

# Pediatric Vaccine Hesitancy in British Columbia (BC)

*A systematic analysis of COVID-19 vaccine uptake amongst eligible pediatric populations in BC*



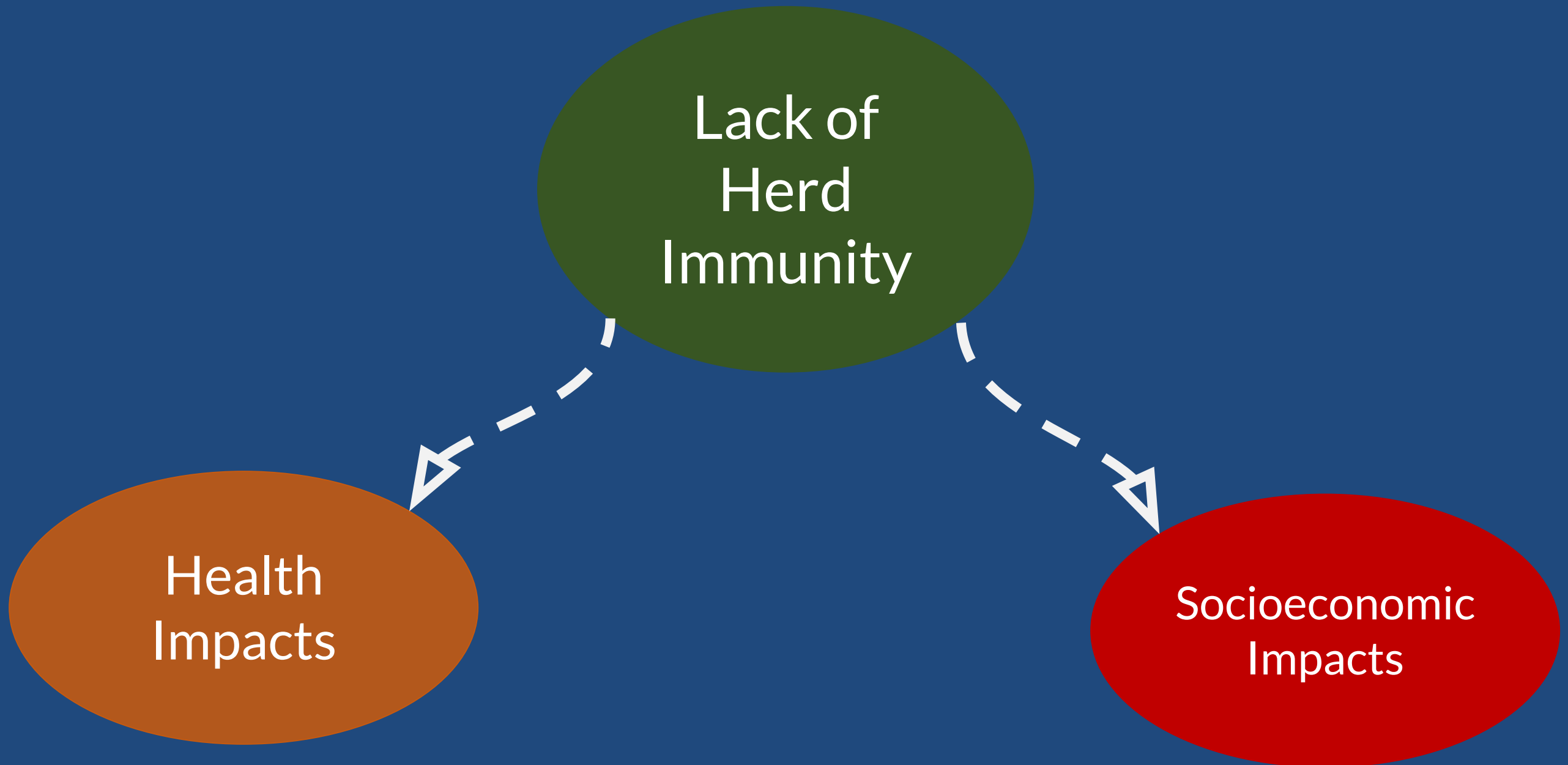
*We would like to acknowledge that our research was conducted on the traditional, ancestral, and unceded territory of the the Musqueam (x<sup>w</sup>məθk<sup>w</sup>əyəm) people.*

Paniz Ataei  
Rachel Kehler  
Nima Toussi  
Emilie Wang

# Defining Vaccine Hesitancy



# Why is Pediatric Vaccine Hesitancy a Problem?



# Pediatric Vaccine Hesitancy in British Columbia

55% for 5-11yrs,  
88% for 12-17yrs

180,000 BC children  
unvaccinated

50+ days of  
in-person  
school closures

\$171B aggregate,  
lifetime economic  
loss in BC

1 in 10 children  
experience  
'Long-COVID'

1000s of BC  
children with  
chronic symptoms



# Low COVID-19 vaccination rates in pediatric populations in BC has **disproportionate, long-term** impacts

*How can the current systems and stakeholders increase pediatric COVID-19 vaccine coverage?*

# Research Methods

*Our primary research was conducted in collaboration with the UBC Vaccine Literacy Club (VLC).*



## Vaccine Attitudes Survey

122 responses

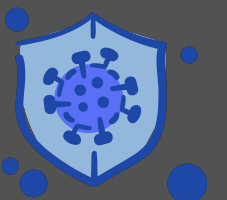


## Exchanges with Stakeholders

24 panellists + interviewees



## Literature and Media Trends Review

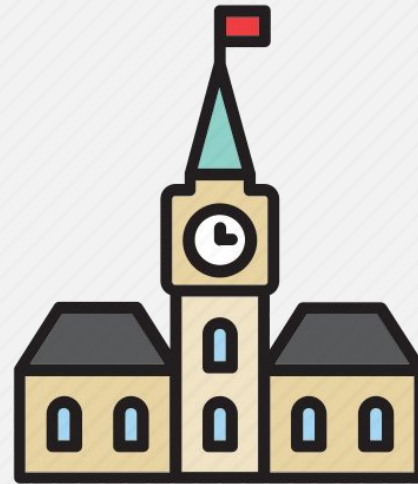


# What Influences Vaccine Choice?



# Who influences Vaccine Choice?

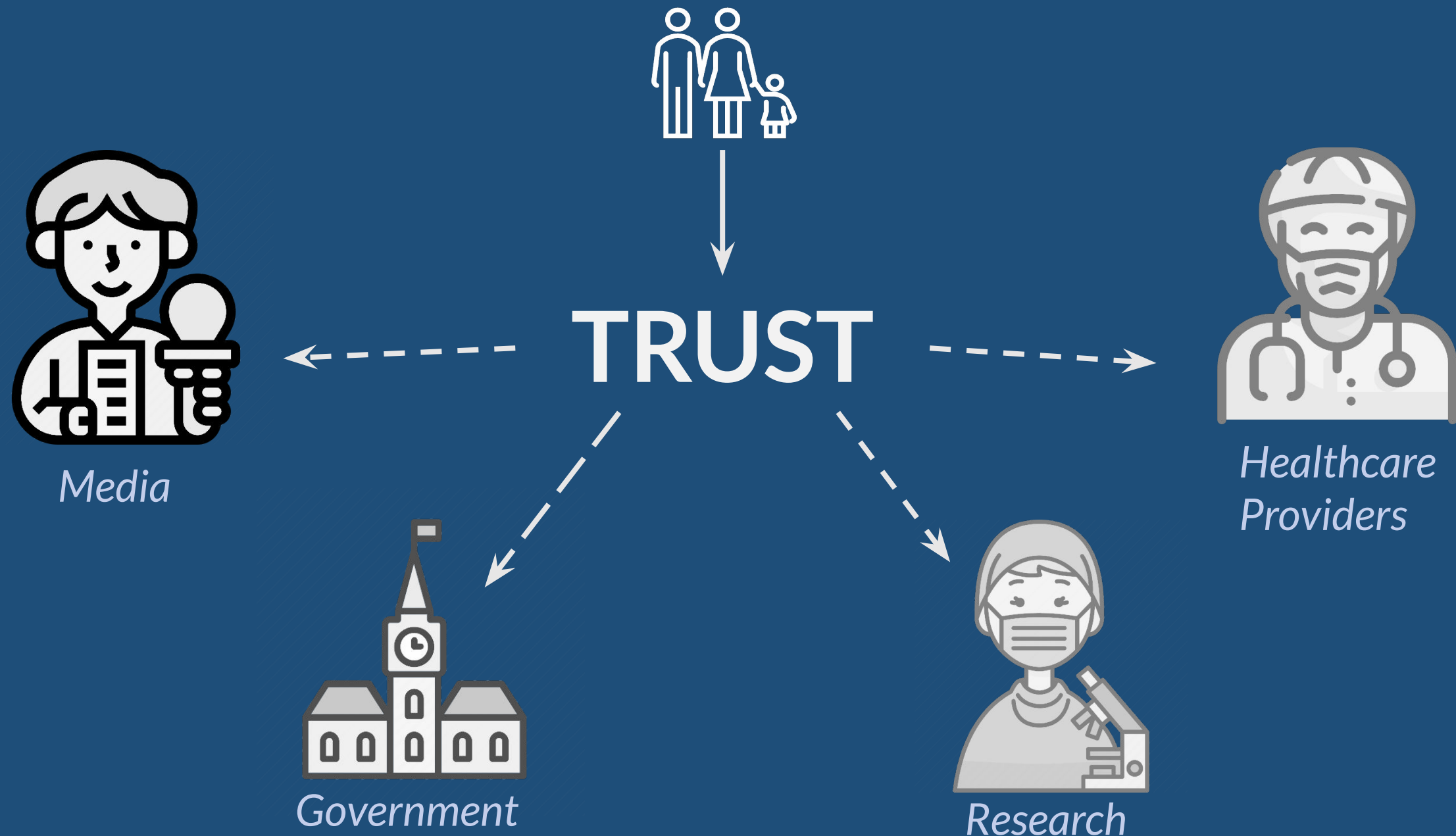
*Everybody is affected by a lack of herd immunity, but the stakeholders in vaccine hesitancy are groups/people/institutions which influence individual assessments underlying vaccine choice.*



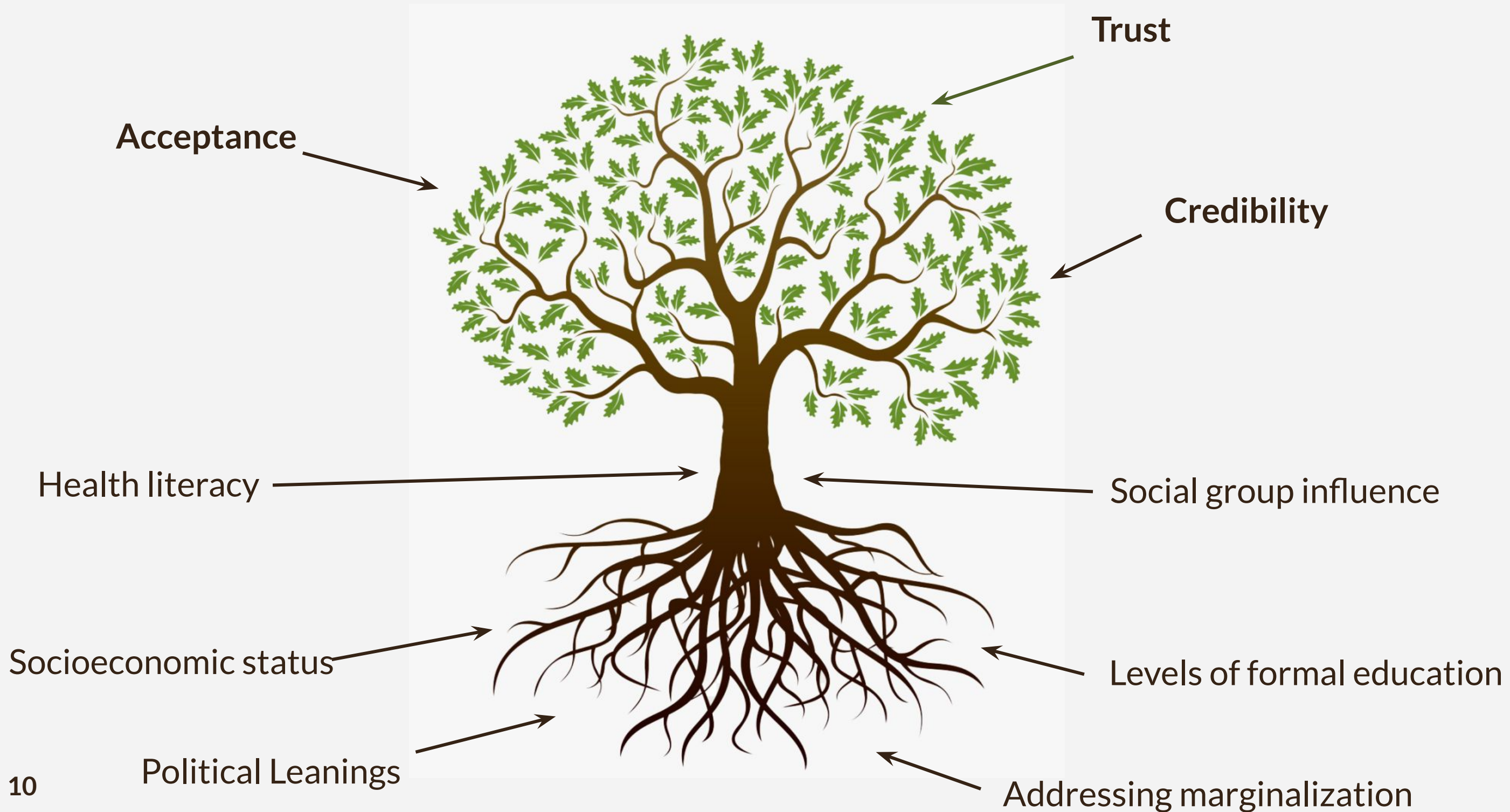


# Role of Trust

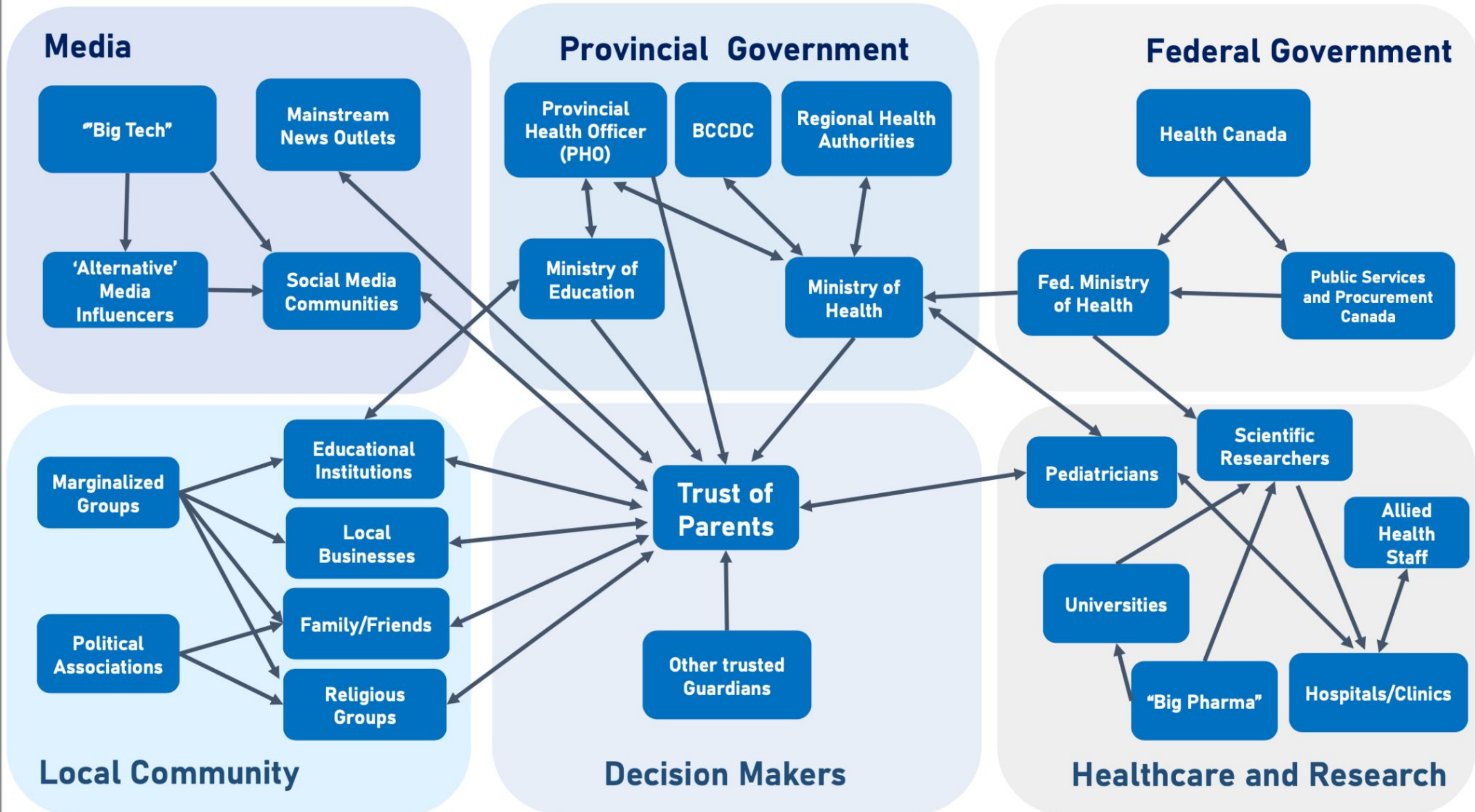
*The epistemic trust of parents in stakeholders is required for stakeholders to influence attitudes towards vaccination.*



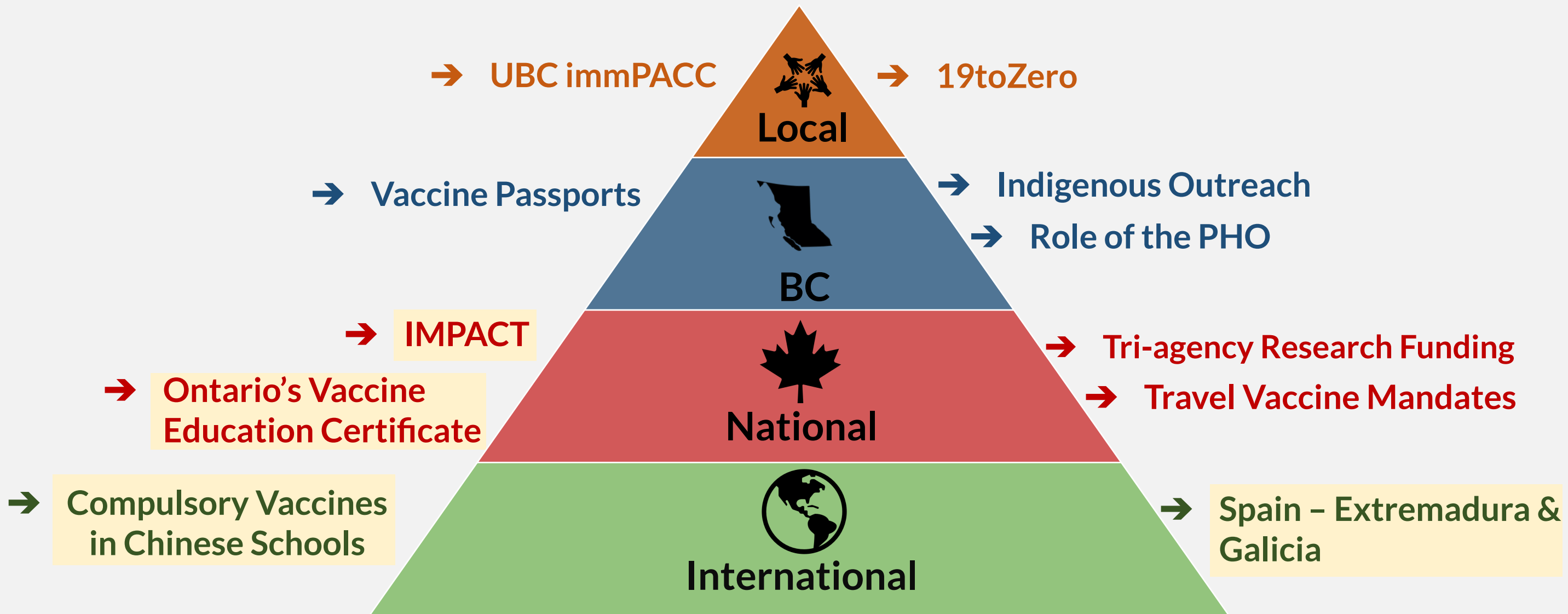
# Root Causes behind Public Trust



# Stakeholder - *Trust* Relationships



# Solutions Landscape



# Patterns within the Solutions Landscape

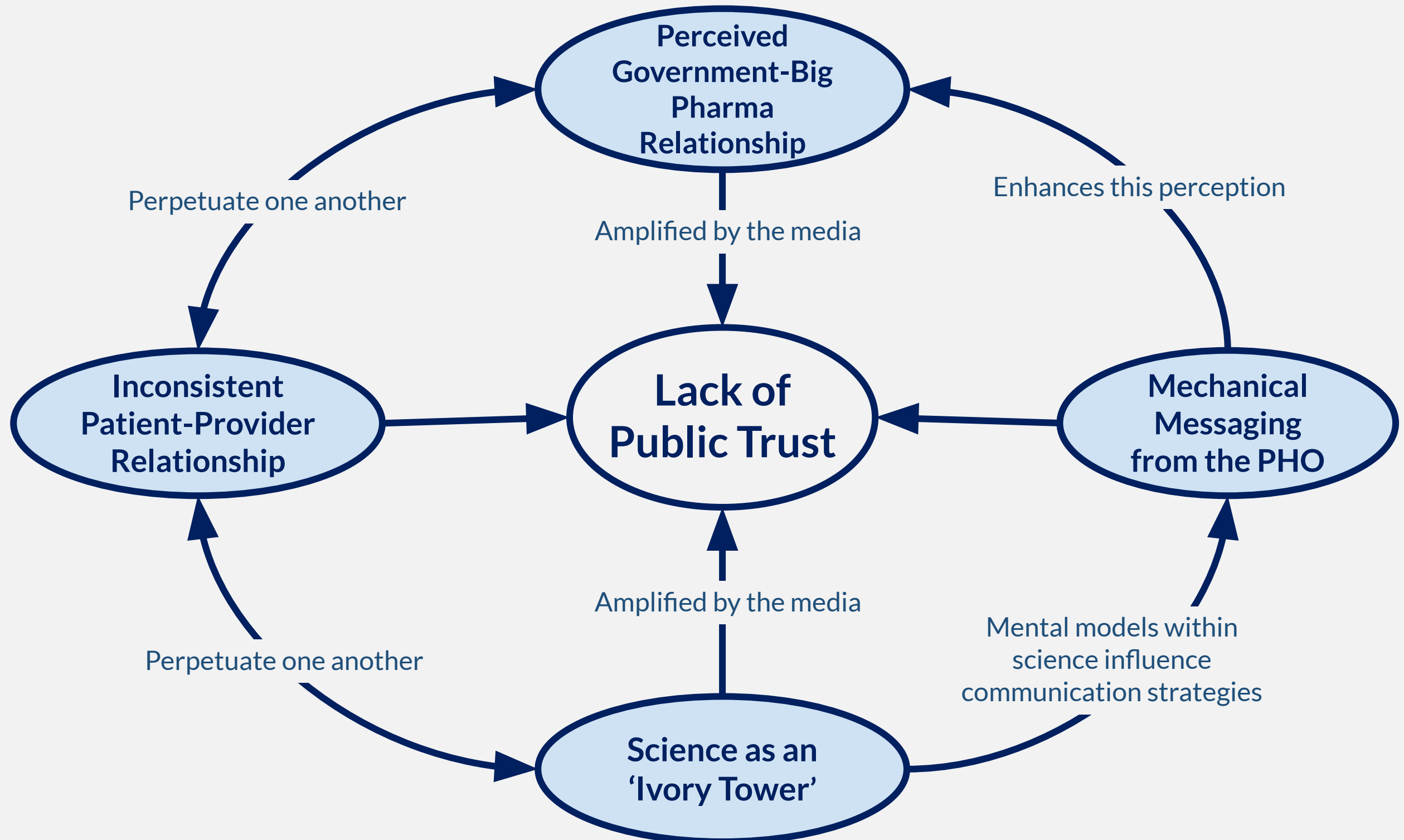
## *Effective Initiatives*

- ❖ Validating parental concerns
- ❖ Transparent communication of public health limitations
- ❖ Community-specific initiatives

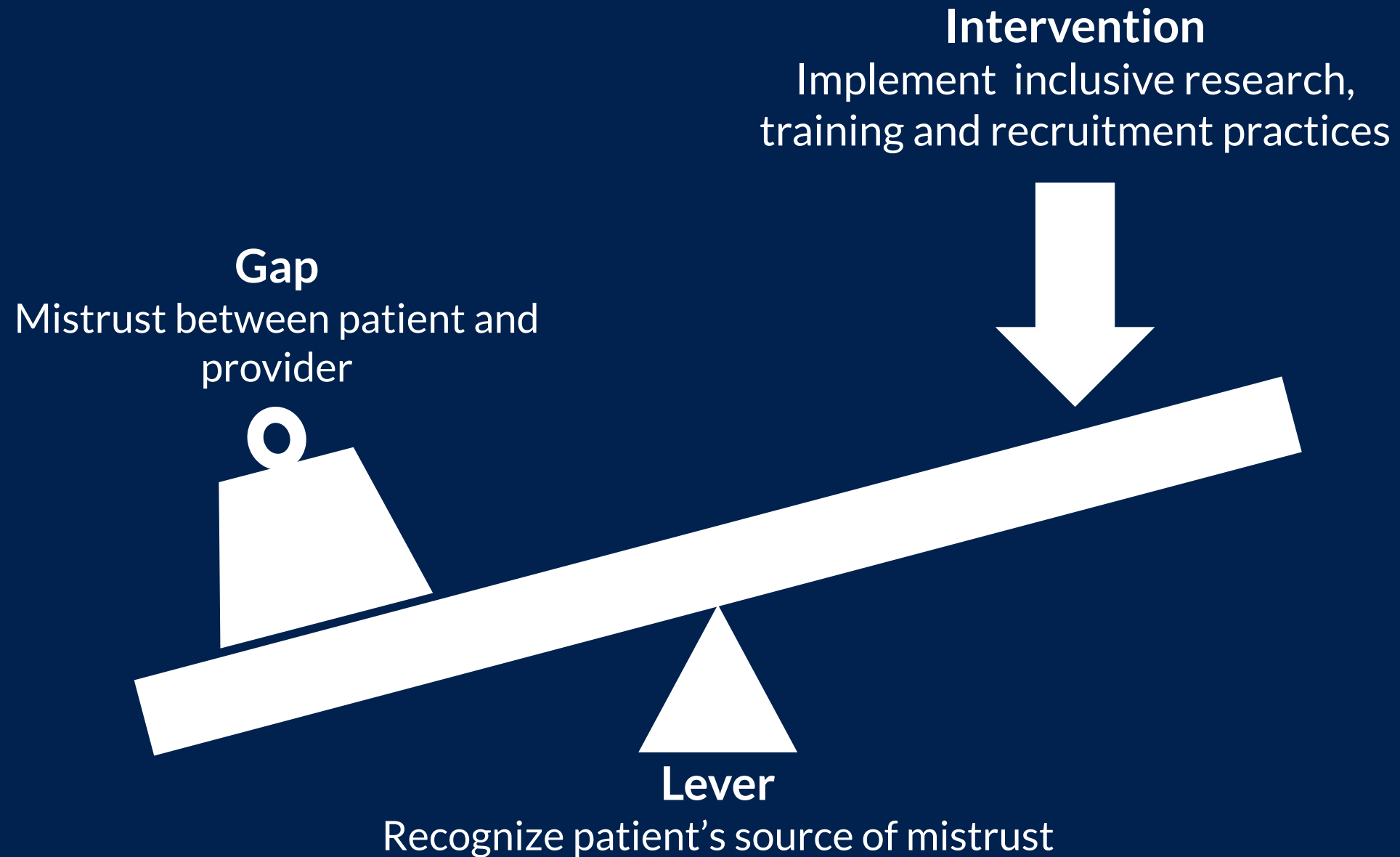
## *Less Effective Initiatives*

- ❖ ‘Talking down’ to parents
- ❖ Ignoring historical injustices
- ❖ ‘One-size-fits-all’,  
‘one-pronged’ solutions

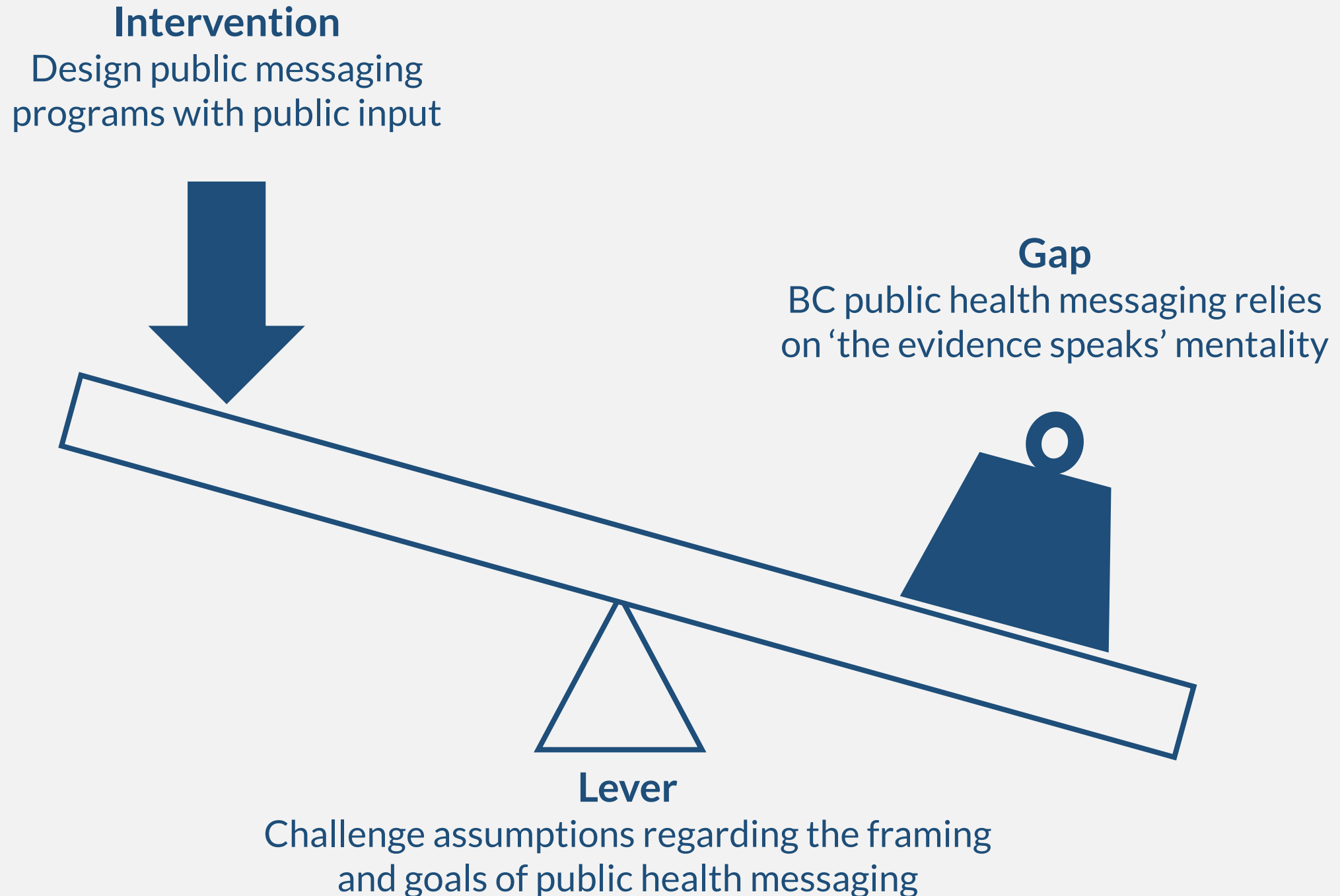
# Challenge Landscape: Power Dynamics & System Gaps



# Gaps, Levers and Intervention #1

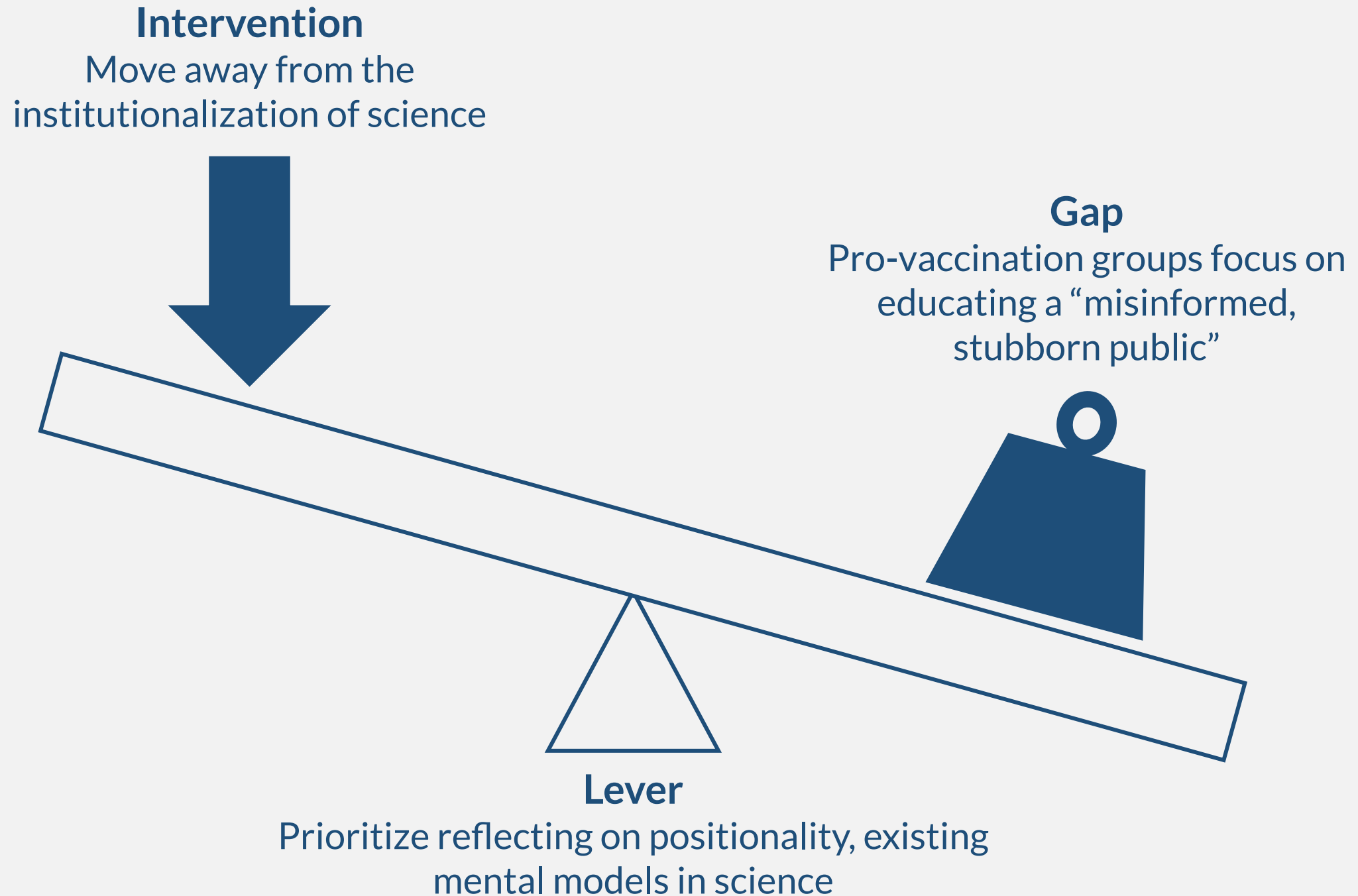


# Gaps, Levers and Intervention #2

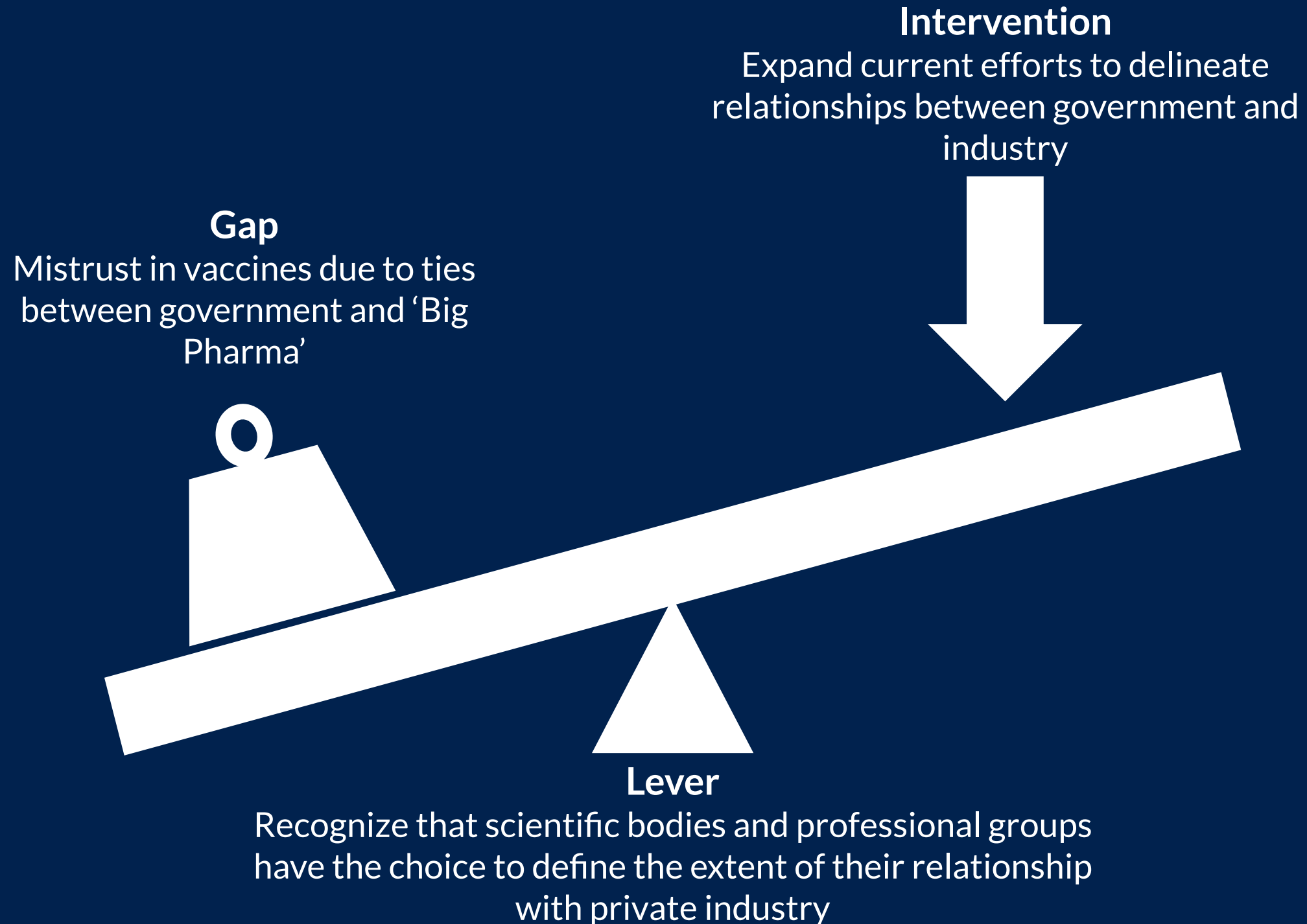




# Gaps, Levers and Intervention #3



# Gaps, Levers and Intervention #4



# What key lessons did we take away?

- ❖ Vaccine hesitancy is long standing, rooted in historical legacies
- ❖ Trust is central
- ❖ Recognition of our own mental models as science students

# Calls of action to increase vaccine confidence

① Acknowledge polarizing views and understand **vaccine hesitancy as a gradient**

② Design implementations which **strengthen public trust**

This approach can be applied to gain public buy-in regarding other areas of contested science in the broader ecosystem

**Thank you!**  
**Questions?**

# Supplementary Slides

# Science as an Ivory Tower

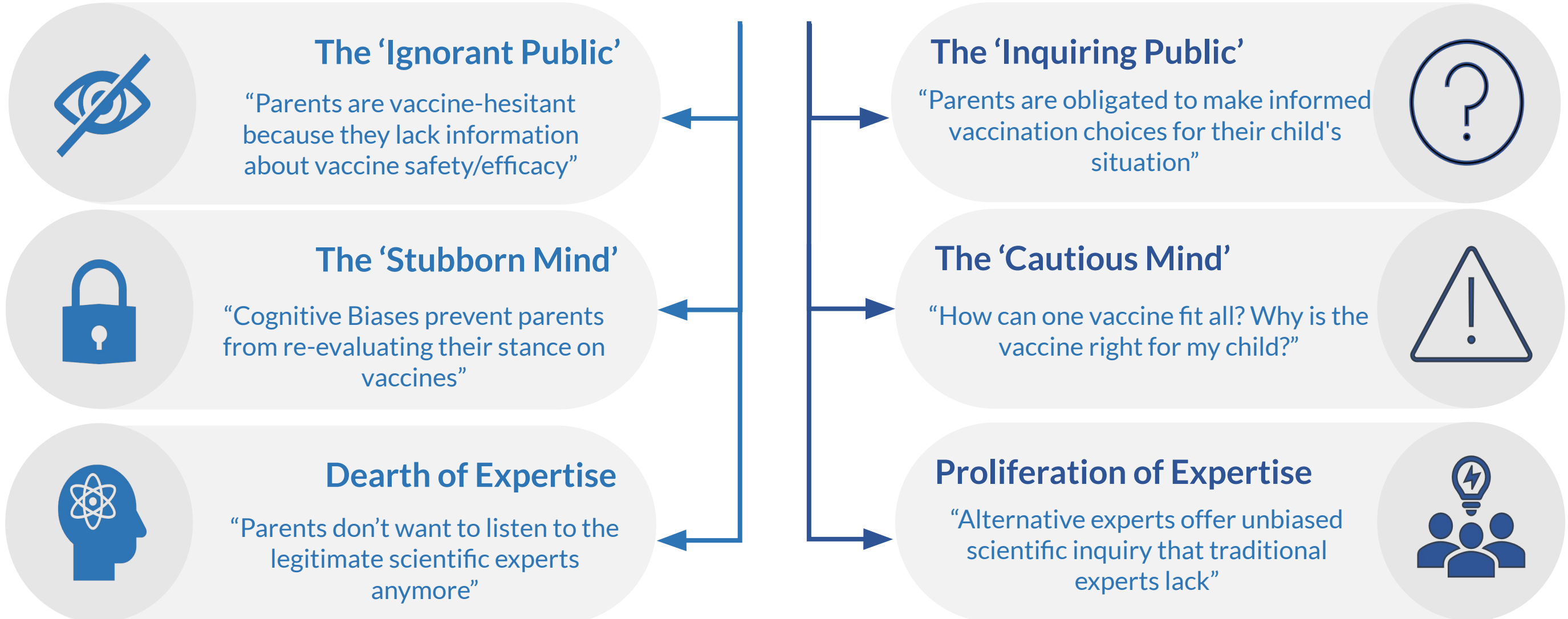
## Public Health Perspective

Misunderstanding of Science

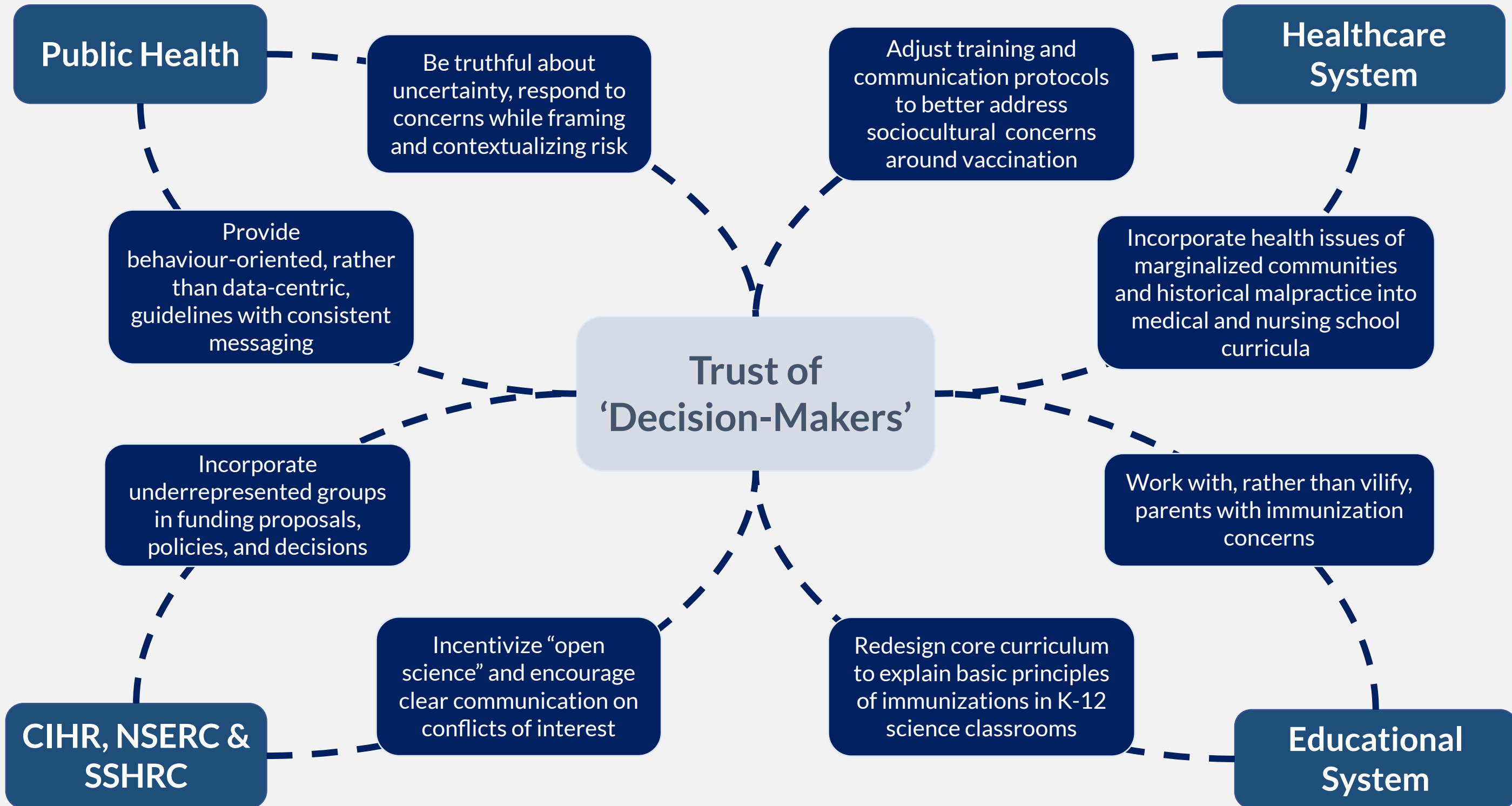


## Vaccine-Hesitant Perspective

Mistrust of Public Health Institutions



# Rebuilding the Missing Links





# The Maverick - Approaches to Communicating Science

Examples: Drs. Theresa Tam, Bonnie Henry, and Anthony Fauci

Examples: Drs. Andrew Wakefield, Michael Yeadon, and Barry Marshall; Galileo and William Harvey

Public Concern is dismissed as unrealistic and uninformed, reinforcing public sentiment that science is an elitist institution

Govern themselves on an internal set of norms, such as organized skepticism, financial disinterestedness, and universalism of procedure

Trust/Confidence is decreased significantly when they are unable to guide public through societal risks

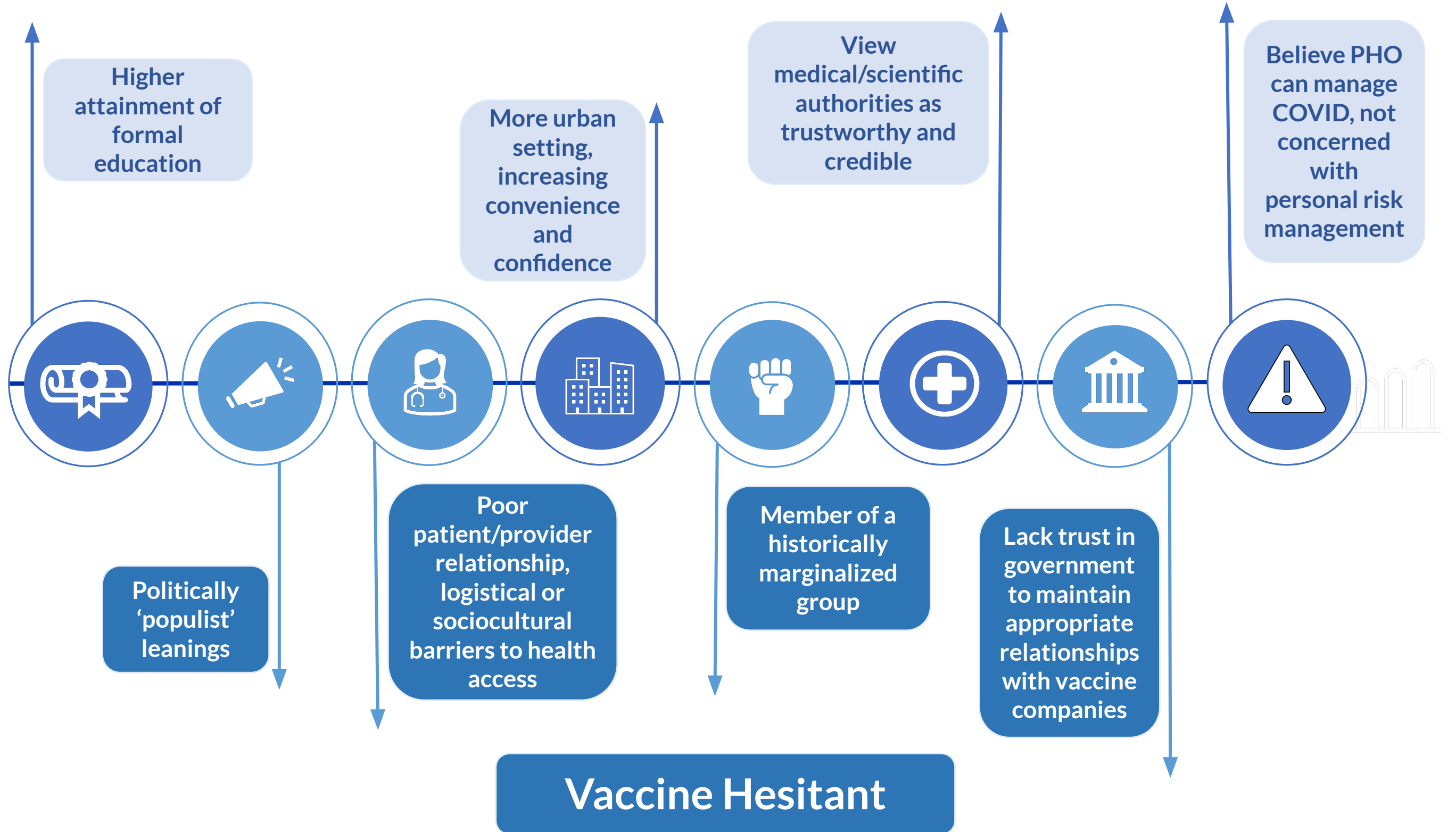


Public Concern is a missed opportunity for mass engagement, capitalize on public unease about organized science's goals

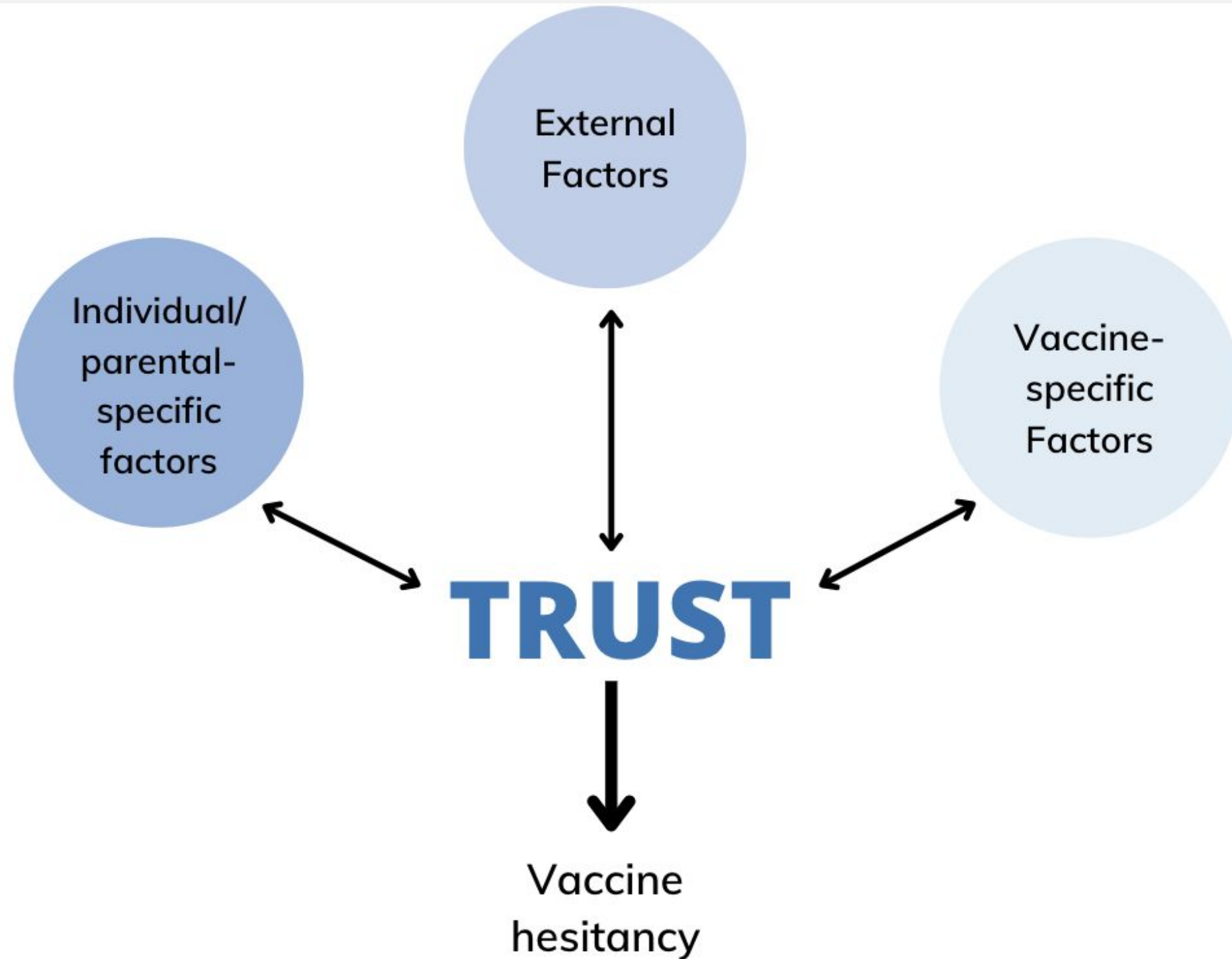
Take advantages of missing norms in science governance – such as representation and public service – and violations of norms – such as industry partnerships – to progress 'anti-science' agenda

Sanctions against Mavericks by the scientific community are perceived as self-preserving actions by the 'establishment'

# Eager to Take



# Role of Trust




# What are the Root Causes for Low Public Trust?



**Parental Specific  
Factors**

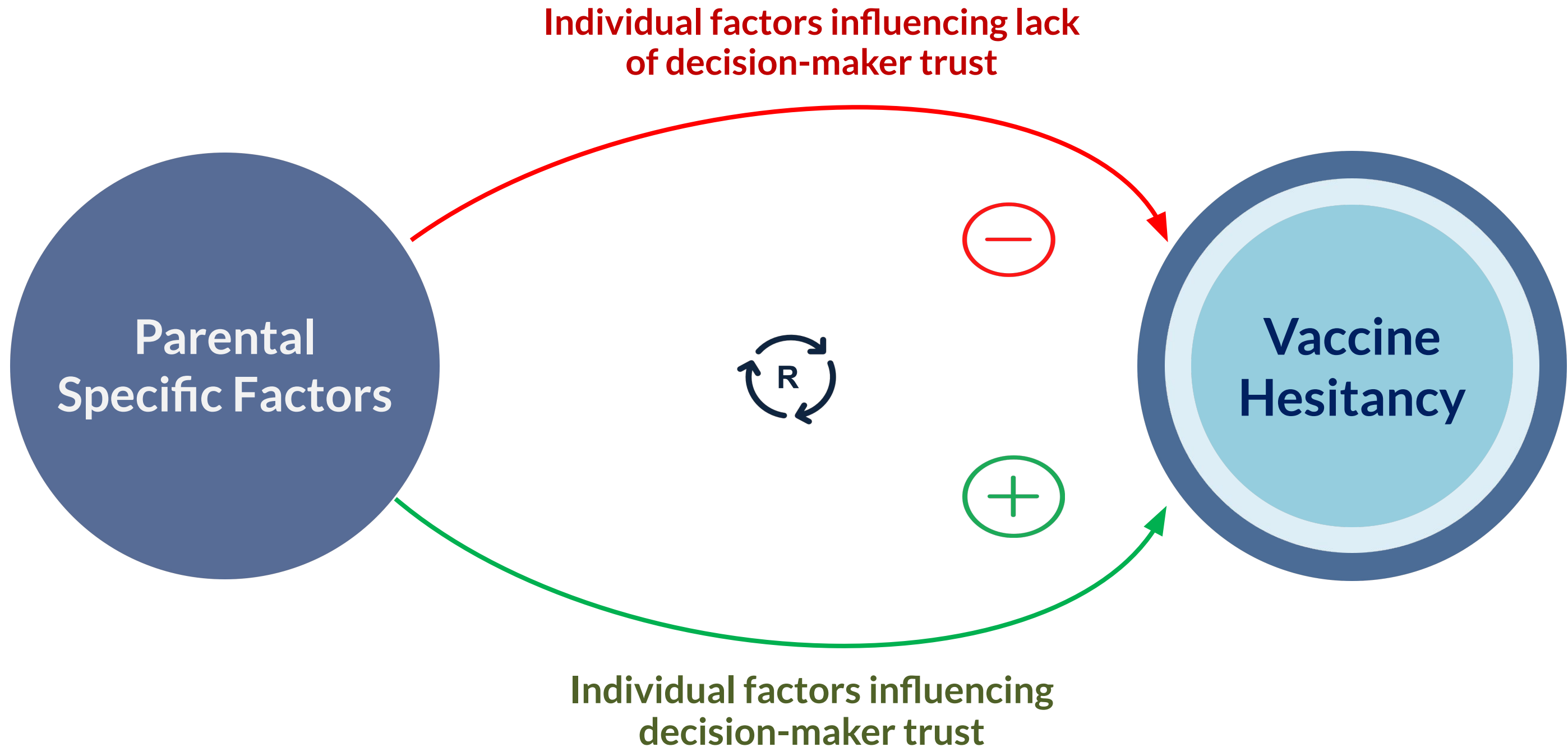


**Vaccine-Specific  
Factors**



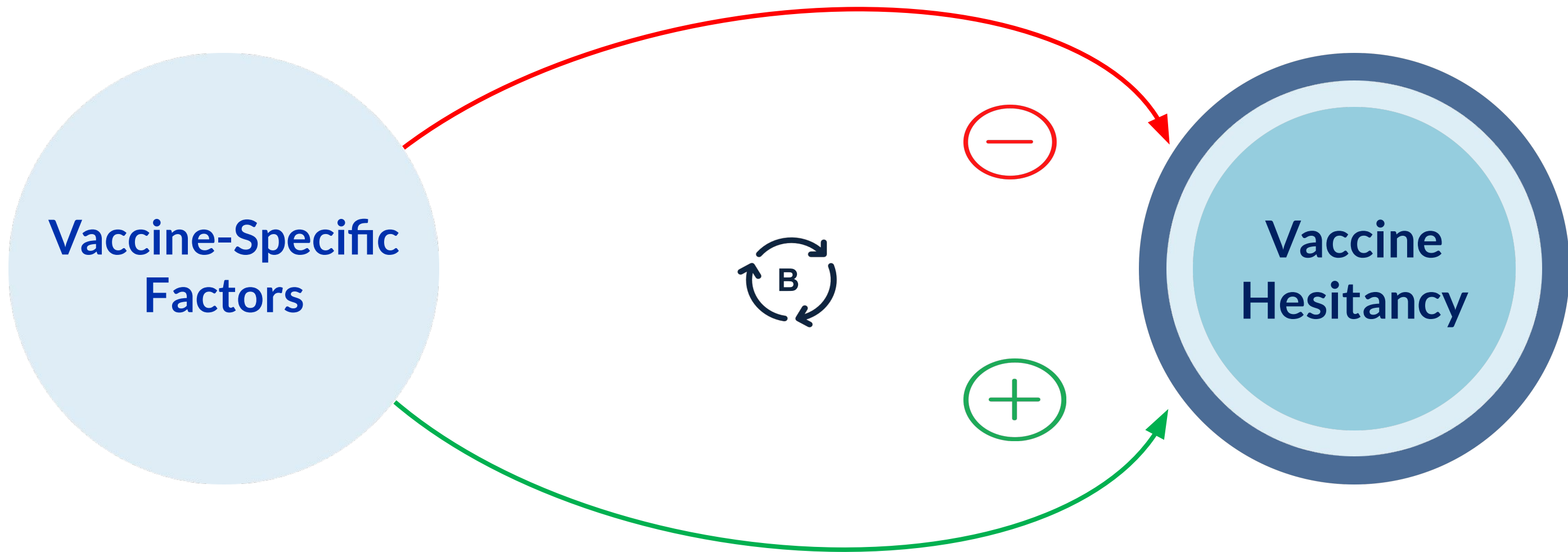
**External  
Influences**

# What are the Root Causes?



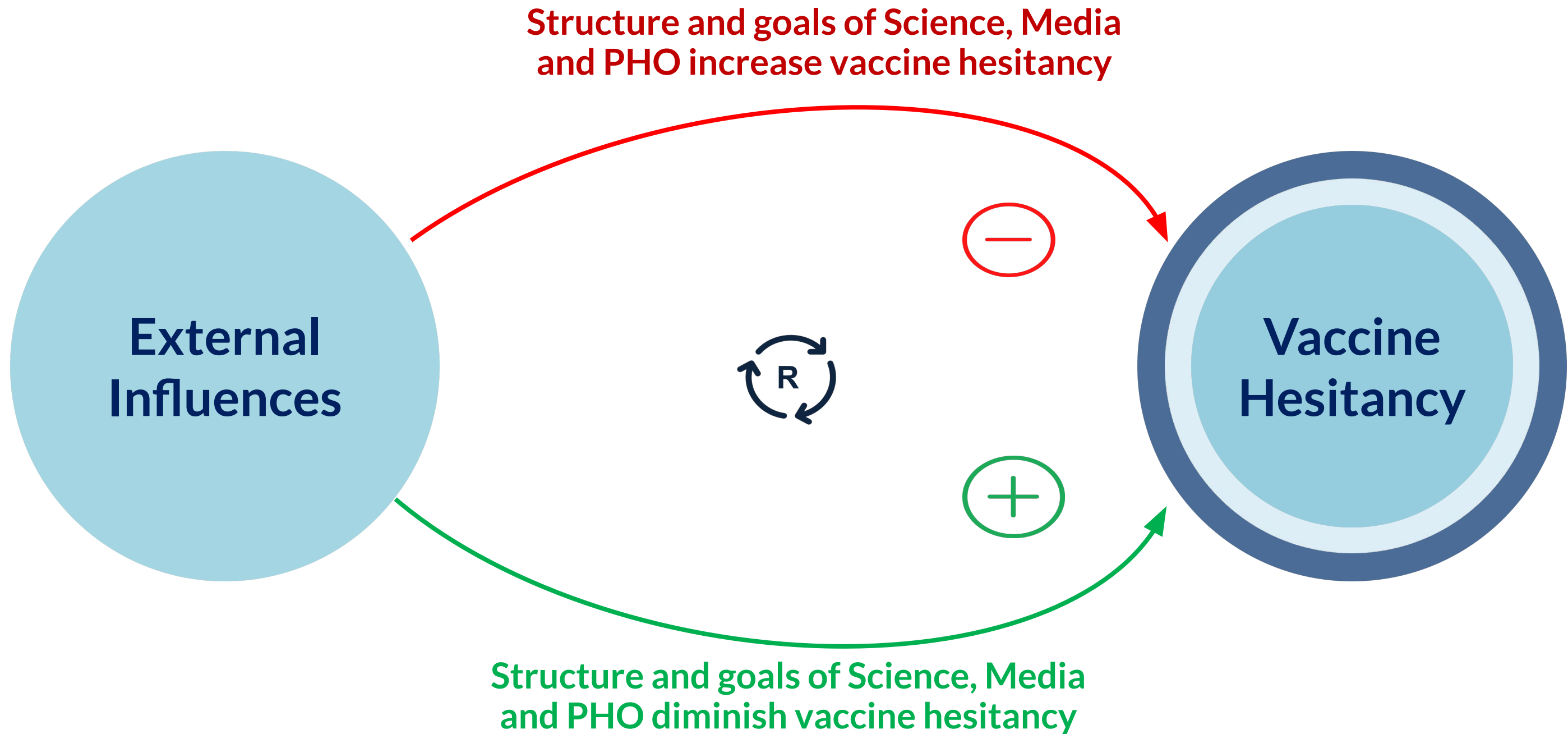
# What are the Root Causes?

Government, Media and Local Community negatively influence perception of Pediatric COVID-19 vaccine safety and efficacy



Government, Media and Local Community positively influence perception of Pediatric COVID-19 vaccine safety and efficacy

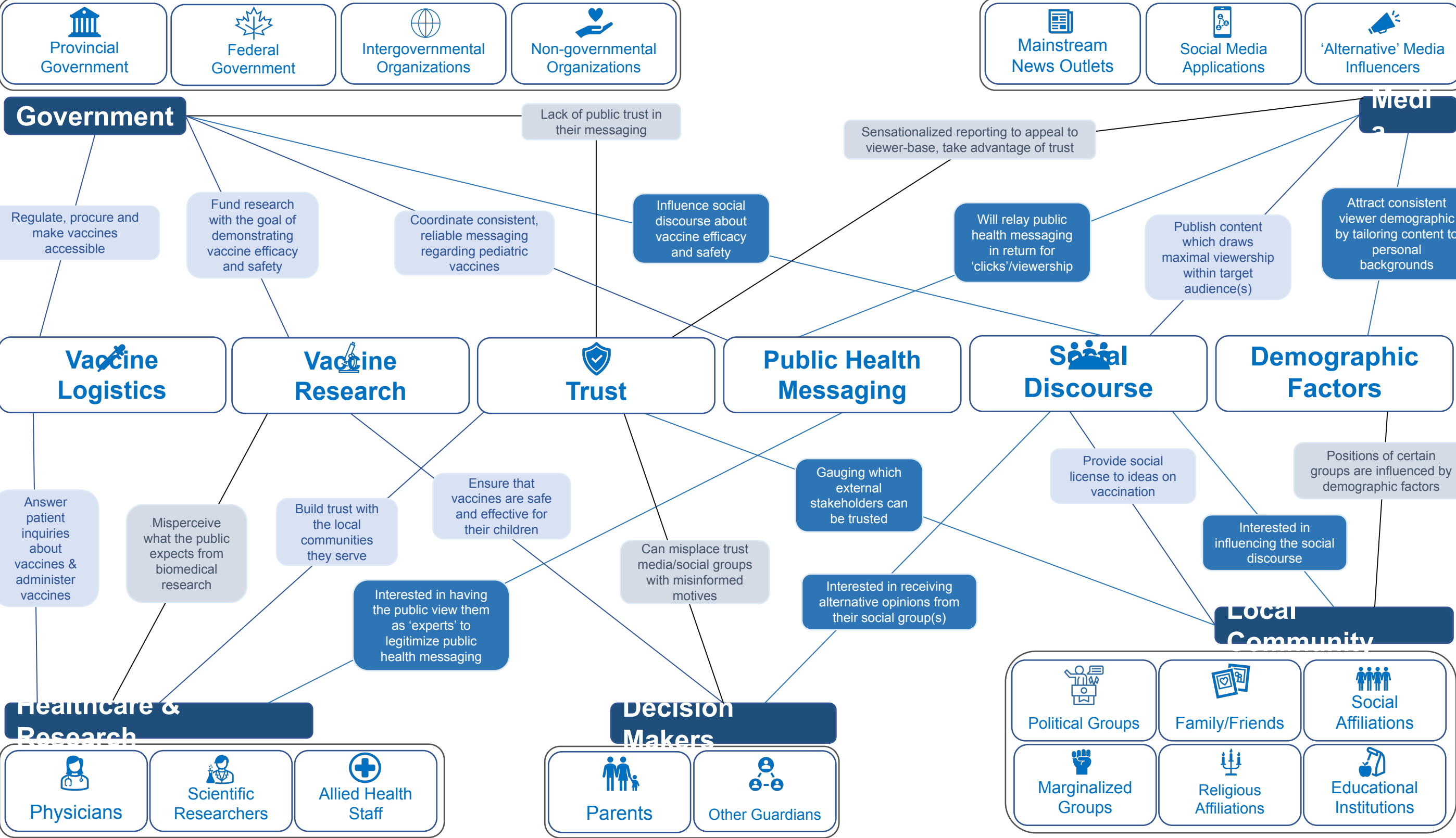
# What are the Root Causes?



# Stakeholder – Variable Interactions

How stakeholder groups are affecting, or are affected by, the key variables contributing to vaccine hesitancy

- Roles
- Goals/Interests
- Gaps/Limitations





# Why does Pediatric Vaccine Hesitancy Exist and Persist?

**Emerging variants of concern** (VOC, VOI) creating mutations of more transmissible variants, which allow for more breakthrough infections

Infection of clinically-vulnerable individuals who rely on **herd immunity** to be protected

**School and Business closures** due to strains on the healthcare system cause socioeconomic unease, promoting the **politicization** of the pandemic

Incidents of **discrimination** against **disadvantaged populations** persists in healthcare and research

## Events

As breakthrough infections increase, the public **loses confidence** in the **safety and efficacy** of the COVID-19 vaccine

The public **underappreciates** the **'herd immunity'** role of vaccination, primarily understands the benefits/risks of vaccination on an individual level

## Patterns of Behaviour

**Alternative Media Influencers** leverage discontent and 'big tech' algorithms to spread **misinformation** at a historic rate

Calls to action regarding **diversity and inclusion** are **inadequately implemented** in research and healthcare

Perceived **lack of government transparency** regarding relationships with pharmaceutical companies

Public Health Officials communicate vaccination as an **individual decision**, rather than a **collective obligation**

## Systemic Structures

**Profit-driven media** promotes misinformation and public division, fermenting widespread social division

**Healthcare and Research** institutions operate as a "**gated communities**", limiting public interaction and inquiry

**Hidden relationships** between government and vaccine companies belies governments' claims of vaccine safety and efficacy

Parents are enabled to make **individualistic choices**, conduct their **own research** into if vaccination is the right choice for their child

## Mental Models

When **experts** are not thought to be able to **manage the risks** around COVID, parents feel obligated to take greater agency in selecting sources of trustworthy information

Healthcare practitioners and researchers are meant to **educate a misinformed, stubborn public**

# Which Stakeholders have the Most Power to Facilitate Change?

The ability of a stakeholder to influence change in this system lies in the trust that parents put in them. Trust is needed to influence the 5C attitudes around vaccine choice



**1. Governments (Federal & Provincial)**



**2. Science as an Institution**

# Levels of Solutions

An overview of attempted solutions at **organizational**, **provincial**, **federal**, and **international** levels

**UBC immPACC:** A workshop facilitated by UBC's Faculty of Medicine, where local stakeholders work with public health experts to discuss and design customized solutions to address community-specific immunization barriers

**Vaccine Logistics:** BC allows children to receive their vaccination during their parent's appointment, easing logistical burdens. Vaccine passports encourage vaccinations for practical purpose.

**IMPACT:** IMPACT is a national active surveillance network for adverse vaccine events. Beyond the program's intrinsic value, it also demonstrates to parents that practitioners and policy makers care about adverse vaccine effects

### Ontario's Vaccine Education Certificate:

In 2017, Ontario introduced a mandatory vaccine education clinic for parents who sought an exemption for their children. It had a "0% conversion rate" as of 2019

### Compulsory Vaccines in Chinese Schools:

Some local Chinese governments have made COVID-19 vaccination mandatory for entire families that have children in school, including the students themselves.

**19toZero:** A Canada-wide coalition of academics, economists, and public health experts whose goal is to produce public messaging which increases trust and confidence in vaccines

**Indigenous Outreach:** BC has prioritized vaccine delivery and uptake amongst Indigenous populations, however, vaccination rates amongst Indigenous youth remain disproportionately low

**Role of the PHO:** BC has received academic and media acclaim for Dr. Bonnie Henry's role as a calm, consistent, expert face in COVID-19 communication

### Tri-agency Research Funding:

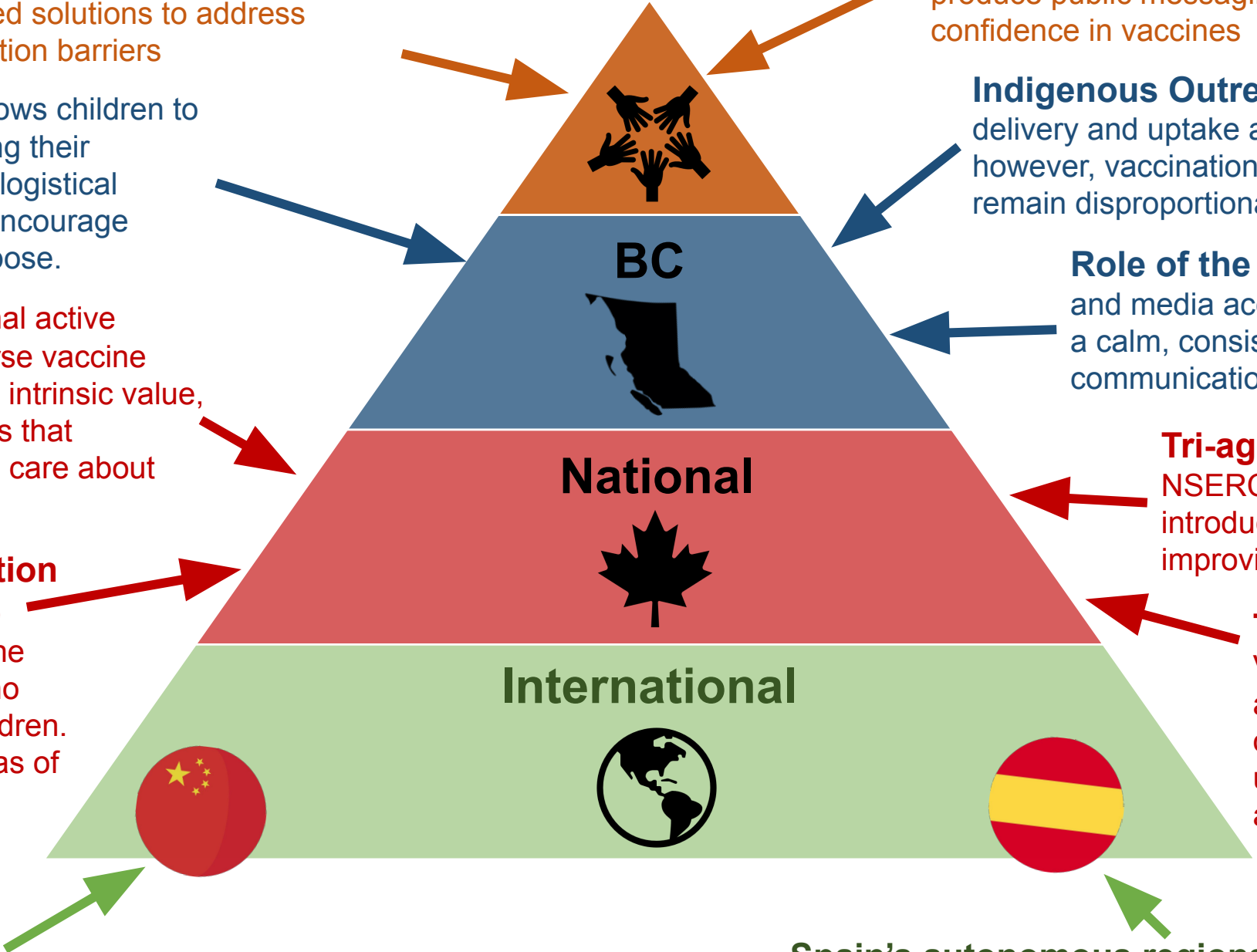
NSERC, CIHR and SSHRC have introduced grants to fund research on improving vaccine uptake

### Travel Vaccine Mandates:

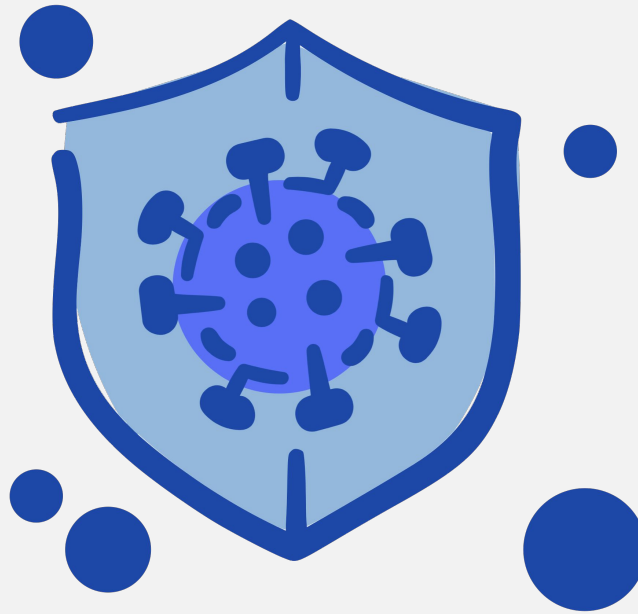
Vaccination is mandatory for all airline/rail commuters over 12 years old. Mandates can increase vaccine uptake, but may be viewed as an abuse of governmental power

### Spain's autonomous regions – Extremadura & Galicia:

Two rural, relatively impoverished Spanish provinces have bucked demographic predictors of pediatric vaccine uptake by operating vaccination campaigns within schools and threatening fines to holdouts



# UBC Vaccine Literacy Club (VLC)



The VLC is a student-led initiative aiming to increase vaccine awareness in-community, through disseminating age-appropriate and culturally-relevant information to the general public, classrooms, and underrepresented populations.

We collaborated with the VLC to produce primary research for this project.

# Role of Trust

*The epistemic trust of parents in stakeholders is required for stakeholders to influence attitudes towards vaccination.*

