



*On a Rural Health Mission*

Presenter: Casey McManus  
New York State Public Health Corps Graduate Fellow  
Pivotal Public Health Partnership

Moderator & Liaison: Bridget Hallock Kasaoka  
Fellowship Placement Coordinator, Western Region  
New York State Department of Health

**The Future:**

**Building the  
Conversation on  
Artificial Intelligence  
in Public Health  
Departments**

December 13th, 2023

# Learning Objectives

01

**DEVELOP**  
a foundational  
understanding of  
Artificial Intelligence  
and applications in  
Public Health.

02

**IDENTIFY**  
Public Health  
Department priority  
areas and potential  
partnerships related  
to Artificial Intelligence.

03

**APPLY**  
Public Health  
Department  
strategies to initiate  
inquiry into Artificial  
Intelligence (AI).

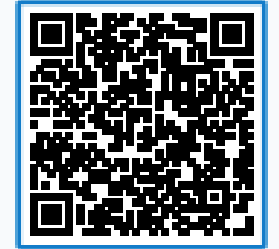


*First!*

Let's look into our  
current  
understanding of  
Artificial Intelligence.



When poll is active respond at [PollEv.com/caseymcmanus855](https://PollEv.com/caseymcmanus855)



**What is your current level of knowledge about Artificial Intelligence (AI) & its applications?**

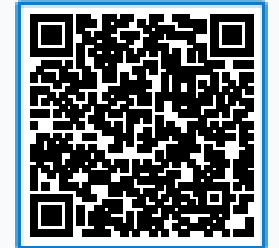
None

SEE MORE





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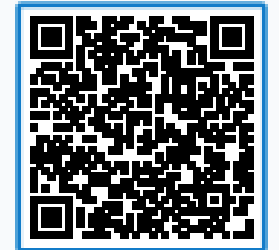
**What first comes to your mind when you hear "Artificial Intelligence (AI)"?**

SEE MORE





Join by Web [PollEv.com/caseymcmanus855](https://PollEv.com/caseymcmanus855)

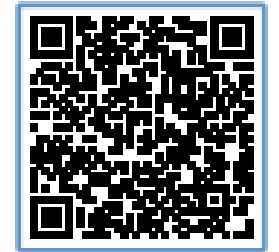


What is an opportunity you see to integrating AI into public health work?

creating socs



When poll is active respond at [PollEv.com/caseymcmanus855](https://PollEv.com/caseymcmanus855)



**What is a barrier you see to integrating AI into public health work?**

Nobody has responded yet.

Hang tight! Responses are coming in.

# Inquiry & Adoption of New Technologies



*The internet was once new too!*



*The World Wide Web launched into the public realm on*  
**April 30th, 1993...just over 30 years ago.**

**NOW!**

## The Internet Has Significant Impacts on Public Health



A report in the **Substance Abuse and Mental Health Services Administration** described how, "internet access is increasingly recognized as a "super determinant" of health." (Turcios, 2023).

In the, **2022-2024 Comprehensive Regional Community Health Assessment** (Chemung, Livingston, Monroe, Ontario, Schuyler, Seneca, Steuben, Wayne and Yates Counties), broadband access to communities provides access to,



**Connection**



**Remote Education**



**Telemedicine**



**Learning & Playing**





# Federal Communications Commission



## Connect2Health FCC Task Force (C2H Task Force)

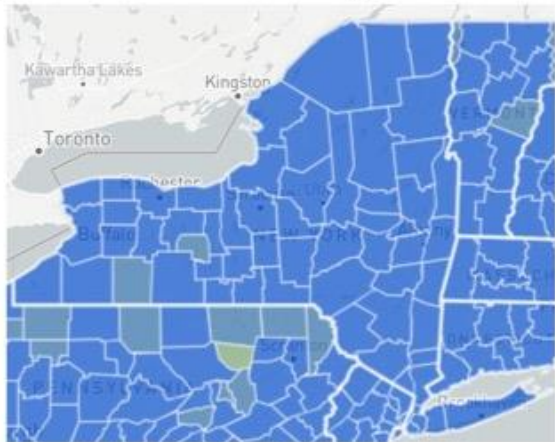
\* created to advance broadband & healthcare technologies.



## Early Data Analytics and Findings (2015-2017)

\*

Key findings based on fixed broadband data and data from County Health Rankings & Roadmaps.



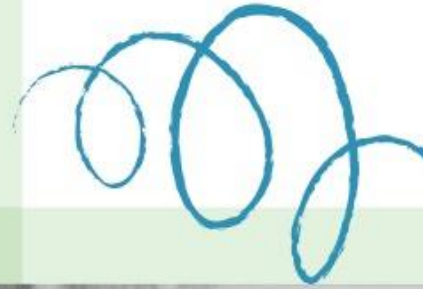
Federal Communications Commission (n.d.)



## Regions with Limited, Lower, or No Internet Access also had:

- Higher rates of chronic disease
- Worse access to primary care physicians
- Higher rates of preventable hospitalizations





Artificial Intelligence  
is new to us all!



So,

what about  
Artificial  
Intelligence?

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What Is

# Artificial Intelligence?

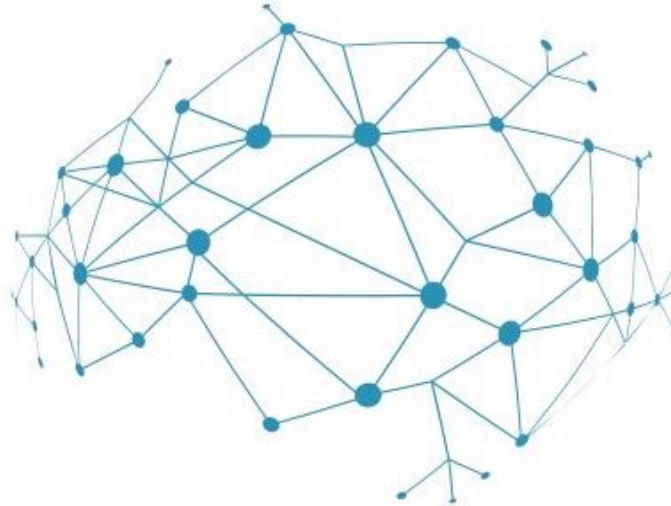
“The term ‘artificial intelligence’ (AI) means a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations or decisions influencing real or virtual environments.”

## **-NATIONAL ARTIFICIAL INTELLIGENCE ACT OF 2020**

- Data is the foundation of AI.
- AI mimics the human brain through operating functions including decision making and problem-solving.
- AI encompasses both machine learning and deep learning.



*This?*



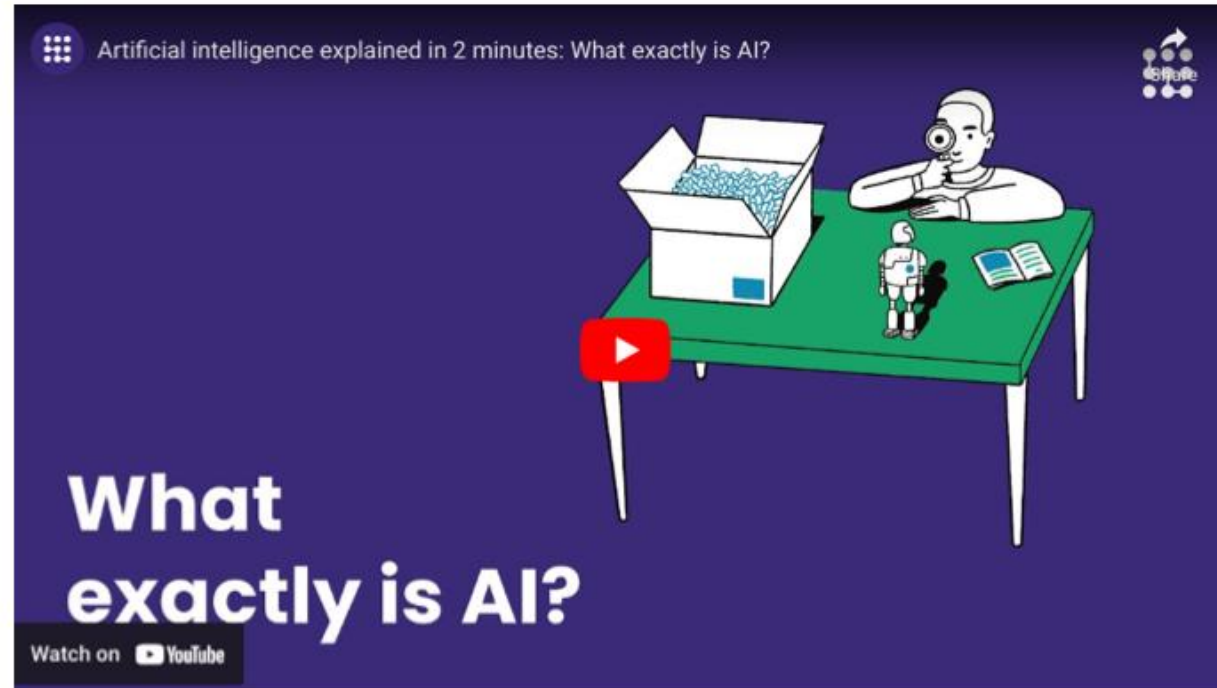
*Or This?*

What Is

# Artificial Intelligence?

**"Artificial intelligence explained in 2 minutes: What exactly is AI?"**

-KI - Campus



<https://www.youtube.com/watch?v=UdE-W30oOXo>



# Current Opportunities for AI within Public Health

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**DISEASE  
SURVEILLANCE  
AND OUTBREAK  
PREDICTION**

**PUBLIC HEALTH  
MESSAGING/  
GENERATIVE  
LANGUAGE MODELS**

**VACCINE  
DISTRIBUTION &  
PRIORITIZATION**

**PUBLIC HEALTH  
RISK ASSESSMENT**

**HEALTHCARE  
RESOURCE  
MANAGEMENT**



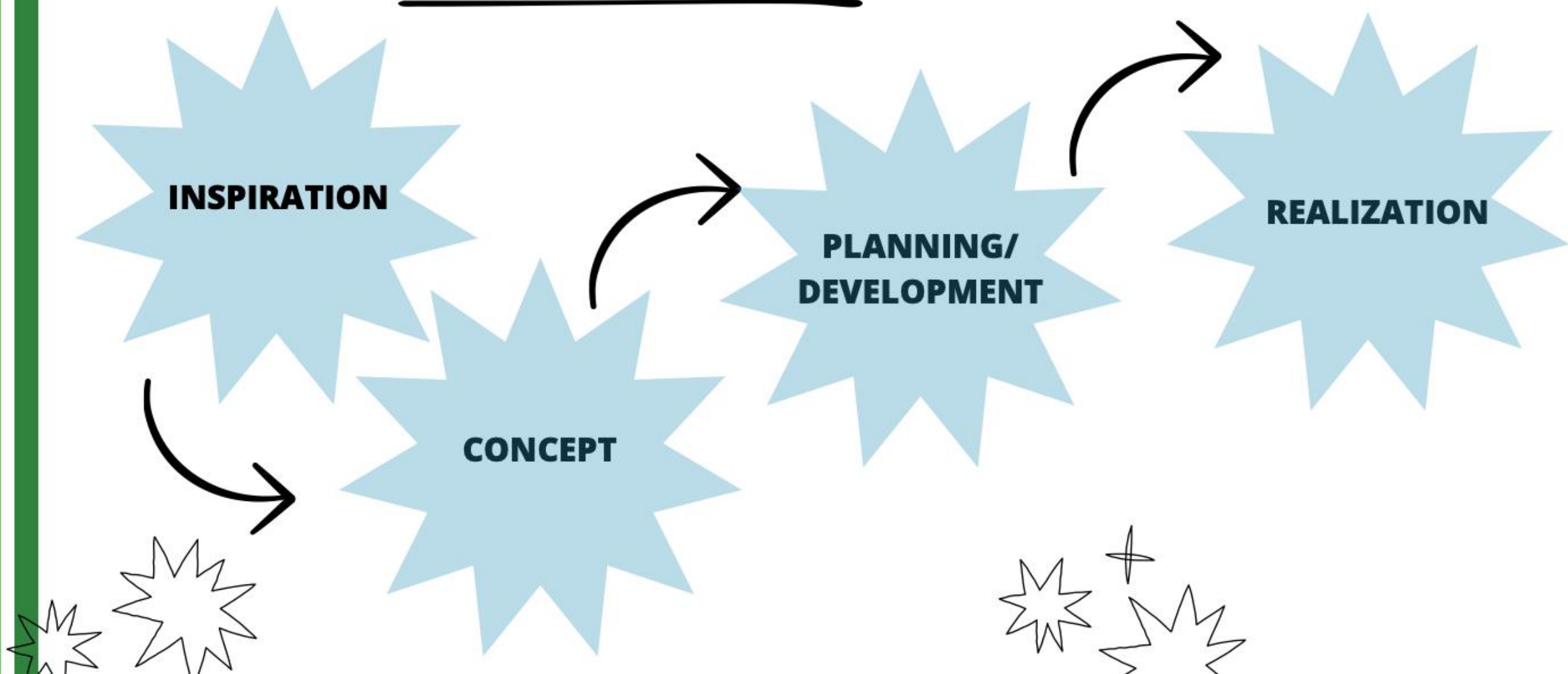


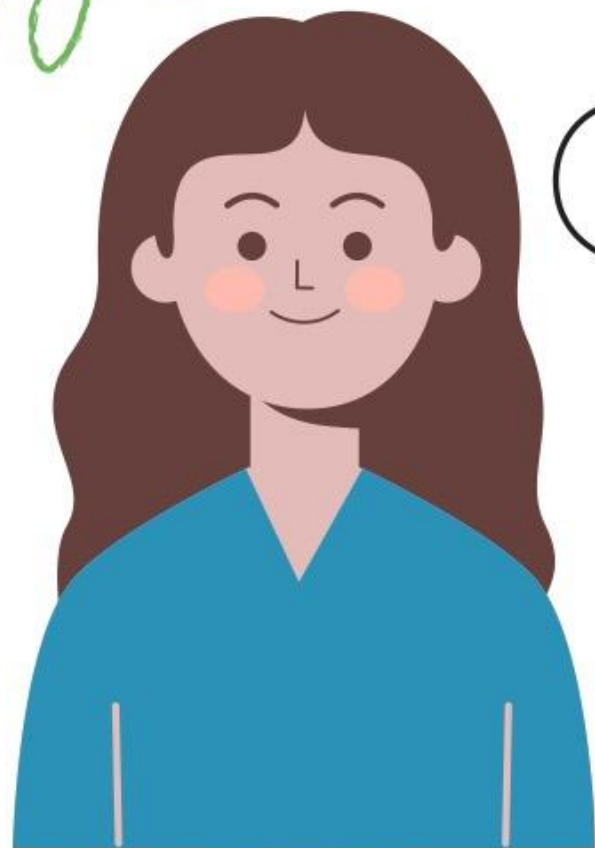
01

# INSPIRATION

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# It all starts with an **IDEA!**





Exploration into new areas can arise in unexpected ways. A conversation about the use of ChatGPT in schools by students lead to the consideration of current and future impacts of AI within Public Health.





**Michele Foster, MPA, Executive Director**

*How we fulfill  
the mission*

- 01 Enhance Public Health Practices**
- 02 Convene Partnerships**

Pivital Public Health Partnership is a non-profit affiliation of eight county Public Health Departments in the Finger Lakes Region of New York including Chemung, Livingston, Ontario, Schuyler, Seneca, Steuben, Wayne, and Yates Counties.

**Mission: To be a leader in improving health outcomes for our rural communities.**



**Impacts of COVID-19 highlighted the opportunity to pursue innovative approaches to Public Health challenges, including:**



**Workforce  
Capacity**



**Vaccine  
Distribution**



**Access to  
Food  
Resources**



**Access to  
Healthcare  
Services**



**Public Health  
Disparities**

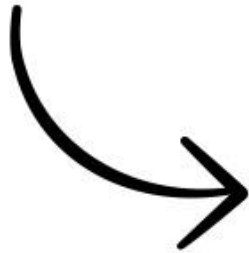
02

# CONCEPT

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# Application of Pivotal's mission to the inquiry of AI in Public Health.

**Enhance Public Health Practices**



Public Health Department partners are accredited with the **Public Health Accreditation Board (PHAB)** and achieve accreditation or reaccreditation by measuring public health department performance which meets national standards.

One of the **PHAB** measures that Public Health Departments must meet is "**Fostering Innovation.**"

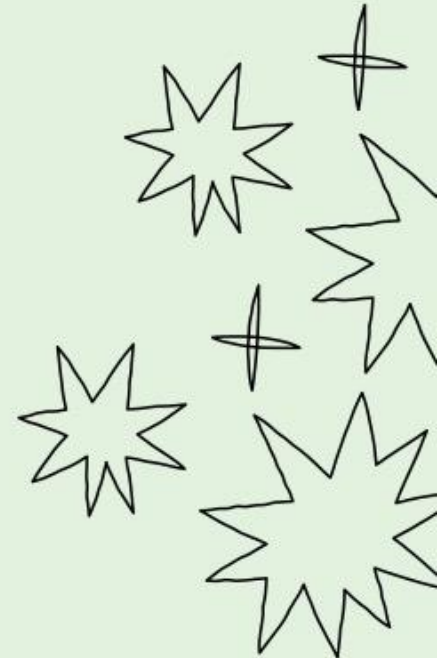
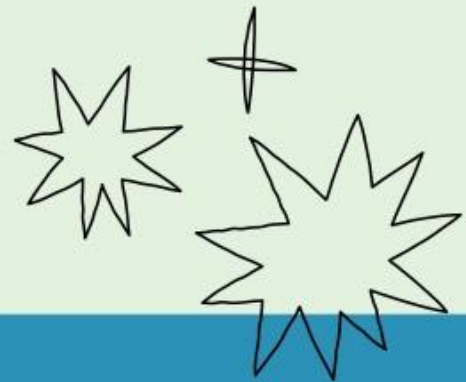
The purpose of this measure: "assess the health department's efforts to promote and support innovations in public health practices. Public health addresses complex, multisectoral problems that are changing as rapidly as our social, cultural, and technological environment is changing. The need for innovation in public health practice is urgent, given the increasingly rapid pace of change in the environment that affects the public's health," (Standards & Measures for Reaccreditation Version 2022 (phaboard.org), p. 197).





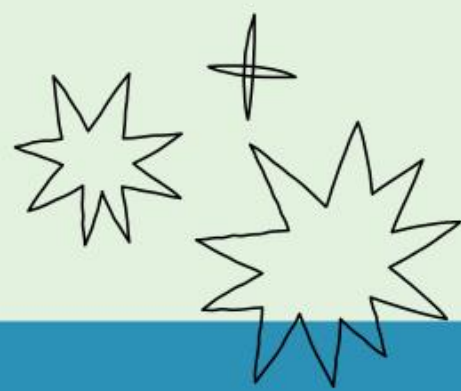
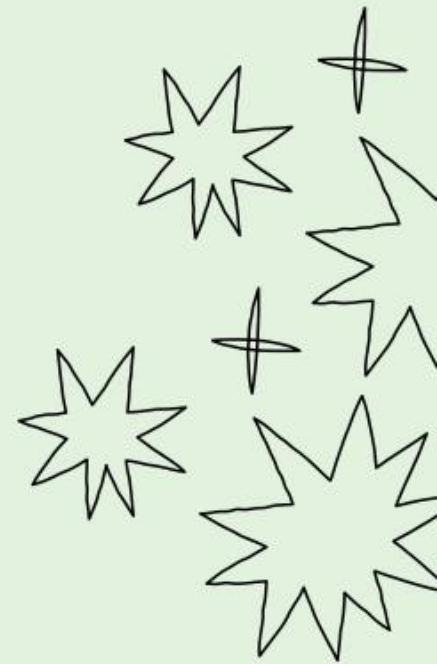


**Kim Arnold, RN, BSN, Regional Quality Improvement Coordinator**





# PHAB ACCREDITED LHDS IN NYS (AS OF NOV 7, 2023)





# AI APPLICATION TO PHAB STANDARDS & MEASURES: **FOSTERING INNOVATION**



*Public Health  
Department* **Effort**

*Promotion  
& Support* **Of Innovation**

**TO MEET**

**Complex  
Problems**

**Social, Cultural,  
Technological Rapid  
Change**

**Urgent  
Need**

**HOW** →

*Build Conversations & Approaches to Exploring AI  
within Public Health Departments*

03

# PLANNING & DEVELOPMENT

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*So,*

**What can we do as  
NYSPHC Fellows and  
Public Health  
professionals to explore,  
understand, and apply AI  
within Public Health  
Department work?**



1.

ENGAGE WITH  
PUBLIC  
HEALTH  
DEPARTMENT  
COLLEAGUES



# Collaborate with Public Health Department Directors Through the Distribution of a Survey



**LEARN OF  
CURRENT AI  
UNDERSTANDING  
& USE**

**GAUGE INTEREST  
& OPPORTUNITIES**

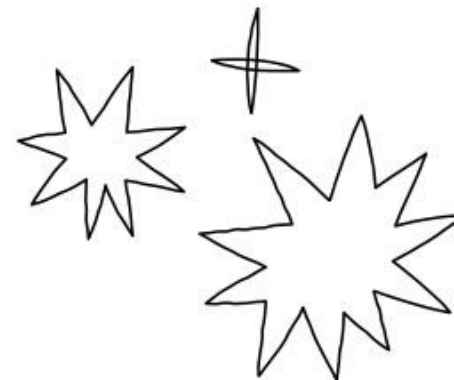
**UNDERSTAND  
OBSTACLES &  
BARRIERS**





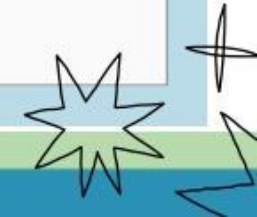


# **Survey Results from Public Health Director Respondents**





# Questions Presented in the “Public Health Director Survey on Artificial Intelligence (AI)”

1. What is your current understanding on Artificial Intelligence (AI) in the context of public health?
  2. What is your present level of interest in integrating AI into Public Health Department work?
  3. Are you utilizing AI within Public Health initiatives or projects?
  4. Which forms of AI have you or are you utilizing? (Please select all that apply).
  5. Which of the following opportunities do you think AI can help address in Public Health?
  6. Which AI related privacy concerns would you most like to learn more about?
  7. What is the primary barrier or concern you foresee in implementing AI into public health work?
  8. What would be the role of IT staff in the integration of AI into Public Health?
  9. Which aspect of learning more about AI and its potential for supporting rural communities in public health are you most excited about?
  10. Are you interested in AI trainings & workshops for Public Health Department staff?
- 





100%



**OF THE PUBLIC HEALTH DIRECTORS WHO PARTICIPATED IN THE SURVEY  
ALL OF THEM RESPONDED THAT THEY HAVE A BASIC LEVEL OF UNDERSTANDING  
ABOUT AI IN PUBLIC HEALTH.**

50%

(NO)

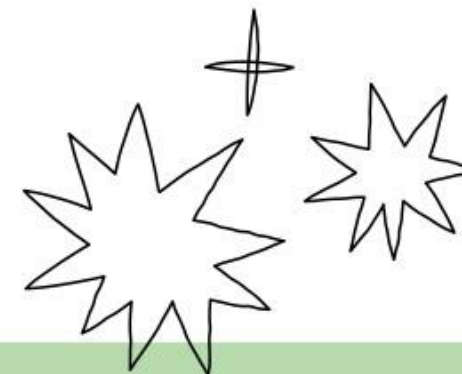
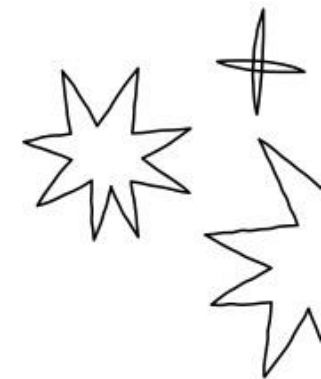
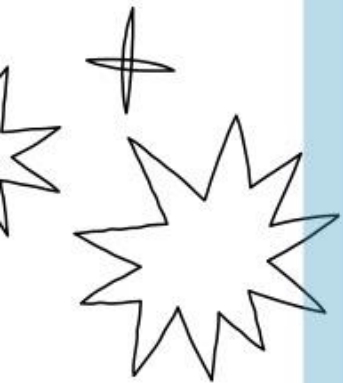
33%

(EXPERIMENTED)

16%

(UNSURE OF USE)

**OF THE PUBLIC HEALTH DIRECTOR SURVEY PARTICIPANTS, HALF SAID THEY ARE NOT USING AI IN THE PUBLIC HEALTH DEPARTMENTS, FOLLOWED BY SOME WHO HAVE EXPERIMENTED WITH IT, AND OTHERS WERE UNSURE.**

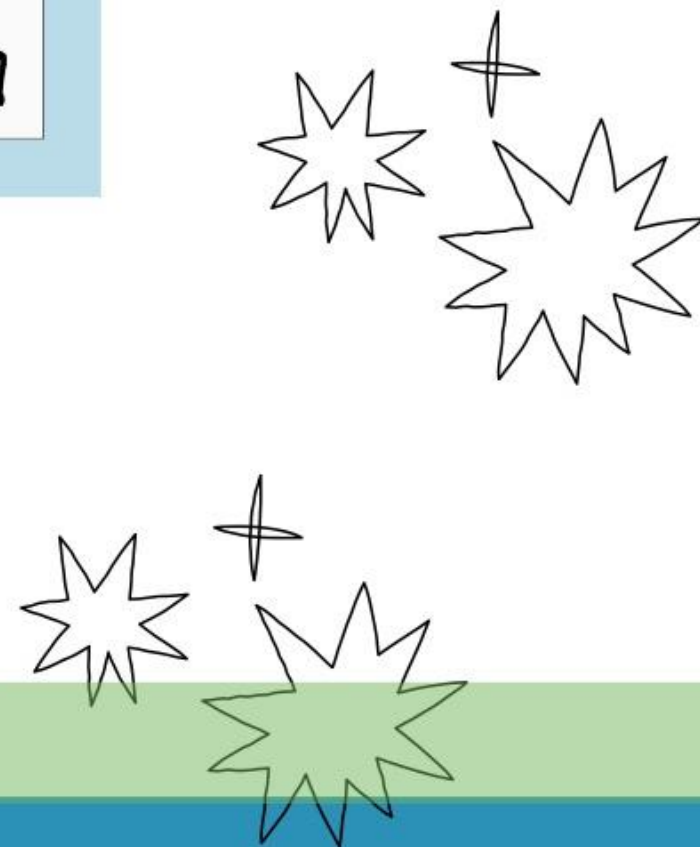


## AREAS WHERE PUBLIC HEALTH DIRECTORS SAW OPPORTUNITIES TO USE AI TO ADDRESS PUBLIC HEALTH NEEDS INCLUDED

Mitigating  
staff shortages

Enhancing  
content creation

Improving  
Data Analysis



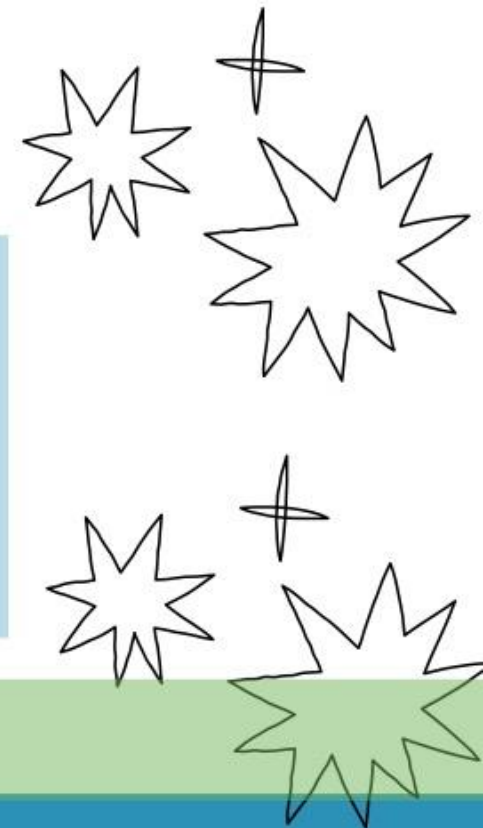
## AREAS WHERE PUBLIC HEALTH DIRECTORS SAW BARRIERS TO USING AI TO ADDRESS PUBLIC HEALTH NEEDS INCLUDED

Data Privacy &  
Security

Lack of Financial  
Resources

Staff Resistance  
to Change

Ethical  
Considerations

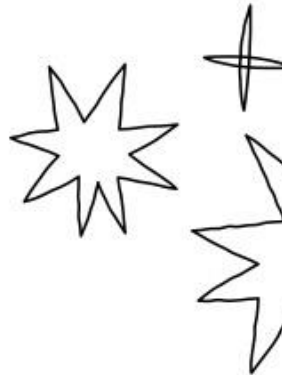
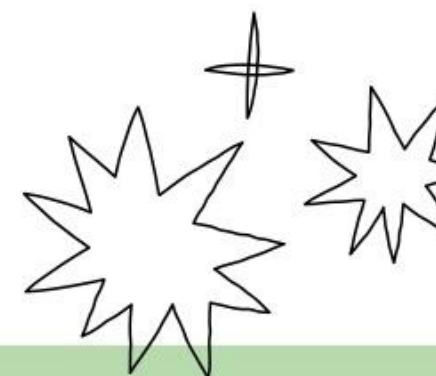




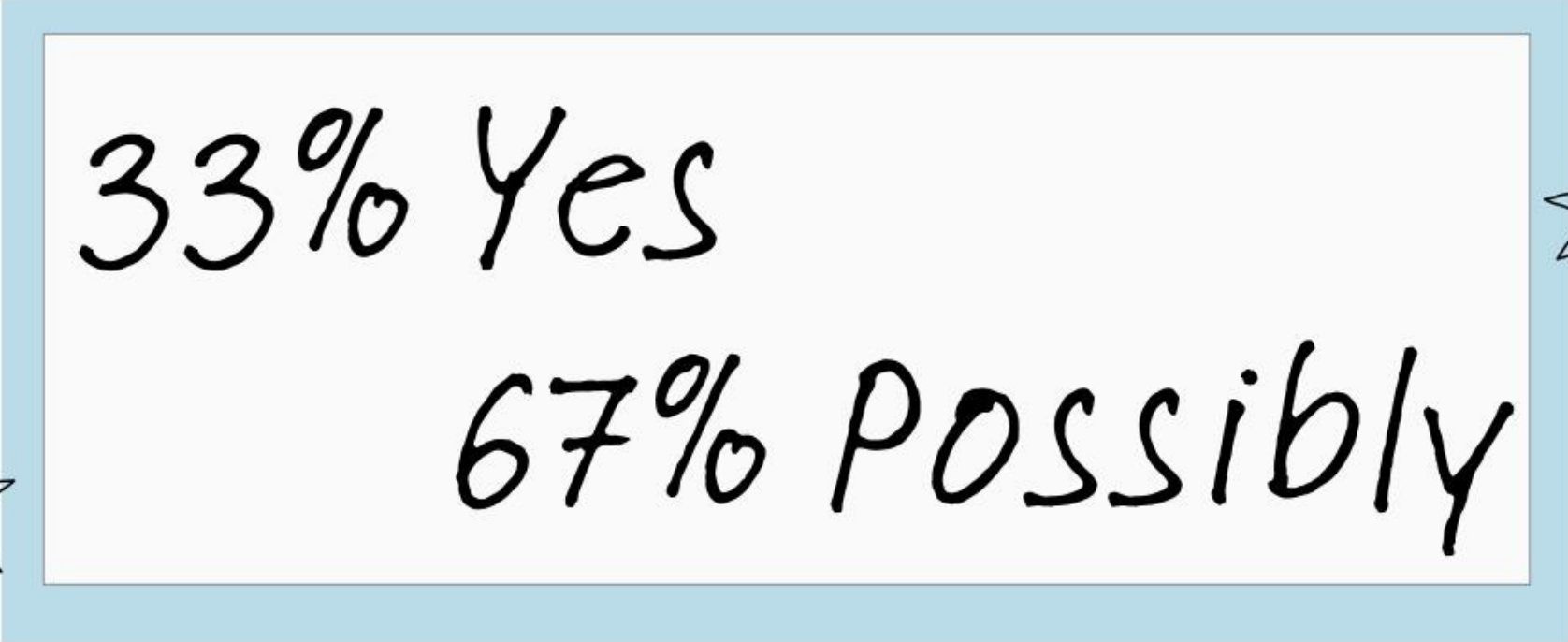
50%  
MODERATE INTEREST

50%  
LIMITED INTEREST

**PUBLIC HEALTH DIRECTORS WHO PARTICIPATED IN THE SURVEY HAD MODERATE AND LIMITED INTEREST IN INTEGRATING AI INTO PUBLIC HEALTH DEPARTMENT WORK. NO PARTICIPANTS WERE VERY INTERESTED OR HAD NO INTEREST.**







33% Yes

67% Possibly



**OF THE PUBLIC HEALTH DIRECTORS WHO PARTICIPATED IN THE SURVEY  
THERE WAS POSSIBLE AND DEFINITE INTEREST IN AI TRAININGS & WORKSHOPS.  
THERE WERE NO PUBLIC HEALTH DIRECTORS WHO WERE NOT INTERESTED IN LEARNING  
MORE ABOUT AI.**



2.

LEARN FROM  
ACADEMIA,  
GOVERNMENT,  
AND  
PUBLIC/PRIVATE  
SECTOR  
IN PUBLIC  
HEALTH PRIORITY  
AREAS



## A. ACADEMIA

Harvard John A. Paulson School of Engineering and Applied Sciences

**Teamcore** - collaborative group with the goal to advance AI research to improve social systems related to public safety, conservation, and public health.





## A. ACADEMIA

**Teamcore** Research Area:  
AI for Global Health and Public Health

**Current Research Projects:**



**Maternal Child Health  
Outcomes**



**Climate-Smart Health**



**HIV Prevention With  
Homeless Youth**

# AI APPLICATION IN PUBLIC HEALTH: CASE STUDY: MATERNAL AND CHILD HEALTH OUTCOMES / ARMMAN PARTNERSHIP



<https://www.youtube.com/watch?v=tj7e6rSZic0>

## B. GOVERNMENT

The Center for Disease Control (CDC) is exploring A.I. as a part of the “Data Modernization Initiative.”



# ACCELERATE DATA INTO ACTION.





## B. GOVERNMENT

### Blueprint for an AI Bill of Rights

#### Framework:

- Safe & Effective Systems
- Algorithmic Discrimination Protection
- Data Privacy
- Notice and Explanation
- Human Alternatives, Considerations, and Fallbacks

### BLUEPRINT FOR AN AI BILL OF RIGHTS

MAKING AUTOMATED  
SYSTEMS WORK FOR  
THE AMERICAN PEOPLE



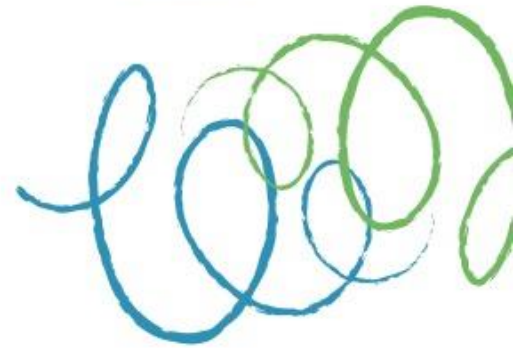
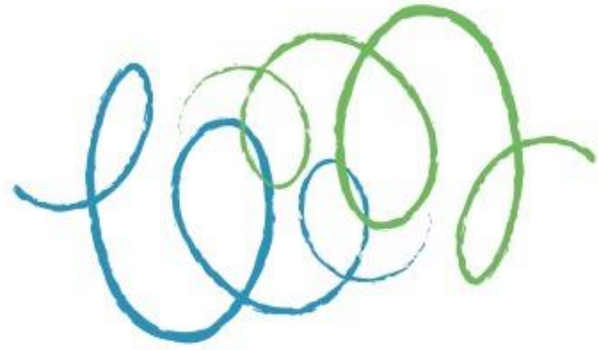


# C. PRIVATE & PUBLIC SECTOR

Advanced Robot Solutions & Court System Support

## A.I. Kiosk Platform -

Businesses including Advanced Robot Solutions collaborate with County Court Systems to provide kiosks with A.I. software to assist with staffing shortages and provide inclusivity to diverse community populations.



# AI APPLICATION IN PRIVATE & PUBLIC SECTOR: CASE STUDY:

ADDRESSING STAFF SHORTAGE & ACCESSIBILITY / ADVANCED ROBOT SOLUTIONS

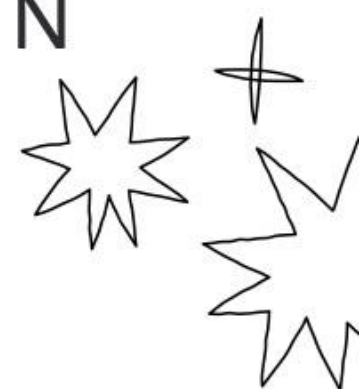


<https://www.youtube.com/watch?v=6n8sIRRW0go&list=TLGGbkoV7nMdRcswNDEyMjAyMw&t=67s>



3.

SUPPORT SKILLS  
DEVELOPMENT IN  
AI TOOLS  
CURRENTLY  
BEING UTILIZED  
IN PUBLIC  
HEALTH





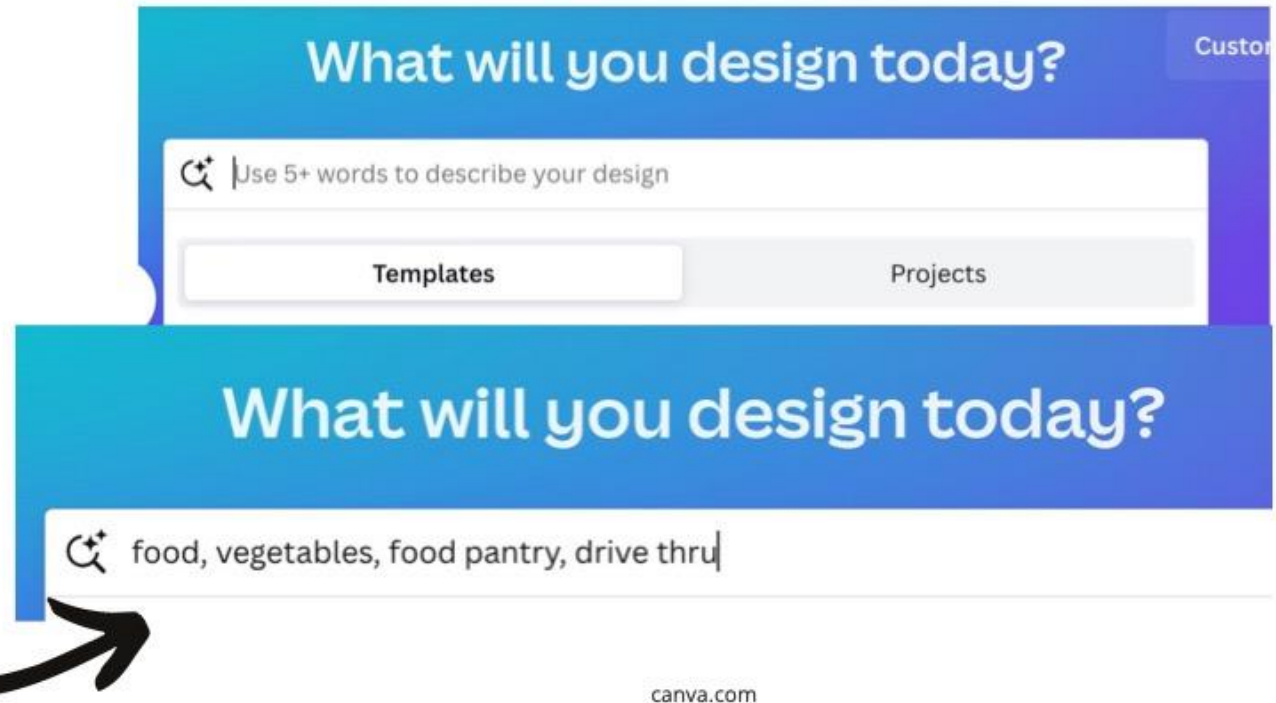
# CONTENT CREATION & CANVA

CANVA features **Magic Design**, a Canva Pro feature.

How Magic Design Works:

- Type project idea into search with a few key words.
- Magic Design generates custom templates
- Brand Kit for organization can be applied to template and personalized.

From idea to design with Magic Design





# CONTENT CREATION & CANVA



Orange Purple Illu...  
Flyer by RepublicDraw



Colorful Food Driv...  
Iryna Danyliuk



Colorful Food Driv...  
Flyer by Iryna Danyliuk



Beige Bold Food D...  
Poster by Veronika Go...



Beige Red Creative...  
atvakola



Postal Food Drive...



Colourful Bold Tex...  
Flyer by Take Care Cre...



Food Drive Instragr...  
Instagram Post by mixy



Neutral Purple Co...



Beige and Red C...

Results in **Canva Magic Design** from Words Describing Design:

- Food
- Vegetables
- Food Pantry
- Drive Thru

# TEXT CREATION & CHATGPT

**Chat GPT** - language model-based chatbot.

There is a new versions of ChatGPT: ChatGPT-4 available on ChatGPT Plus, Khan Academy, and Duolingo

## ChatGPT-4 is:

- Safer
- More Factual
- Larger
- Multimode - photos & text
- Provides Up-to-Date Data

ChatGPT-4 /  
\$20 month

ChatGPT-  
3.5 / FREE

<https://chat.openai.com/auth/login>



<https://www.learnprompt.org/chat-gpt-3-vs-gpt-4/>



# TEXT CREATION & CHAT-GPT

## LearnPrompt.org Tips for CHATGPT

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employing prompt-based learning techniques which involves asking a specific and clear task of machine learning systems creates the best results and trains the machine learning model.



Utilize Proper Grammar



Provide Context



Clear & Specific



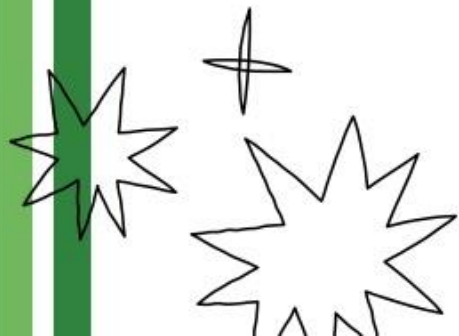
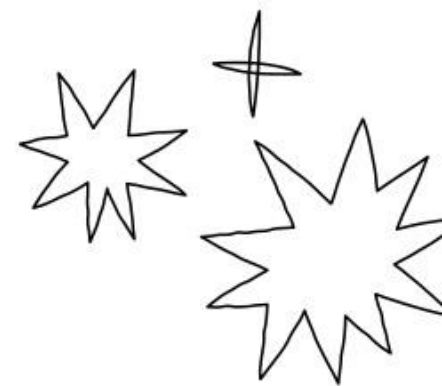
Keywords



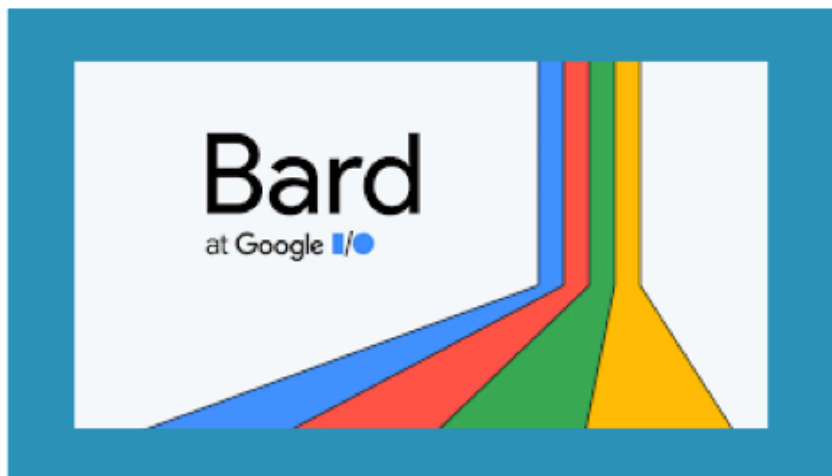
Concise



Proofread



# ADDITIONAL LARGE LANGUAGE-MODEL CHATBOT: GOOGLE BARD



\* Asked Google Bard to  
Compare ChatGPT & Google Bard

Feature	ChatGPT	Google Bard
Developer	OpenAI	Google AI
Underlying model	GPT-3	Transformer-based neural network
Strengths	Creative text formats, engaging and original content	Research tool, factual accuracy, access to real-world information
Weaknesses	Paid web access, may struggle with factual accuracy	May lack creativity and expressiveness
Web access	Paid	Free

[Export to Sheets](#)

<https://bard.google.com/chat/167d4ac071a57fd4>

- \* Enhancing & Complimenting
- \* Not Replacing Community Input



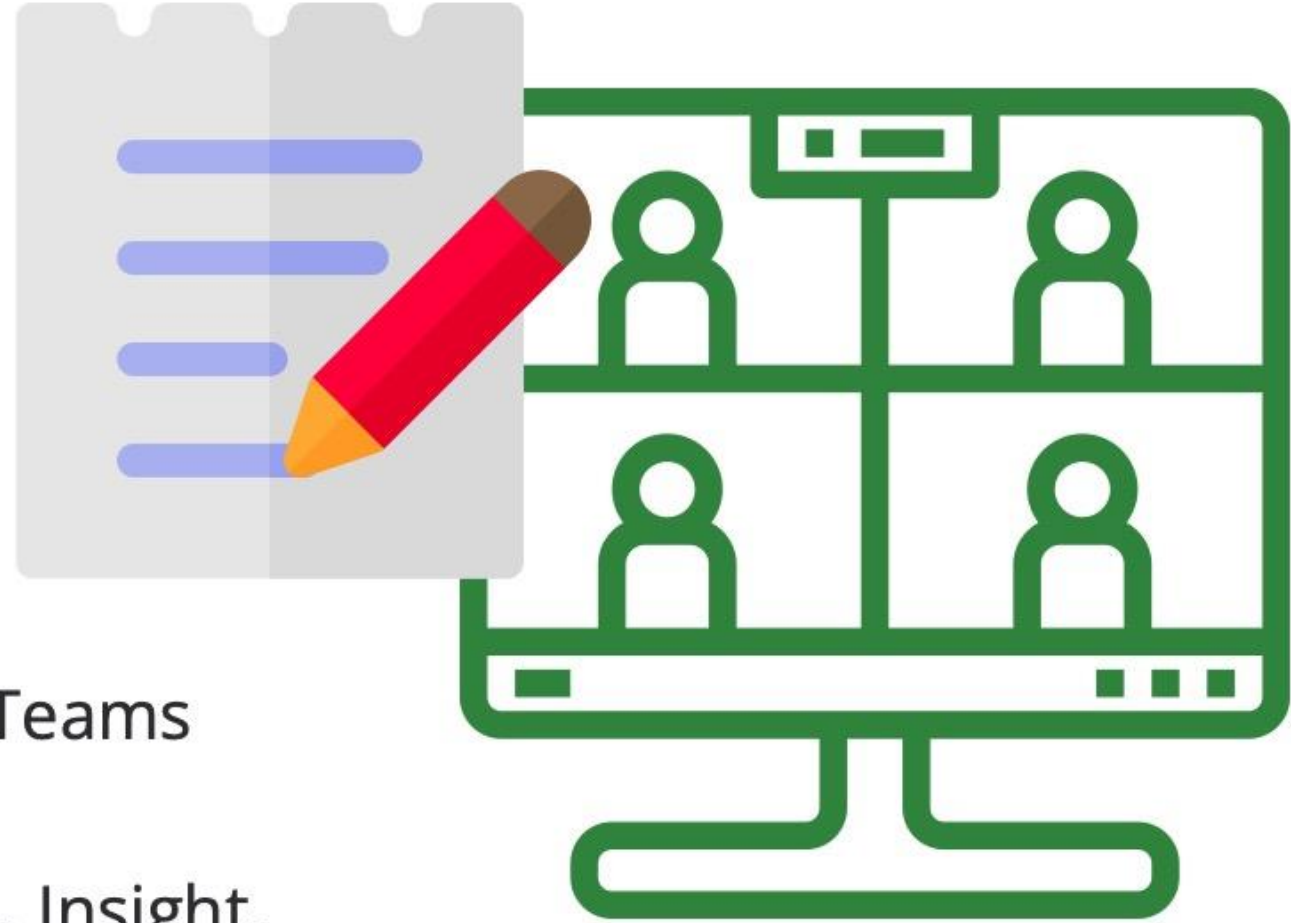


# MEETING TRANSCRIPTION: FATHOM & OTTER.AI

\* Used With Coalition & Workgroup Meetings

\* Compatible with Zoom, Google Meet, Microsoft Teams

\* Transcription, Insight, Meeting Analysis



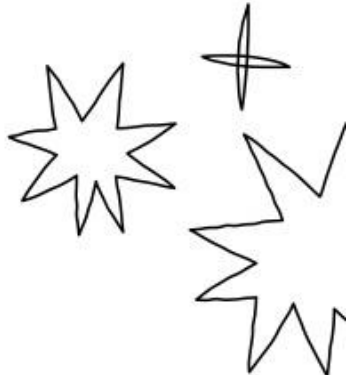
05

REALIZATION

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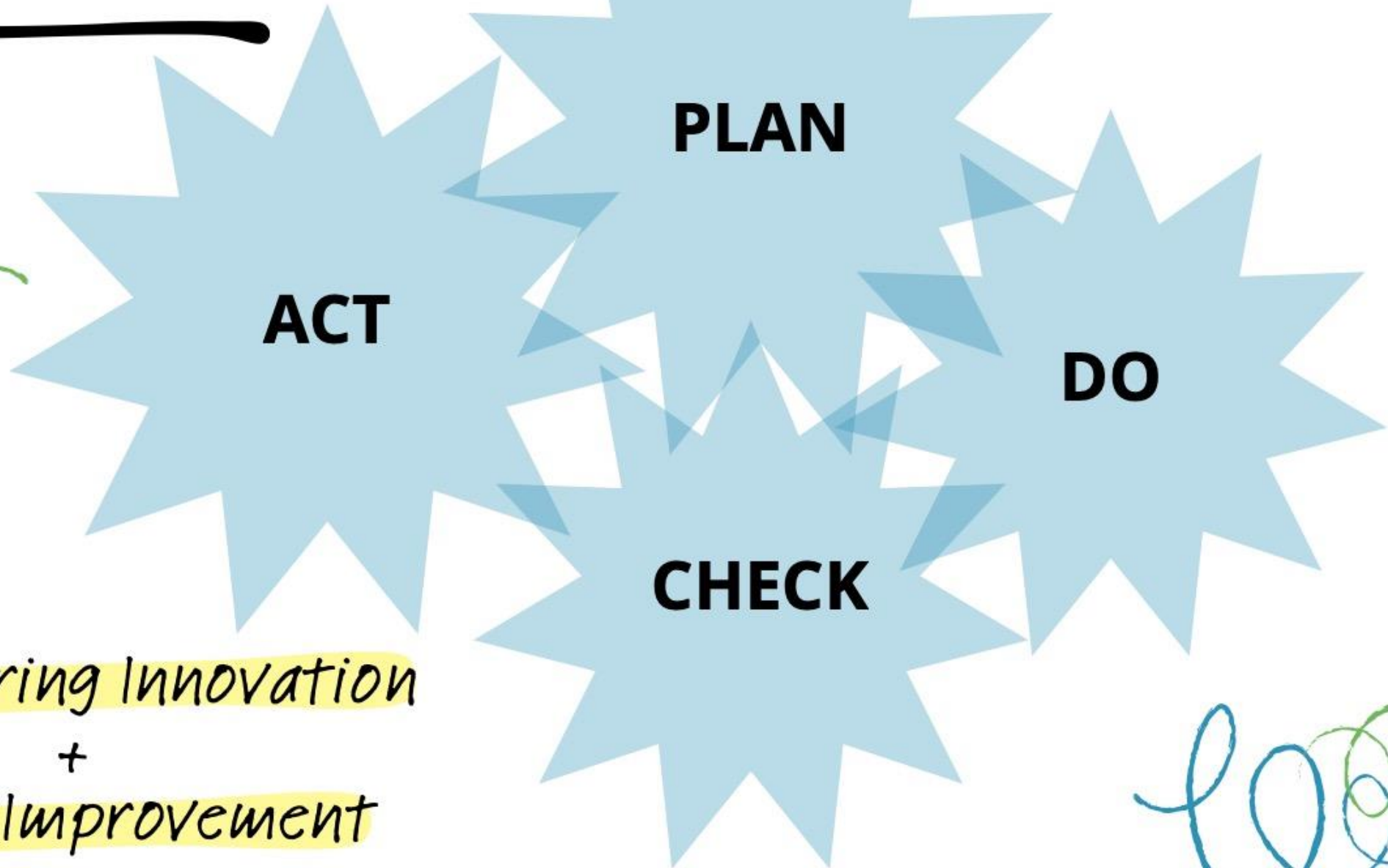


DEVELOP  
WORKGROUP TO  
FACILITATE AI  
INQUIRY,  
LEARNING  
OPPORTUNITIES, &  
IMPLEMENTATION



# **Back To PHAB!**

---



**\*** *Fostering Innovation*  
+  
*Quality Improvement*





# Plan - Do - Check - Act

**Example:** Working to Increase the % of Local Health Departments utilizing AI within Public Health Initiatives

<p>1. Plan (Setting the Stage)</p>	<ul style="list-style-type: none"><li>• Examine the current state - <b>why are 50% of LHDs not using AI?</b></li><li>• Identify all possible causes (fear, lack of knowledge, IT restrictions, unknown possibilities).</li><li>• Identify potential solutions to those causes • Identify partners/team who have a role in making change.</li><li>• Select a solution to try</li><li>• Develop an action plan and identify measures of success - how will you know what you tried worked?</li></ul>
<p>2. Do (Pilot)</p>	<ul style="list-style-type: none"><li>• Implement the action plan</li><li>• Collect data (measure of success)</li><li>• Document any observations</li></ul>
<p>3. Check</p>	<ul style="list-style-type: none"><li>• Analyze the data to see if what was tried worked.</li><li>• Document lessons learned, knowledge gained, and any surprising results.</li></ul>
<p>4. Act (Implement)</p>	<ul style="list-style-type: none"><li>• Adopt/Adapt or Abandon the Project</li></ul>

# Which Can Lead To ...

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**Partnership  
Development**



**Workshops  
&  
Trainings**



**Funding  
Opportunities**



**NOW!**

Let's look at our  
understanding of AI now  
after the conclusion of this  
presentation.



When poll is active respond at [PollEv.com/caseymcmanus855](https://PollEv.com/caseymcmanus855)



**At the conclusion of this presentation, do you feel your understanding of AI and it's applications has grown?**

SEE MORE 





When poll is active respond at [PollEv.com/caseymcmanus855](https://PollEv.com/caseymcmanus855)



**Now, what is an opportunity you see in integrating AI into public health work?**

Nobody has responded yet.

Hang tight! Responses are coming in.



When poll is active respond at [PollEv.com/caseymcmanus855](https://PollEv.com/caseymcmanus855)



**What barriers do you still see with integrating AI into public health work?**

Nobody has responded yet.

Hang tight! Responses are coming in.



When poll is active respond at [PollEv.com/caseymcmanus855](https://PollEv.com/caseymcmanus855)



**How do you feel you can or would like to participate in AI inquiry within public health work?**

Nobody has responded yet.

Hang tight! Responses are coming in.

# OneDrive



*RESOURCES:*  
“BUILDING THE  
CONVERSATION  
ON ARTIFICIAL INTELLIGENCE  
IN PUBLIC HEALTH DEPARTMENTS”



# Acknowledgements

Thank you to Michele Foster,  
Kim Arnold, Kathy Wille, Bridget Hallock  
Kasaoka, Sarah Walker, Shelby Smith,  
Maggie Steele, and Juanita Rosenbloom for  
their support and contributions to the  
development of this presentation!



Feel free to stay in contact & reach out!  
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**Thank You!**



# Q & A

