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 Boston College
 Performance Task – Critical Thinking
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Domain Specifications

1. Scientific and Analytical Reasoning

a. Analyzing and Interpreting Data

- i. Investigate, gather, and identify data to be used as evidence and how these data are needed to support a claim

b. Public Health Guidelines Specific Domains

i. Health Protection – Diagnose and Investigate Health Problems

- i. Protect the environment and workplaces and enforce laws and regulations

ii. Health Improvement – Monitor the Health Status of the Population

- i. Inform, educate, and empower the community on current health issues

iii. Health Services – Develop Policies and Plans

- i. Evaluate health services as well as link people to needed health services

The cross-cutting concept and construct of **Scientific and Analytical Reasoning** within the domain of **Public Health**; the critical thinking task: **NGSS! Recommendation on COVID-19 vaccine**

2. Critical Thinking

a. Dealing with Conflict

- i. Two groups: those with mistrust of pharmaceutical companies with concerns regarding safety of the vaccine **vs.** those who believe in the efficacy of the vaccine and its safety record

b. Perspective Analysis from the Community

- i. Both groups have spoken and provided documents on the objectives they deem legitimate to pursue within their underlying ideologies. They have stated facts from experts and authorities they consider relevant. They have provided their positions regarding the next course of action.

c. Evaluating and Using Information as to Trustworthiness or Bias of Sources, Relevance, and Proneness to Judgmental Error

- i. Obtain data from scientific journals, new stories, Food and Drug Administration (FDA), and the Centers for Disease Control (CDC) as cited and put forth by both groups
- ii. Determine which information sources are more trustworthy

- iii. Support the claim with logical reasoning and relevant, accurate data along with evidence that demonstrate an understanding of the topic and issue using credible sources
- d. **Recognizing, Evaluating, Integrating, and Structuring Arguments and their Components (such as claims, support, beliefs, assumptions, facts) in Response**
 - i. Analyze and interpret materials appropriately
 - ii. Integrate the presented information and what has been learned to develop a coherent understanding of the topic and issue
 - iii. Compare and contrast the information learned from the readings
 - iv. Develop an argument and make a recommendation using evidence found within the documents provided

Storyline – The town of Salmon, Massachusetts is a popular tourist spot known for their great salmon dishes and deep-sea salmon fishing. Tourism is the main economy for this community. With an increasing number of COVID-19 cases as well as rising hospitalizations, the mayor informed the town of plans to allocate some of the town budget to open more vaccination sites and a public relations (PR) campaign to encourage people to get vaccinated. The mayor claims that when approximately 70% of the town is vaccinated, she will likely loosen the current restrictions. Relevant restrictions include restaurant limits, curfews, and fishing charter boat limits. She then opened up the floor for discussion.

The opposition group oppose spending on additional vaccination sites. They cite concerns of safety, the lack of liability from the vaccine producers, and vaccine manufacturing issues such as the Cutter Labs polio vaccine and the Baltimore lab COVID-19 vaccine incidents. They also cited statements and alternative facts from prominent politician Robert F. Kennedy Jr., who runs a non-profit on anti-vaccination efforts. After seeing some restaurants closing their doors for good, they have proposed using the budget on grants for the struggling businesses, support for the overwhelmed town hospital, and more preventive measures such as hand sanitizing stations, distribution of masks, etc.

The support group have pushed for more vaccination sites. They have insisted the vaccine works and have cited journal articles on the safety and efficacy of the vaccine and believe the benefits outweigh the risks. They have said the opposition group has a mixture of distrust of the government, ignorance about how vaccines work, and are spreading misinformation on the vaccine. They argue that restrictions will be lifted sooner with more access to vaccination sites in order to achieve 70% immunity as outlined by the mayor. Opposition and support to the plan was evenly split.

Challenge – As the town’s scientific liaison, the mayor has tasked you with reviewing the data and making a recommendation on the COVID-19 vaccine, opening more vaccination sites and the PR campaign or applying the budget towards business grants, the town’s hospital, and more COVID-19 preventative measures.

- By using the documents cited by the both groups, educate yourself with respect to the vaccine and the risks associated with the COVID-19 vaccine and make a recommendation to the mayor on the plan she should choose

- Your recommendation should use evidence found within the documents from both the opposition and support groups that support your claim

Seven (7) Documents Provided: (S – Support Document; O – Opposition Document)

1. **Pfizer (S)** – journal article containing relevant information to the safety and efficacy of the vaccine
2. **Cutter Lab (O)** – journal article describing the polio vaccine production failure causing some children to get polio rather than being inoculated
3. **RFK Jr. (O)** – Non-profit website article with alternative facts on COVID-19 vaccines
4. **Baltimore Lab (O)** – New York Times report on the error in manufacturing that ruined 15 million doses of the COVID-19 vaccine
5. **FDA Safety (S)** – Key facts on safety monitoring of the COVID-19 vaccines from the FDA
6. **CDC Key Things (S)** – Key facts on COVID-19 vaccines from the CDC
7. **Vaccine Liability (O)** – CNBC report explaining how vaccine producers and the FDA are not liable in court for severe vaccine side effects

	GENERIC CT		DISCIPLINE-SPECIFIC CT	
	DOCUMENT	OTHER	DOCUMENT	OTHER
RELEVANCE	Vaccine Liability		Pfizer FDA Safety CDC Handout Cutter Lab Baltimore Lab	
TRUST-WORTHINESS	Vaccine Liability		Pfizer CDC Key Things FDA Safety Cutter Lab Baltimore Lab	
SUSCEPTIBILITY TO JUDGMENTAL BIAS		RFK Jr	Pfizer CDC Key Things FDA Safety	

Document Breakdown – Support (More Vaccine Sites); Opposition (Business Grants)

Identifier	Pfizer – Support Document
Document Title	Safety and Efficacy of the BNT162b2 mRNA COVID-19 Vaccine
Document Type	New England Journal of Medicine Article
Summary	Contains relevant information to the safety and efficacy of the vaccine
Relevance	Contains relevant information to the safety and efficacy of the vaccine
Trustworthiness	Peer-Reviewed, Scientifically Accepted, Journal Article – Very Trustworthy
Judgmental Bias	Those who have distrust of the pharmaceutical industry and deem the information not trustworthy, considering the pharmaceutical company sponsored the study and the writing of the paper
Support Evidence	<ul style="list-style-type: none"> • 21,720 people received a dose in the clinical trial, which was placebo controlled, thus the vaccine has been properly tested, and results can be trusted • Vaccine efficacy was 95% effective in preventing COVID-19 • Similar efficacy (generally 90 to 100%) was observed across subgroups defined by age, sex, race, ethnicity, baseline body-mass index, and the presence of coexisting conditions • Among participants, there were 10 people who developed a severe COVID-19 case, 9 occurred in placebo recipients and 1 recipient who received the vaccine • Side effects were short-term, mild-to-moderate pain at the injection site, fatigue, and headache. The incidence of serious adverse events was low and was similar in the vaccine and placebo groups.
Opposition Evidence	<ul style="list-style-type: none"> • Safety was only shown for median of 2 months, long term safety was not shown, how can we know the vaccine will not cause any long-term side effects

Identifier	Cutter Lab – Opposition Document
Document Title	The Cutter Incident: How America’s First Polio Vaccine Led to a Growing Vaccine Crisis
Document Type	Journal of the Royal Society of Medicine, Article
Summary	Article describing the polio vaccine production failure causing some children to get polio rather than being inoculated
Relevance	Speaks to the safety of vaccine manufacturing
Trustworthiness	Peer-Reviewed, Scientifically Accepted, Journal Article – Very Trustworthy
Judgmental Bias	No judgmental bias
Support Evidence	<ul style="list-style-type: none"> • The incident within Cutter labs led to the effective federal regulation of vaccines, which today enjoy a record of safety ‘unmatched by any other medical product’
Opposition Evidence	<ul style="list-style-type: none"> • 200,000 children in five Western and mid-Western USA states received a polio vaccine in which the process of inactivating the live virus proved to be defective • The defective vaccine caused 40,000 cases of polio, leaving 200 children with varying degrees of paralysis and killing 10 • The National Vaccine Injury Compensation Program introduced in 1986 to protect vaccine manufacturers from litigation

Identifier	RFK Jr. – Opposition Document
Document Title	68-Year-Old Dies After Anaphylactic Reaction to COVID Vaccine as CDC Continues to Ignore Inquiry into Increasing Number of Deaths
Document Type	Website Article
Summary	Article describing false facts about the COVID-19 vaccines and deaths caused by the vaccines, false statements from the CDC
Relevance	This document should be considered non-relevant as it comes from a non-profit organization who are very pro-anti vaccination
Trustworthiness	Non-Profit Organization – Not Trustworthy
Judgmental Bias	Those who are anti-vaccination will tend to be intrigued by this article
Support Evidence	<ul style="list-style-type: none"> All the evidence within this article should be considered false, as the statements are made by anti-vaccination group
Opposition Evidence	<ul style="list-style-type: none"> All the evidence within this article should be considered false, as the statements are made by anti-vaccination group

Identifier	Baltimore Lab – Opposition Document
Document Title	15 Million Johnson & Johnson Doses Reportedly Ruined Due Human Error at Baltimore Plant
Document Type	Website Article – New York Times
Summary	NYT report on the error in manufacturing that ruined 15 million doses of the COVID-19 vaccine
Relevance	Speaks to the safety of vaccine manufacturing
Trustworthiness	New York Times Report, Respected Media Organization – Trustworthy
Judgmental Bias	No judgmental bias
Support Evidence	<ul style="list-style-type: none"> The 15 million doses that were affected were not shipped, and did not make it into the supply chain Company does have quality control processes in place to capture such manufacturing errors and the affected doses never advanced to the filling and finishing stages of the manufacturing process The lab itself was not yet approved by the FDA for the manufacturing of the vaccine but they are now providing additional oversight at the lab to get FDA authorization
Opposition Evidence	<ul style="list-style-type: none"> Human error on the production of COVID-19 vaccine ruined 15 million doses Vaccine producer itself confirmed it found "one batch of drug substance that did not meet quality standards" during its quality control process Although not shipped, what if vaccine was processed through, potentially 15 million people could have been affected, with an inactive vaccine providing a false sense of immunity and any potential side effects that may have caused

Identifier	FDA Safety – Support Document
Document Title	Learn More About COVID-19 Vaccines and Safety from the FDA
Document Type	Website Article
Summary	Key facts on safety monitoring of the COVID-19 vaccines from the FDA
Relevance	Contains information on COVID-19 vaccine safety
Trustworthiness	FDA document, official government information – Trustworthy
Judgmental Bias	Those who have mistrust of the government and government officials
Support Evidence	<ul style="list-style-type: none"> • FDA employees who are career scientists and doctors decided to authorize COVID-19 vaccines. These are people who have expertise in the field of science, medicine, and medicinal products. • FDA and CDC have several systems in place to continually monitor COVID-19 vaccine safety. These systems detect and investigate potential safety problems. • The most common side effects from over 211 million people who have received the vaccine are the same as reported from the clinical trial, confirming the safety profile of the vaccine
Opposition Evidence	<ul style="list-style-type: none"> • Although the FDA and CDC have systems in place to monitor safety, government systems are not fail safe. (Then an example of government systems failure is given: Flint, MI water crisis; New Orleans, LA levees system, etc.)

Identifier	CDC Key Things – Support Document
Document Title	Key Things to Know About COVID-19 Vaccines
Document Type	Website Article
Summary	Key facts on COVID-19 vaccines from the CDC
Relevance	Contains information on the safety and other pertinent information on the vaccines
Trustworthiness	CDC document, official government information – Trustworthy
Judgmental Bias	Those who have mistrust of the government and government officials
Support Evidence	<ul style="list-style-type: none"> • Studies show that COVID-19 vaccines are effective at keeping you from getting COVID-19 • Getting a COVID-19 vaccine will also help keep you from getting seriously ill even if you do get COVID-19, keeping hospitalization rates down • COVID-19 vaccination is an important tool to help us get back to normal • Early data show the vaccines do help keep people with no symptoms from spreading COVID-19 • Millions of people in the USA have received COVID-19 vaccines, and these vaccines have undergone the most intensive safety monitoring in U.S. history which includes using both established and new safety monitoring systems to make sure that COVID-19 vaccines are safe • These vaccines cannot give you COVID-19
Opposition Evidence	<ul style="list-style-type: none"> • Scientists are still learning how well vaccines prevent you from spreading COVID-19 to others • Scientists are still learning how long COVID-19 vaccines protect people • Even fully vaccinated people should keep taking precautions in public places, like wearing a mask, staying 6 feet apart from others, avoiding crowds, poorly ventilated spaces, and washing your hands often

Identifier	Vaccine Liability – Opposition Document
Document Title	You Can't Sue Pfizer or Moderna if You Have Severe COVID Vaccine Side Effects. The Government Likely Won't Compensate You for Damages Either
Document Type	Website Article – CNBC News Report
Summary	A report explaining how vaccine producers and the FDA are not liable in court for severe vaccine side effects
Relevance	Contains information about liability cases for vaccine producers
Trustworthiness	CNBC Report, Respected Media Organization – Trustworthy
Judgmental Bias	No judgmental bias
Support Evidence	<ul style="list-style-type: none"> • Congress created a fund specifically to help cover lost wages and out-of-pocket medical expenses for people who have been irreparably harmed by a “covered countermeasure,” such as a vaccine
Opposition Evidence	<ul style="list-style-type: none"> • Under the PREP Act, companies like Pfizer and Moderna have total immunity from liability if something unintentionally goes wrong with their vaccines • You also cannot sue the FDA for authorizing a vaccine for emergency use • The program put in place to fund patients who are harmed from a vaccine is difficult to use and rarely pays. It has compensated less than 6% of the claims filed in the last decade. • The quickest vaccine ever developed was for mumps which took four years. Pfizer's COVID-19 vaccine was developed and cleared for emergency use in just eight months.