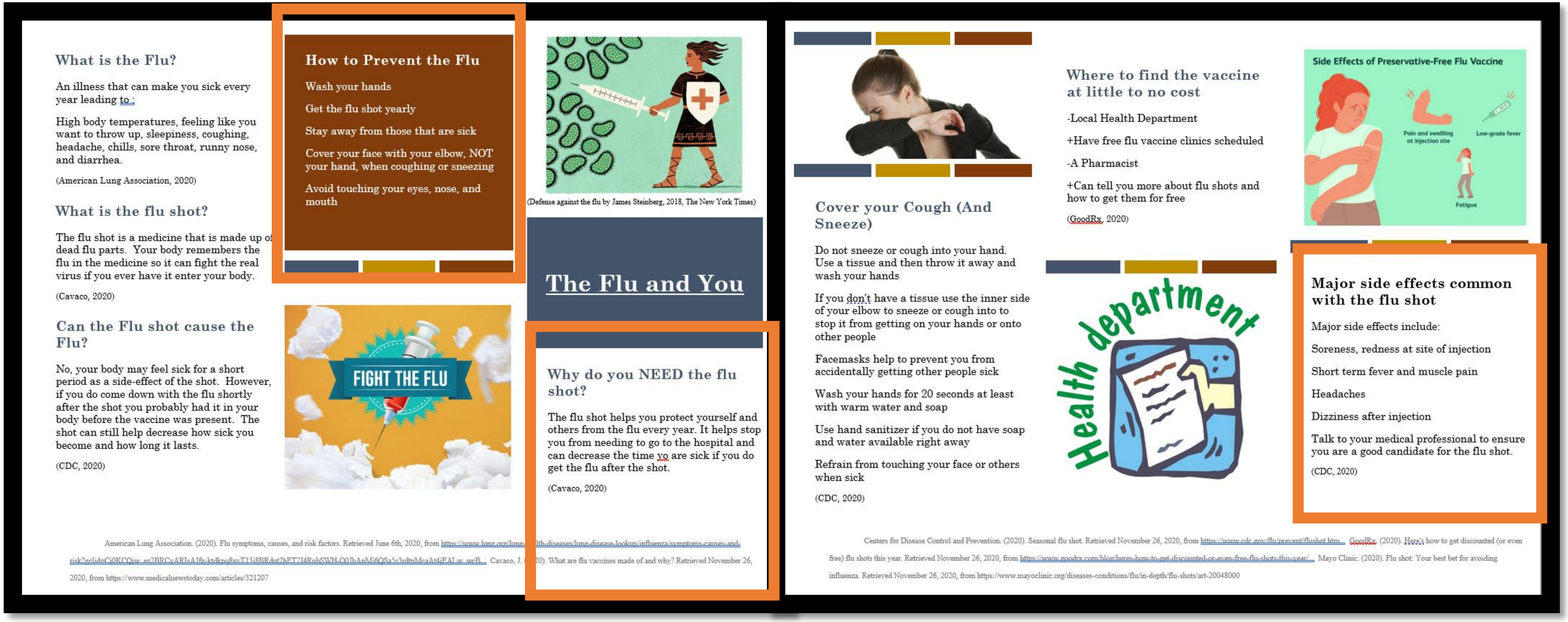
- **Face Validity-** Modified from validated tool
  (Dr. Opel's Parent Attitude about Childhood Vaccines)
  PACV had Predictive and Construct Validity (Opel, 2017)

- **Interrater Reliability-** Same population
  (People Who Inject Drugs)

- **Face Reliability-** Measures what it says it is measuring
  (Flu Vaccine Hesitancy)

- **Construct Validity-** Measures what it claims to measure
  (Flu Vaccine Hesitancy)

- **Predictive Validity-** Predicts participants responses to other questions
  (Refuse Flu Vaccine)



What is the Flu?

An illness that can make you sick every year leading to :

High body temperatures, feeling like you want to throw up, sleepiness, coughing, headache, chills, sore throat, runny nose, and diarrhea.

(American Lung Association, 2020)

What is the flu shot?

The flu shot is a medicine that is made up of dead flu parts. Your body remembers the flu in the medicine so it can fight the real virus if you ever have it enter your body.

(Cavaco, 2020)

Can the Flu shot cause the Flu?

No, your body may feel sick for a short period as a side-effect of the shot. However, if you do come down with the flu shortly after the shot you probably had it in your body before the vaccine was present. The shot can still help decrease how sick you become and how long it lasts.

(CDC, 2020)

How to Prevent the Flu

Wash your hands

Get the flu shot yearly

Stay away from those that are sick

Cover your face with your elbow, NOT your hand, when coughing or sneezing

Avoid touching your eyes, nose, and mouth

(Defense against the flu by James Steinberg, 2018, The New York Times)

The Flu and You

Why do you NEED the flu shot?

The flu shot helps you protect yourself and others from the flu every year. It helps stop you from needing to go to the hospital and can decrease the time yo are sick if you do get the flu after the shot.

(Cavaco, 2020)

Cover your Cough (And Sneeze)

Do not sneeze or cough into your hand. Use a tissue and then throw it away and wash your hands

If you don't have a tissue use the inner side of your elbow to sneeze or cough into to stop it from getting on your hands or onto other people

Facemasks help to prevent you from accidentally getting other people sick

Wash your hands for 20 seconds at least with warm water and soap

Use hand sanitizer if you do not have soap and water available right away

Refrain from touching your face or others when sick

(CDC, 2020)

Where to find the vaccine at little to no cost

-Local Health Department

+Have free flu vaccine clinics scheduled

-A Pharmacist

+Can tell you more about flu shots and how to get them for free

(GoodRx, 2020)

Major side effects common with the flu shot

Major side effects include:

Soreness, redness at site of injection

Short term fever and muscle pain

Headaches

Dizziness after injection

Talk to your medical professional to ensure you are a good candidate for the flu shot.

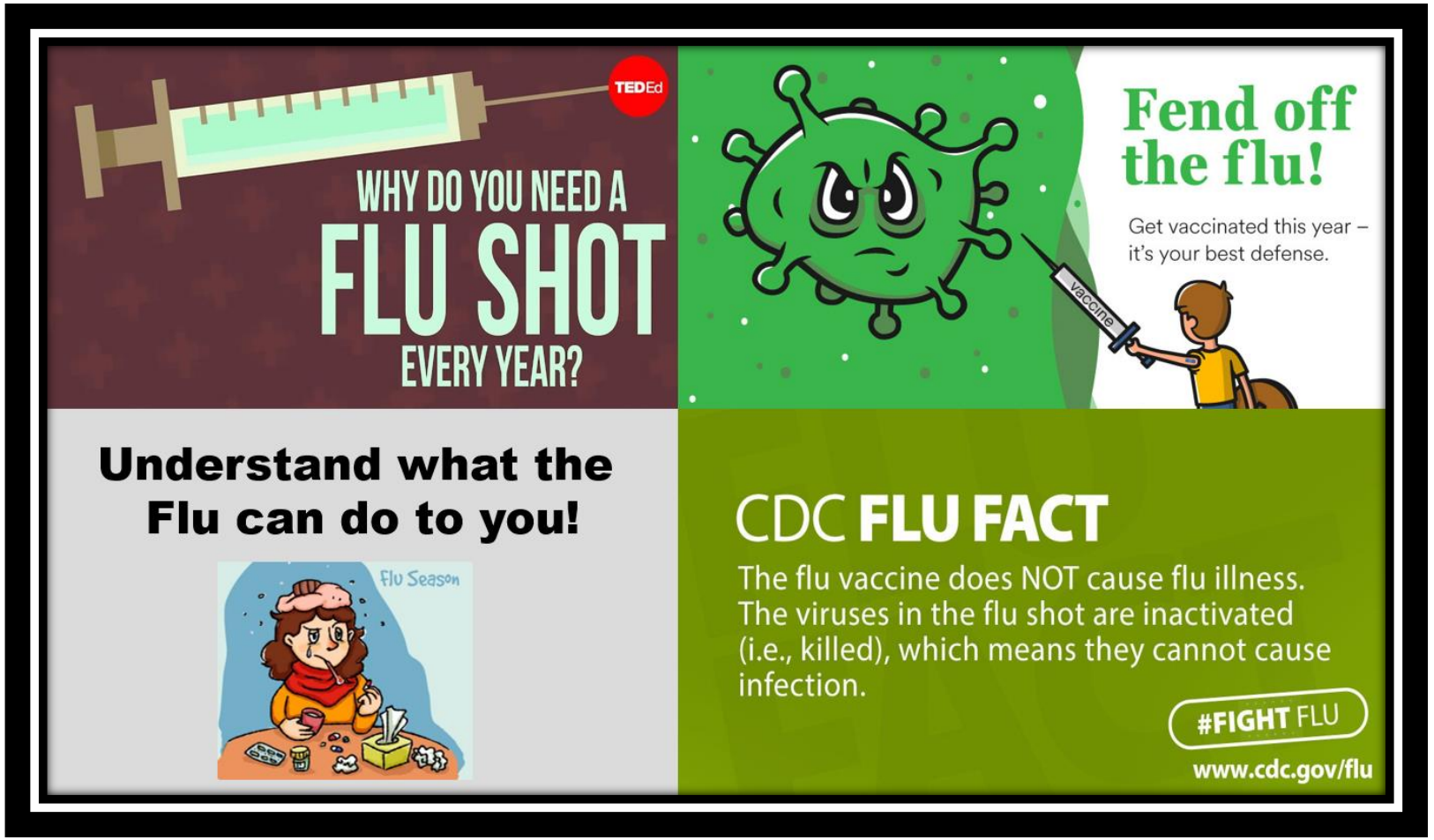
(CDC, 2020)

American Lung Association. (2020). Flu symptoms, causes, and risk factors. Retrieved June 6th, 2020, from https://www.lung.org/lung-...lth-diseases/lung-disease-lookup/influenza/symptoms-causes-and-risk?gclid=Cj0KCQjw_ez2BRCyARIsAJfg-ktdkpq8xuT13i8BRdut2hET7I4RubSWH-Q0JhAnMi6QSa5s3rdtnMcaAt4iEALw_wcB Cavaco, J. (...20). What are flu vaccines made of and why? Retrieved November 26, 2020, from https://www.medicalnewstoday.com/articles/321207

Centers for Disease Control and Prevention. (2020). Seasonal flu shot. Retrieved November 26, 2020, from https://www.cdc.gov/flu/prevent/flushot.htm GoodRx. (2020). Here's how to get discounted (or even free) flu shots this year. Retrieved November 26, 2020, from https://www.goodrx.com/blog/heres-how-to-get-discounted-or-even-free-flu-shots-this-year/ Mayo Clinic. (2020). Flu shot: Your best bet for avoiding influenza. Retrieved November 26, 2020, from https://www.mayoclinic.org/diseases-conditions/flu/in-depth/flu-shots/art-20048000

Educational Pamphlet

Educational Poster

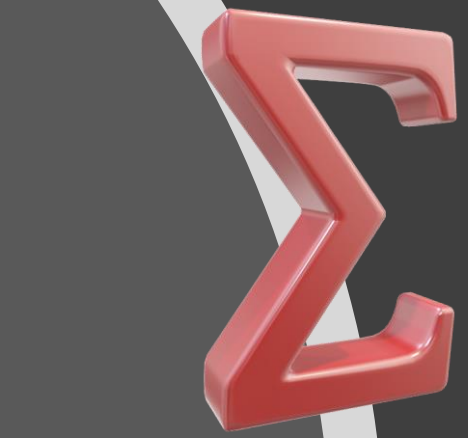


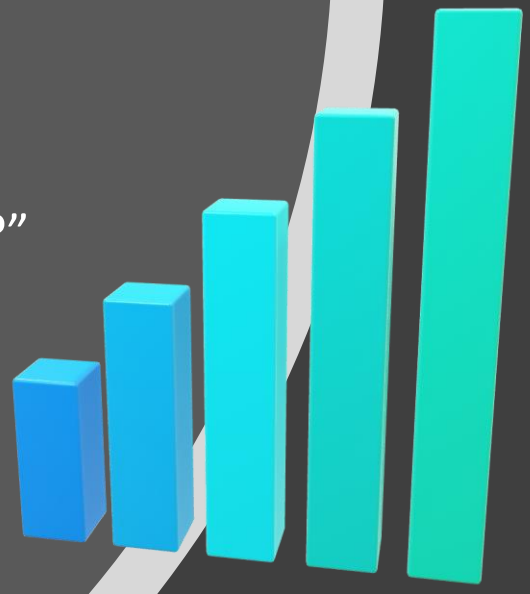
Financials

Resource	Provision	Unit Cost	Price
Organization	Director of Organization	4-8 hours	$0.00
Study Leader	David Arnopole, DNP Student	80 hours	$0.00
Data Collection Tools	Printed Surveys, Clipboard, pens, lockbox	$40	$40
Flu Vaccines Pamphlets	Pamphlets	$1.21 (Office Depot)	$242
Hand Sanitizer	Bottles	$8	$32
Masks	Masks	$10	$40
Total Costs			$352

Data Analysis

- **Descriptive Statistics**
  - Demographics (Question 2-4)
- **Chi-Square Analysis**
  - Review two different groups results of question 5
    - “Do you feel the yearly flu vaccine is necessary?”
- **Identifying Themes**
  - Review results of questions 6
    - “Tell me your thoughts about you receiving the flu vaccine?”
- n=310 (Phase 1=146, Phase 3= 164)





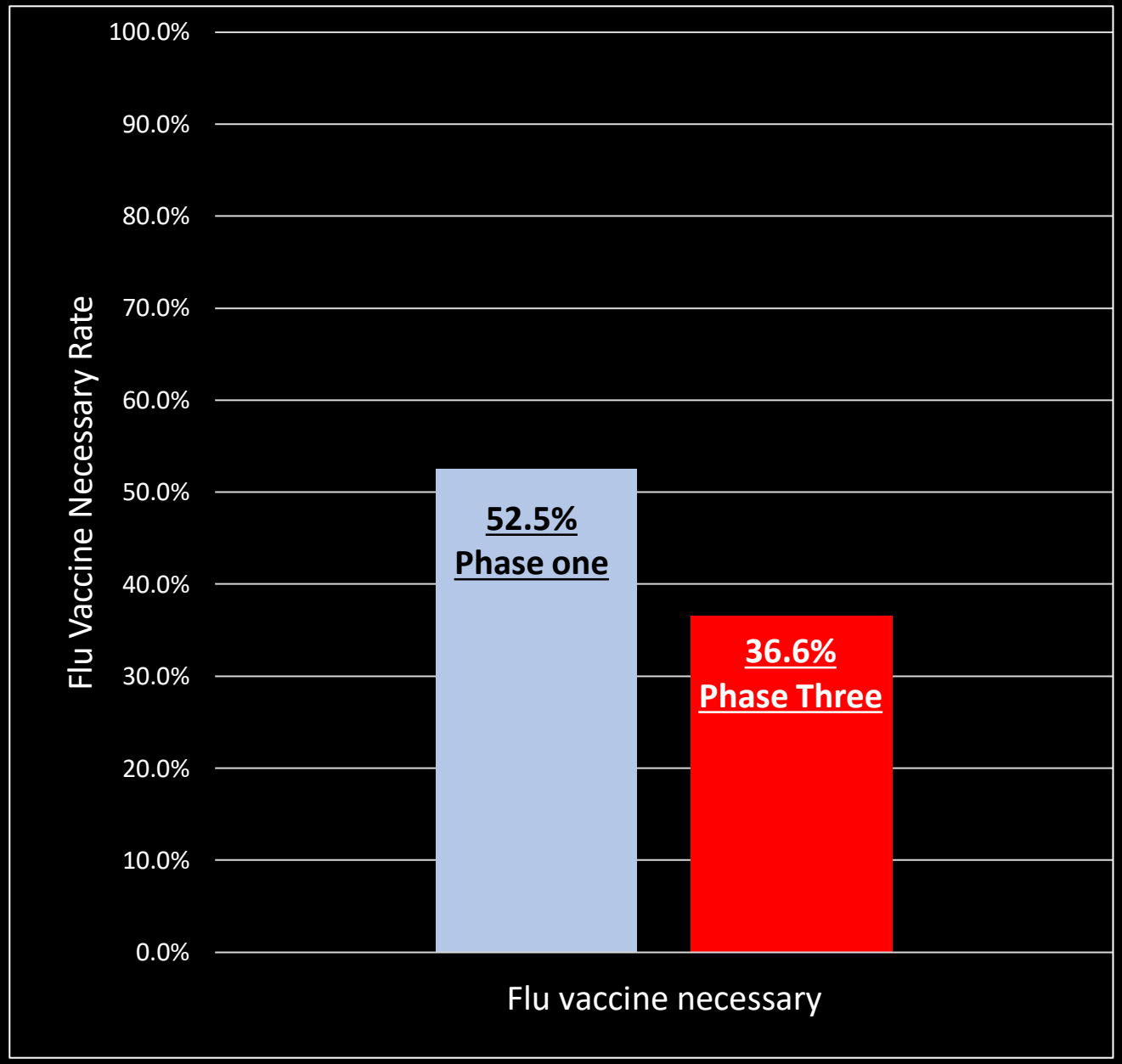
Descriptive Statistics-

Comparison of Pre- and Post-Intervention Groups

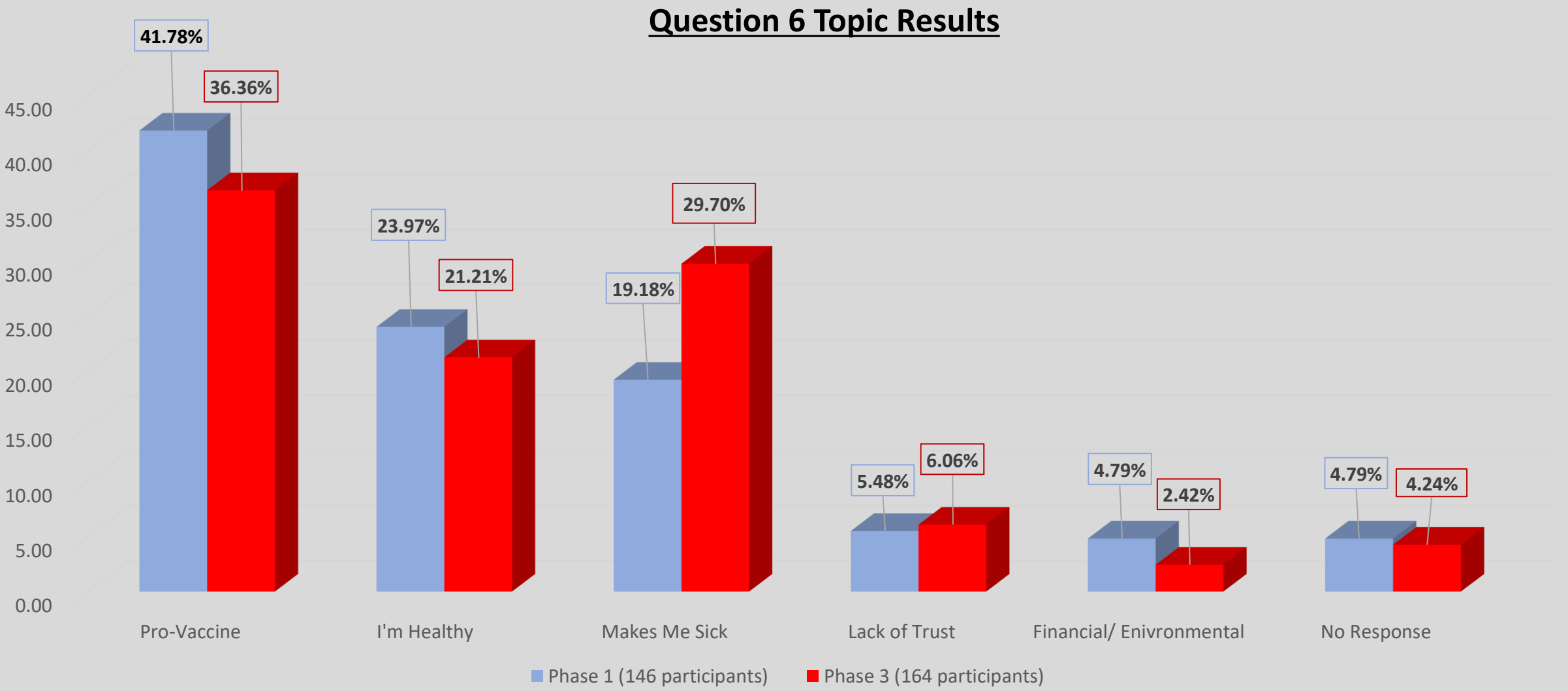
Variable	Pre-intervention	Post-intervention	p-value
Gender (female)	74 (50.7%)	78 (44.1%)	0.24
Age			
18-28	21 (14.4%)	22 (13.4%)	
29-39	66 (45.2%)	63 (38.4%)	
40-50	38 (26.0%)	60 (36.6%)	
Over 50	21 (14.4%)	19 (11.6%)	0.25
Education			
Elementary	1 (0.7%)	1 (0.6%)	
Middle school	26 (17.8%)	39 (23.8%)	
High school	92 (63.0%)	104 (63.4%)	
College	27 (18.5%)	20 (12.2%)	0.34
Flu vaccine last year	64 (44.4%)	57 (35.0%)	0.09

Chi-Square-

Comparison of Pre- and Post-Intervention View on Vaccine Necessity



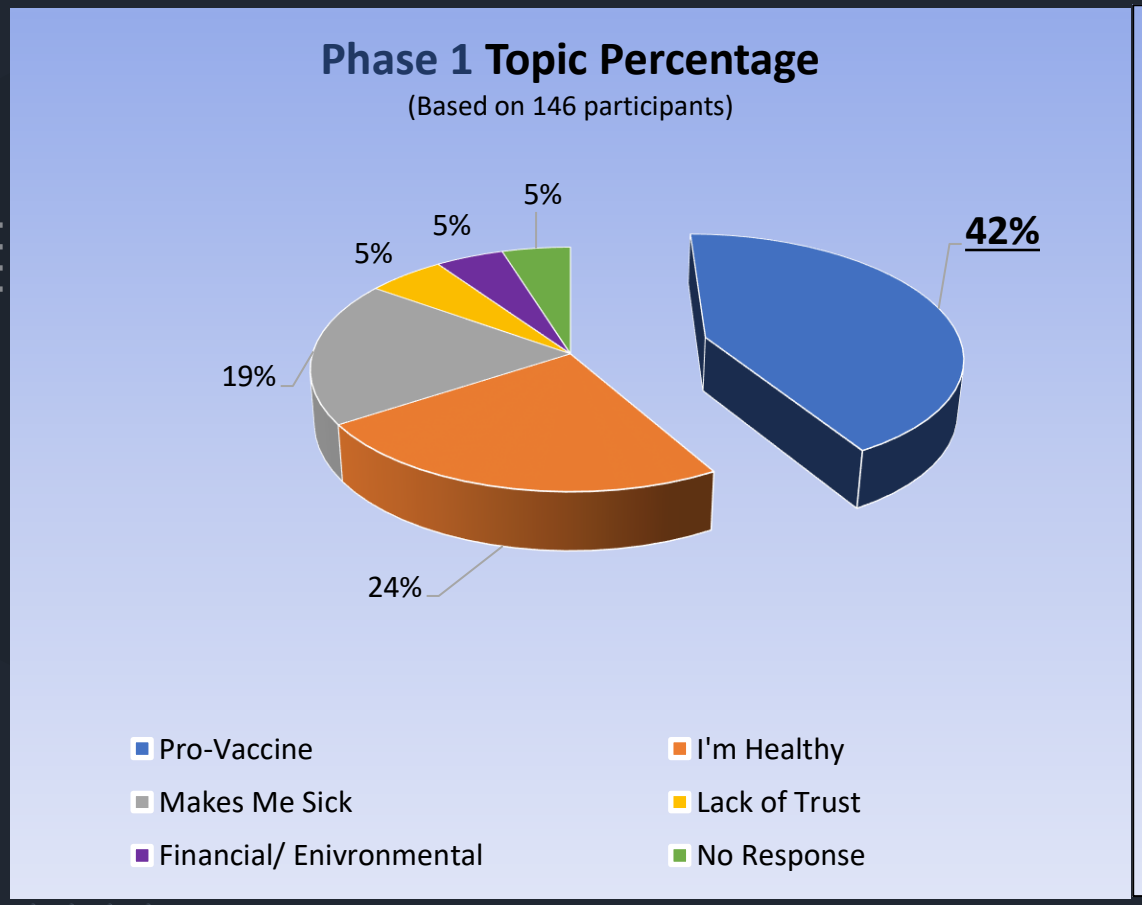
Identifying Themes

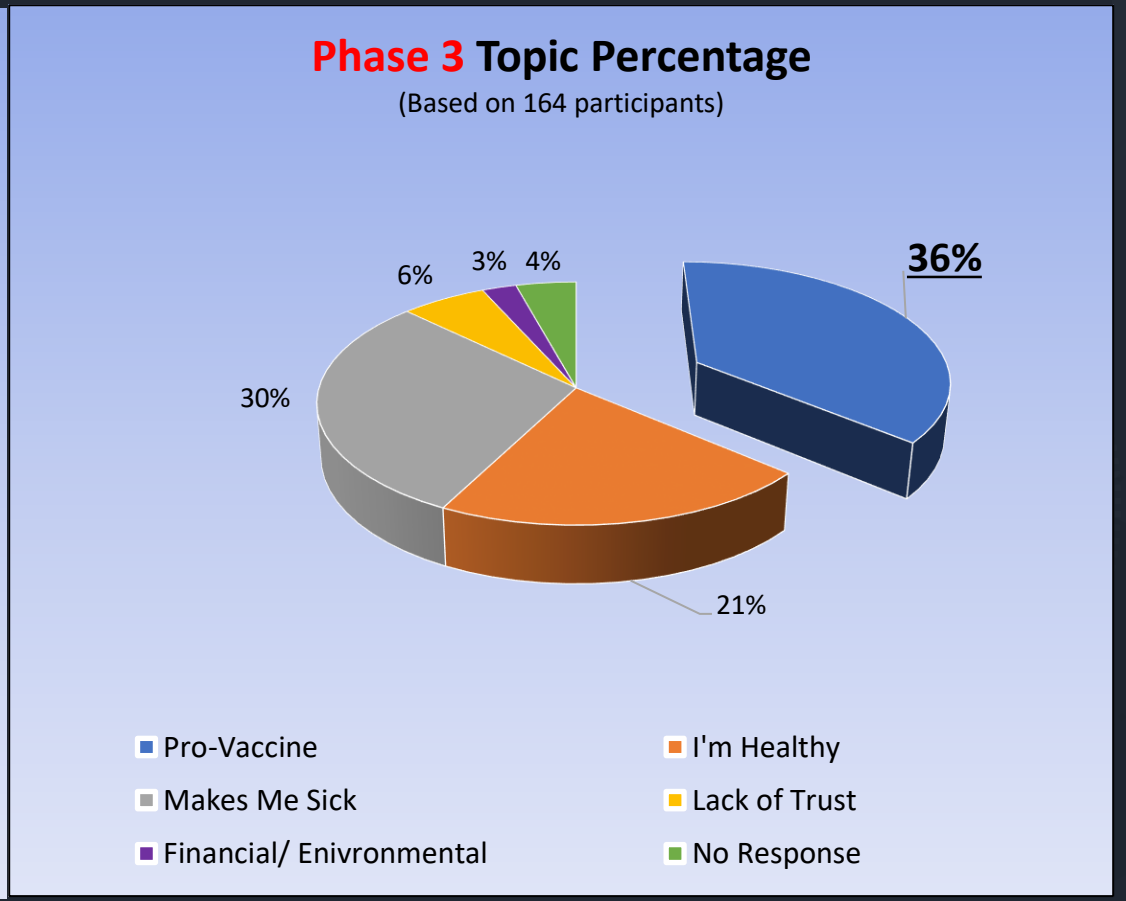


Identifying Themes

"Tell me your thoughts about you receiving the flu vaccine?"

Pro Vaccine

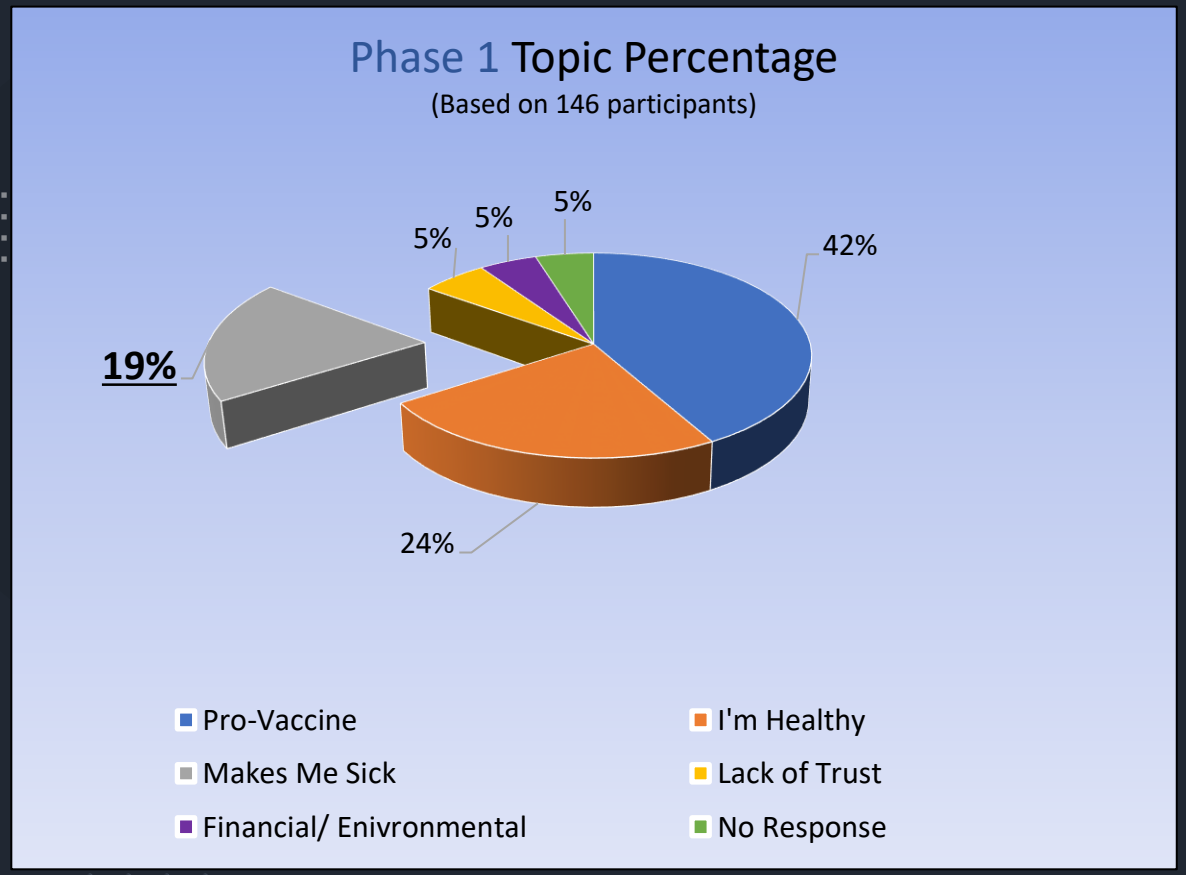


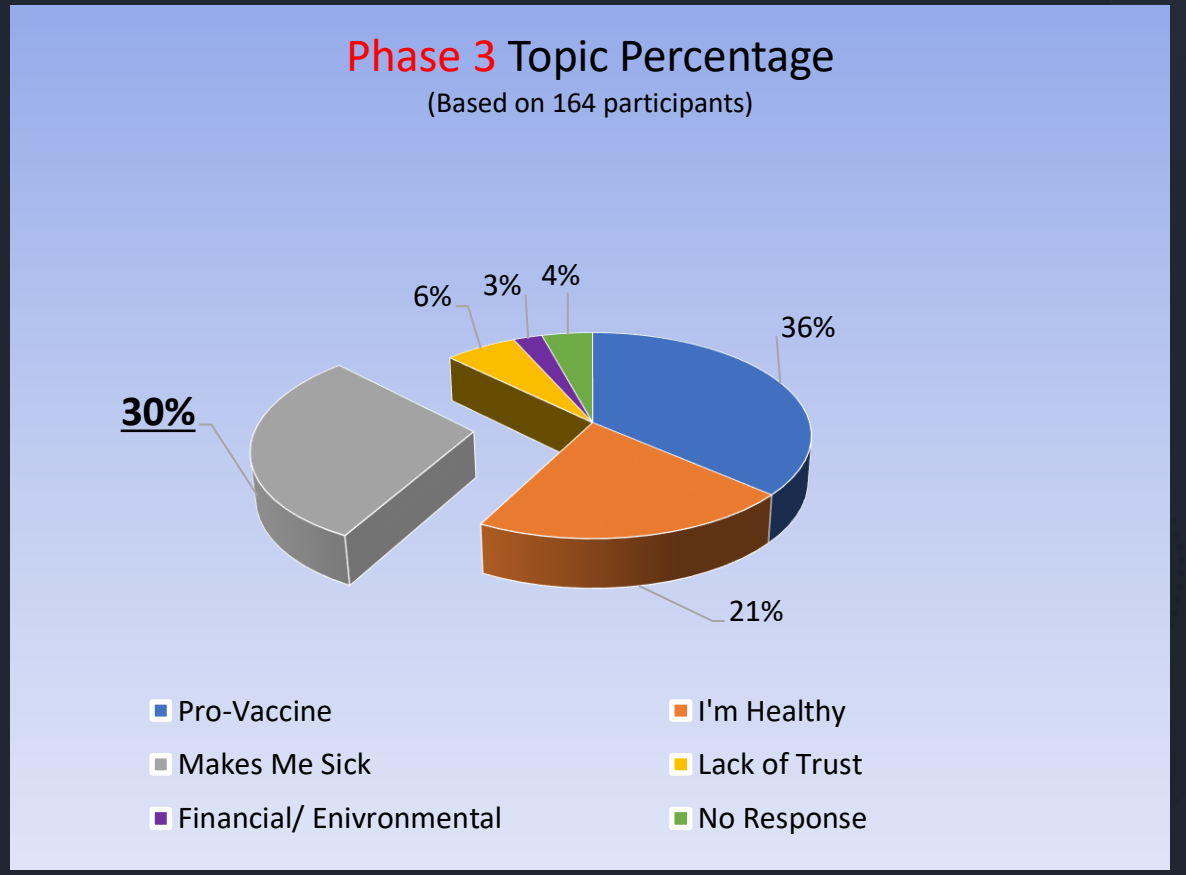


Identifying Themes

"Tell me your thoughts about you receiving the flu vaccine?"

Makes Me Sick





Results

Feeling like the vaccine made them sick after education	Did not increase understanding of risk related to influenza virus	Statistically significant DECREASE in belief of flu vaccine necessity
• Related to: • Disinterest in the education • Lack of trust	• Related to: • Unwillingness to change personal views on vaccines	• Related to: • Education is not always effective

(Beyond critical thinking. Retrieved from https://www.chronicle.com/article/beyond-critical-thinking/)

- **COVID-19**
  - Pandemic
  - Organization Response
    - Scheduling
- **Vaccines are controversial**
  - Regulation changes by CDC for COVID-19
  - Political topic
  - CLT requires a willingness to adopt new information
  - (Braungart & Braungart, 2018; Kaplan & Milstein, 2021)
- **Socioeconomic Factors**
  - Social and Community context
    - Marginalization to Criminalization
      - Felt like they were not heard
      - Fear of being identified to law enforcement
  - (Avert, 2019)

(Limitations of research. Retrieved from https://www.marketing91.com/research-limitations/)

Discussion

- Education led to an INCREASE in vaccine hesitancy
- Flu diagnoses decreased from 2019 to 2020
  - 7.1% to 1.5%
  - (CDC, 2021b)
- “pro-vaccine” ↓ & “Makes me sick” ↑
  - Increased need for education in population regarding vaccines
- New methods of education and incentives:
  - Posters, Pamphlets, serial education, lectures, lottery
    - OH, CA Lotteries (Ohiovaxamillion. (2021); KCRA Staff, 2021)

((Drug addiction illness. Retrieved from https://drugfreeclermont.org/is-drug-addiction-a-mental-illness/)

Questions

- How will vaccine incentives change how providers educate about vaccines?

- What other methods of education could be used to overcome vaccine hesitancy?

(Incentive. Retrieved from https://www.bravon.io/incentives-vs-gamification)

Conclusion

- Intervention ➔ increase in vaccine hesitancy
- Single educational interventions **may not be enough** to improve vaccine hesitancy
- Further studies-
  - Identify reasons for vaccine hesitancy
    - A lack of understanding?
    - Unwillingness to learn?
    - Able to identify true vs false information?

(Straight talk. Retrieved from https://www.macmillandictionaryblog.com/straight-talking)

Implications for Practice

- APRNs are in a unique situations
  - Focus on entire person
    - Recognize risk factors
    - Lifestyle choices
    - Complications that can occur
- Vaccines are necessary
  - Influenza, COVID-19
  - Protect individuals
  - Herd Immunity
- New methods to educate
  - Serial education?
  - Incentivizing?
- Educator
  - Competent with the Vaccine scientific information
- Educators need to be trusted
  - Learn the cause of hesitancy
  - Allow for learning to occur

(Improvisation and practice. Retrieved from https://hbr.org/2021/03/improvisation-takes-practice)

Future Studies

- Vaccine Hesitancy needs to be overcome
- Other vaccines can be used in studies
  - Specific vs. General vaccine hesitancy
- Review new methods of education
  - Serial education
  - More in-depth education
  - Incentivizing
- Review ability of participants to understand vaccines
  - Facts vs Falsehoods

(Digital lock. Retrieved from https://www.healtheuropa.eu/knut-and-alice-wallenberg-foundation-research-projects/88343/)

Dissemination

- Poster
- Pamphlet
- Poster Presentation Submission
  - Sigma Theta Tau Research Day in 2022
  - 15th Vaccine Congress 2021 (Lake Garda, Italy)
  - Annuals Conference of DoctorsofNursingPractice.org
- Manuscript submission
  - Social Science and Medicine
  - Virginia Henderson Repository
- Interest in Public Speaking on Subject

(Meeting. Retrieved from https://wallpaperaccess.com/meeting)

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Thank you!

My Wife, Son, Mother, and Aunt

Team Barnopolevens

Chair:

Dr. O'Dell

Committee Members:

Dr. Cooper

Dr. Clapp

The floor is open for questions!