



The Centers for Medicare & Medicaid Services Artificial Intelligence Health Outcomes Challenge



Disclaimer:

This presentation is only intended to give a high level overview of the CMS Artificial Intelligence Health Outcomes Challenge. This presentation is not intended to interpret or modify the actual Challenge announcement in any way; if there is a conflict between this presentation and the announcement, the announcement controls. The Public Notice may be found at <https://go.cms.gov/AI>.

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Overview of the Center for Medicare and Medicaid Innovation



The Center for Medicare and Medicaid Innovation (the Innovation Center) within CMS tests of **innovative health care payment and service delivery models**.

All models are designed to reduce program expenditures and preserve or enhance the quality of care for Medicare, Medicaid, and Children's Health Insurance Program beneficiaries.



The CMS Artificial Intelligence (AI) Health Outcomes Challenge is a \$1.65 million prize competition designed to encourage the development of AI models to predict health outcomes and propose new outcome-based quality measures that can be used to test and evaluate innovative payment and service delivery models under the authority of section 1115A of the Social Security Act.

Understanding the Problem

High rates of unplanned admissions and adverse events are not only costly to the health care system, but may also indicate low-quality care during a prior hospital stay or contribute to poor care coordination in post-acute care.

Unplanned Admission: When an individual arrives at a hospital or skilled nursing facility (SNF) due to an urgent and/or unexpected condition.

Unnecessary institutionalization can also expose patients to medical risk, and can result in adverse events, including hospital-acquired infections and death.

Adverse Event: A negative consequence of care resulting in unintended injury or illness.

The Challenge Goals – What Participants Will Solve

1

Use AI/deep learning methodologies to predict unplanned hospital and SNF admissions, and adverse events within 30 days for Medicare beneficiaries.

2

Develop innovative strategies and methodologies to: explain the AI-derived predictions to front-line clinicians and patients.

We need solutions that are:

Accurate & Actionable

- Actionable data that offers more accurate predictive capabilities
- Empowers clinicians to provide appropriate resources to the highest risk patients, at the right time.

Explainable & Trustworthy

- Builds transparency and trust with clinicians and patients
- Output information is explainable and comprehensible.

Challenge Stages Overview

Launch Stage

Stage 1: Design

Stage 2: Refine

Stage 2 Winners Announced!

Public Entry
All participants submit online application

Up to 20 Launch Stage Winners

Participants develop proof of concept AI solution and white paper



Participants receive data file #1

Up to 5 Stage 1 Winners

Participants refine AI solution with larger data file



Participants receive prize award & data file #2



Grand Prize



Runner-Up

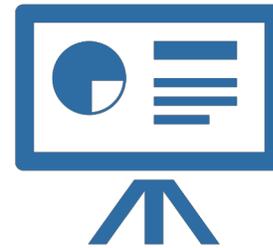
Launch Stage: Submission Requirements



Online Application

Application Form:

1. Participant Information
2. Background & Prior Experience
3. Proposal & Methodology



Briefing Deck

Participants describe:

1. The team
2. The solution
3. How the solution will function
4. Methods to build explainable AI
5. How the AI model will be trained
6. How the team will use a cross disciplinary-design process
7. The development timeline

Eligibility Requirements

To be eligible to win a prize under the AI Health Outcomes Challenge, an individual or entity:

- Shall have timely submitted an entry to participate in the relevant Challenge stage.
- Shall have complied with all described requirements in the Public Notice.
- Shall be incorporated in and maintain a primary place of business in the United States, and in the case of an individual, whether participating singly or in a group, shall be a citizen or permanent resident of the United States.
- May not be a Federal entity or Federal employee acting within the scope of his or her employment.

Additional Eligibility Requirements

To be eligible to win a prize under the AI Health Outcomes Challenge, an individual or entity:

- Shall not be an HHS employee.
- Federal grantees may not use Federal funds to develop entries unless consistent with the purpose of their grant award.
- Federal contractors may not use Federal funds from a contract to develop AI Health Outcomes Challenge applications or to fund efforts in support of an AI Health Outcomes Challenge entry.
- **Full terms and requirements to participate are described in the Public Notice, accessible at <https://go.cms.gov/AI>.**

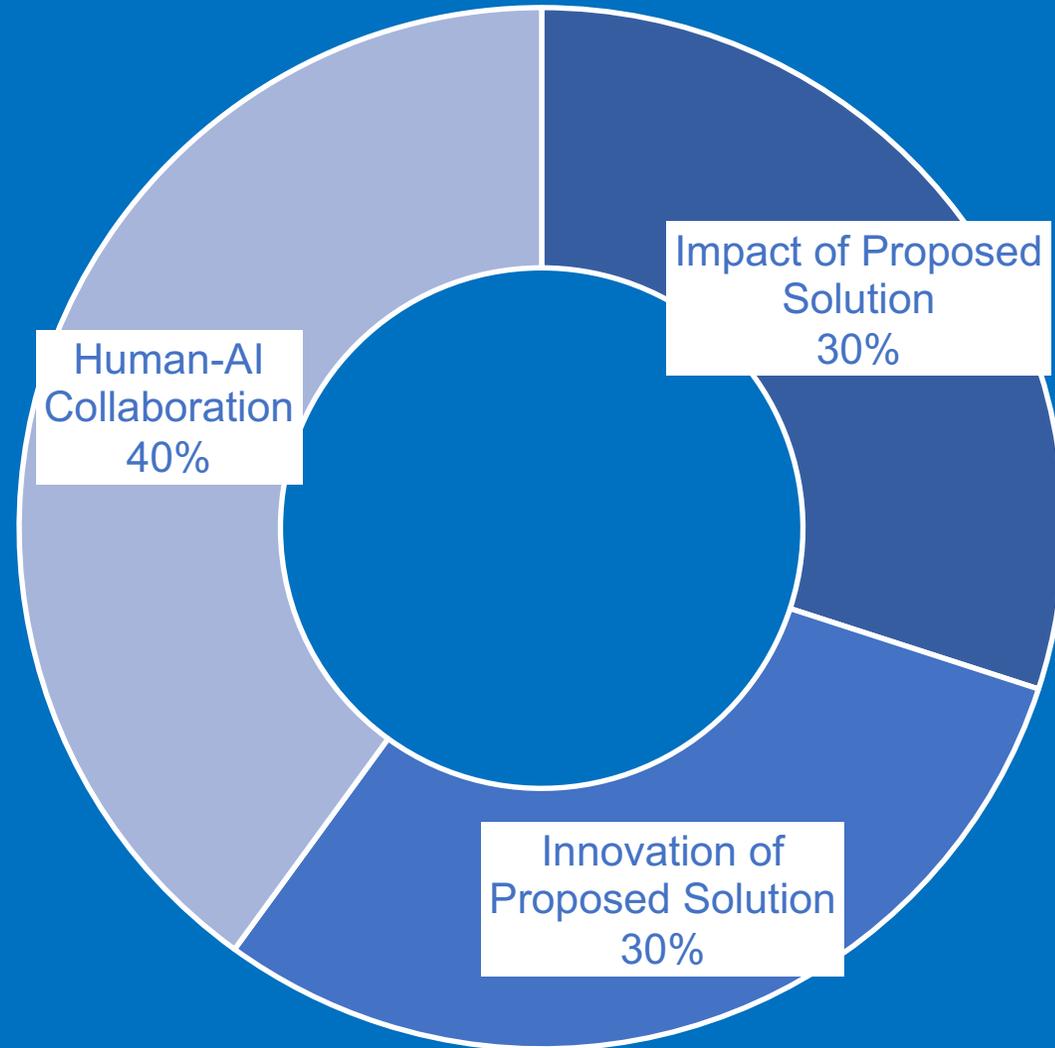
Intellectual Property Terms

- Participants are free to discuss their entry with other parties, are encouraged to share ideas/technologies publicly, collaborate or combine with other participants to strengthen their solutions, and are free to contract with any third parties.
- By participating, each participant warrants that he or she is the sole owner of, or has the right to use, any copyrightable works that the submission comprises.
- Each participant grants to CMS an irrevocable, paid-up, royalty-free nonexclusive worldwide license to reproduce, publish, post, link to, share, and display publicly the submission, and abstracts.
- Each participant must clearly delineate any Intellectual Property and/or confidential commercial information the participant wishes to protect as proprietary data.
- All materials submitted to CMS as part of an entry become CMS agency records.
- If the entry includes any third-party works, the participant must be able to provide documentation of all appropriate licenses and releases.
- See Public Notice for additional intellectual property terms at <https://go.cms.gov/AI>.

Launch Stage Evaluation Criteria

**Subject to Change*

Participant qualifications and history will also be assessed but not included in the weighted score.

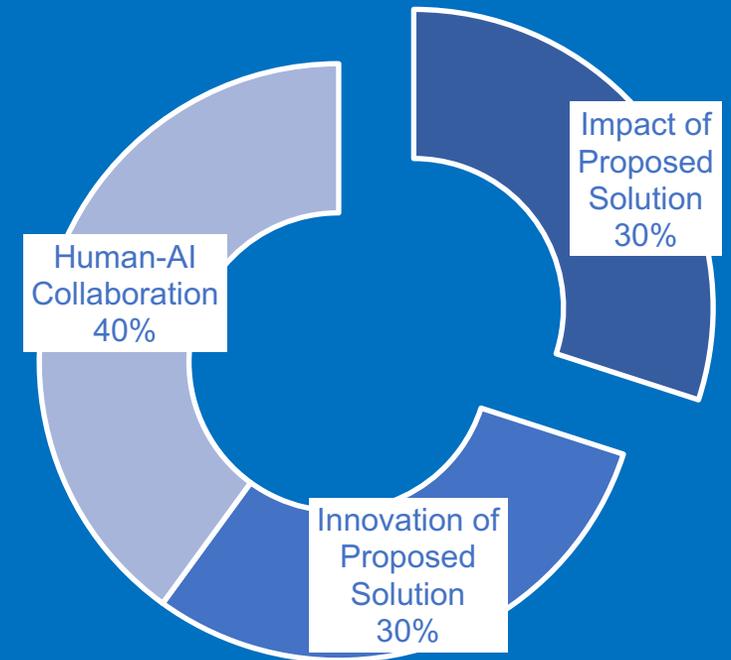


Impact of Proposed Solution (30%)

To what extent is the proposed approach operationally feasible for CMS?

How likely is it to succeed in predicting unplanned hospital and SNF admissions and adverse events?

Did the participant identify potential roadblocks to implementation and suggest ideas to facilitate resolution of such roadblocks?

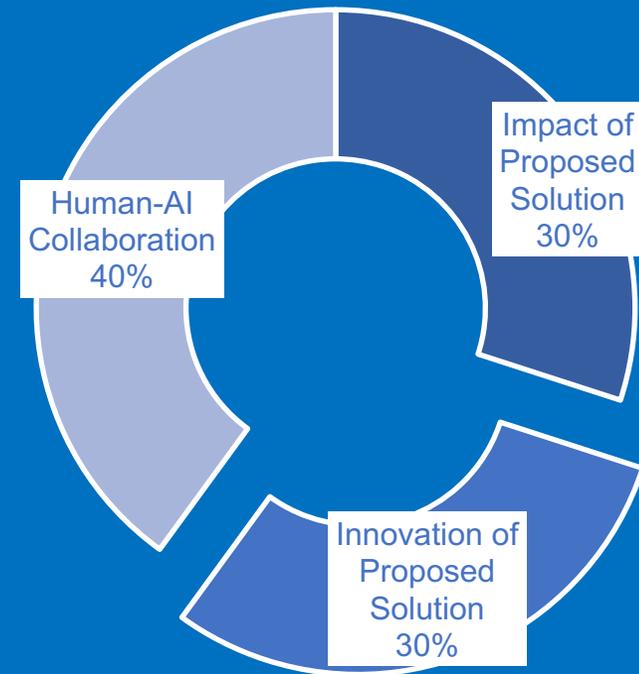


Innovation of Proposed Solution (30%)

To what degree is the proposed design innovative, creative, and original?

To what extent did the participant demonstrate how the proposed solution can outperform existing approaches?

To what extent has the participant identified other data sets and/or types of information that would be useful to further refine their solutions following the competition?

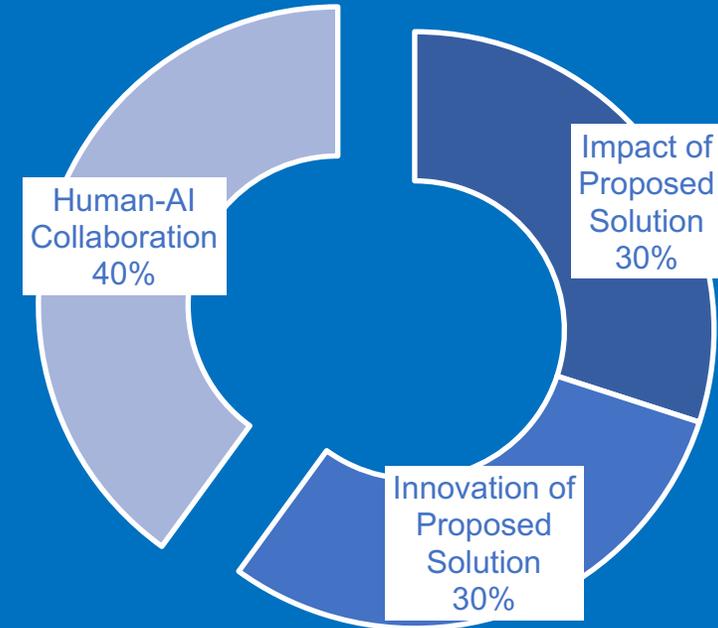


Human-AI Collaboration (40%)

To what extent has the participant explained how the proposed AI tool will work with humans (clinicians and patients) to achieve the desired results?

To what extent has the participant demonstrated a link between the proposed solution and benefit to the Medicare population and potential impact on current health care practice and delivery methods?

To what extent has the participant identified strategies and tools to explain AI predictions to clinicians and patients to build trust and drive transparency?



Medicare Fee-for-Service Competition Data

Stage 1 participants may request 5 years of data and Stage 2 finalists may request an additional, continuous 5 years of data for the same set of ~2.5-3 million beneficiaries.

LDS files contain beneficiary-level health information, but exclude specified direct identifiers.

Participants will follow the CMS process to sign Data Use Agreement (DUA) to access the Limited Data Set (LDS), free of charge. There are specific terms under the DUA that participants must follow, including but not limited to providing a valid research purpose for the data, and publishing research findings. More information about the LDS and DUA can be found in the Public Notice at <https://go.cms.gov/AI>.

Limited Data Set Snapshot

2.5-3 Million

De-identified Beneficiaries

2013-2017

5 Year Time Frame

290 MM

5 Year Claims Total

1.47 Billion

5 Year Record Total

220 GB

File Size

Outcomes are known.

File Characteristics

- 5% Sample of Medicare Parts A/B
- Random
- Structured
- Continuous

7 Analytical Files

Non-institutional & Institutional

Non-Institutional

1. Carrier
2. Durable Medical Equipment

Institutional

1. Home Health
2. Hospice
3. Inpatient
4. Outpatient
5. Skilled Nursing Facility (SNF)

How to Enter

1

Get Smart

on the problem, competition data, submission requirements, and judging criteria

2

Register

for the challenge at ai.cms.gov

3

Attend

informational webinars

4

Submit

your application by **June 18, 2019 at 5 p.m. ET.**

Challenge Updates



+600

Teams Registered

Additional information regarding the Challenge, information on the competition data, and details of the later stages will be provided throughout 2019.

Additional information will be published on the challenge platform: ai.cms.gov

Q&A

For more information, visit: ai.cms.gov