



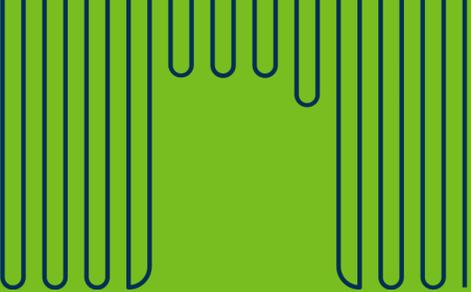
*Seventh Annual*  
Humana/Mays  
2023 Healthcare Analytics Case Competition



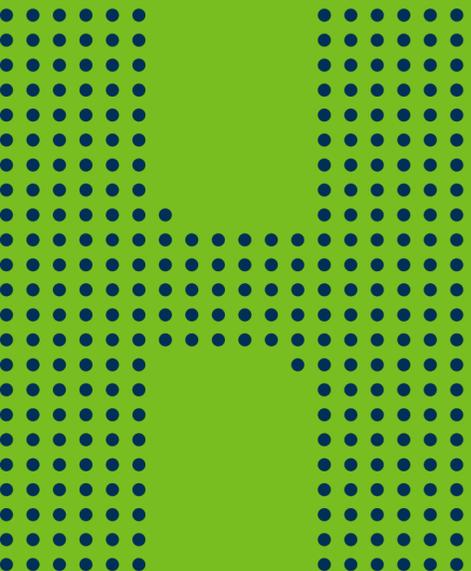
TEXAS A&M UNIVERSITY

Mays Business School

**Humana.**



# Agenda

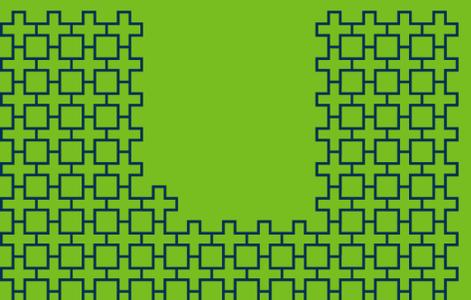


01 | **Introductions** | Texas A&M, Humana

02 | **Competition Overview** | History, Eligibility, Timeline, Prizes

03 | **Analytics Challenge** | Introduction to the Case, Data Overview

04 | **Additional Details** | Judging





# Your Hosts



**Dr. Jerry Strawser**

**Texas A&M – Mays School of Business**

Associate Dean for Graduate Programs  
KPMG Chair and Professor of Accounting



**Geoff Monsees**

**Humana**

Director, Analytics & Insights  
Data Strategy & Governance



**Genevy Dimitrion**

**Humana**

Vice President  
Data Strategy & Governance



**Kali Sassack**

**CenterWell**

**Specialty Pharmacy**

Business Sponsor  
Pharmacy Solutions



**Dustin James Harper**

**Humana**

Senior Data Scientist  
Pharmacy Analytics & Consulting



TEXAS A&M UNIVERSITY

## Mays Business School

- Member of the highly prestigious **Association of American Universities** (1 of 69 universities in the United States)
- One of the few universities in the country designated a **land grant, sea grant, and space grant university**
- One of the largest universities in the country, with over **73,000 students** enrolled in 2023
- **\$18 Billion** University System Endowment
- **Over 525,000 alumni** who create a global Aggie network
- **Mays School of Business is nationally ranked** for the quality of its undergraduate programs, graduate programs, and faculty scholarship
- **[mays.tamu.edu/humana-tamu-analytics](https://mays.tamu.edu/humana-tamu-analytics)**



Members are at the heart of everything we do, and our employees are our strength. Here's a snapshot of our company.



**17.1 million**

Medical members across all 50 states, Washington, D.C., and Puerto Rico



**30+**

years of Medicare experience

- **5.8 million**

Medicare Advantage members



**67,100**

employee count  
*(As of December 31, 2022)*

- **2.9 million**

Medicare prescription drug plan members

- **5.9 million**

TRICARE members

- **5.0 million**

Specialty benefits members



# Competition Overview

## The Challenge

This is an opportunity for students to showcase their analytics skills to solve real-world business problems using Humana's data

## Eligibility Requirements

- Student must be enrolled part- or full-time in an accredited Master of Science, Master of Arts, Master of Information Systems, Master of Public Health, Master of Business Administration, or similar master's programs that educate in business, healthcare, or analytics located within the US
- One entry per team; teams must have 2-4 members from the same school
  - If a participant drops out of the competition, no substitution is permitted
  - If the team falls below the 2-person minimum due to a member leaving, the team is no longer eligible to compete
- Students may only participate on one team
- Students must be currently enrolled and must not have graduated from the qualifying program at the time of the final case competition presentations
- Humana Employees are not eligible

## 2017-2022



### Topics:

- Readmission likelihood among diabetics
- Acute Myocardial Infraction Likelihood
- Long Term Opioid Therapy Likelihood
- SDOH Identification of transportation challenged
- Identification of COVID Vaccination Hesitancy



**Over 4,050 Participants**



**1,398 Teams**



**85+ Universities**



Prizes have increased from  
**10.5K to over 90k**



# 2023 Enhancements



Prize Money awarded to Top 5 teams



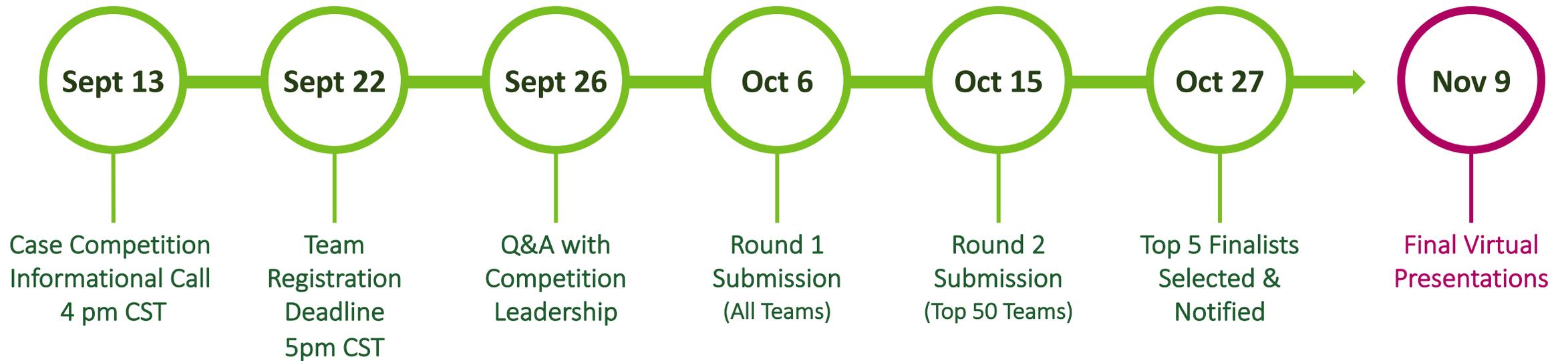
Separate Due Dates for Round 1 & Round 2 Submissions



Including business sponsor to final panel of judges



# Competition





# Competition Prizes



First Place

**\$50,000**



Second Place

**\$20,000**



Third Place

**\$10,000**



Top 5 Finisher

**\$5,000**





# Getting Started

## Register Your Team at:

<https://mays.tamu.edu/humana-tamu-analytics>

## Information Needed:

- Team Name
- Team Member Names
- Designated Team Leader
- School Represented
- Signed NDA *for each team member*

## Team Registration:

- Early: August 1st
- Deadline: September 22nd, 11:59 PM CST

## Data Release:

- Starts September 14<sup>th</sup> (must have completed team registration & signed NDAs)

## Issues with Registration?

- Send an email to [humanacasecomp@tamu.edu](mailto:humanacasecomp@tamu.edu)

# Problem Statement





600,000 people die from cancer each year in the US.  
(1600/day)



New treatments are effective at targeting  
specific types of cancer



Cancer treatments come with significant side effects



# Osimertinib – Non-Small Cell Lung Cancer



## Population:

- People with early-stage EGFR+ Non-Small Cell Lung Cancer (NSCLC)



## Effectiveness:

- Twice as likely to survive vs. people who took no active medicine
- 80% less likely to have their cancer come back or die



## Serious Side-Effects:

- Hyperglycemia
- Constipation
- Nausea
- Fatigue
- Seizures
- Myalgia
- Musculoskeletal Pain



## Medication Adherence

Medication adherence improves disease-free survival.



## Member Impact

Approximately 24% of members taking Osimertinib have a side-effect and discontinue in the first 6 months of therapy.

\*419 of 1765 therapies in 2020-21



## Opportunity

Target at-risk members to improve adherence and survival.



# Competition Objectives

- Identify members most likely to experience a side effect and discontinue their therapy.
- Ensure analysis and recommendations demonstrate fairness and equity through mitigation of potential bias inherent in the data
- Provide recommendations and potential solutions to prevent discontinuation based on the insights derived from the data.





# Case Data | Overview



## **Population:**

Humana members in their first six months of Osimertinib therapy



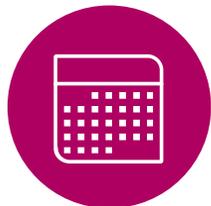
## **Target:**

Those who experience a side-effect (ADE) and discontinue therapy



## **Available Data:**

Insurance claims during and before therapy, 2018-2022.



## **Individual Lookback:**

90 days previous to first osimertinib fill, through osimertinib therapy



# Case Data | Overview

## Target

(target\_train, target\_holdout)

- Person Identifier
- Therapy Identifier
- Therapy Start and End Dates
- Target Identifier
- Protected Attributes
  - Sex
  - Age
  - Race

## Medical Claims

(medclms\_train, medclms\_holdout)

- Claim Identifier
- Therapy Identifier
- Visit Date
- Process Date
- Diagnosis Codes
- Indicators for Diagnoses of Interest

## Pharmacy Claims

(rxclms\_train, rxclms\_holdout)

- Claim Identifier
- Therapy Identifier
- Service date
- Process Date
- Drug Identifier
- Drug Descriptions
- Supply Count
- Cost
- Indicators for drug categories of interest

# Judging Criteria





**SIMPLY STATED:** We are looking for a solution that...



Demonstrates an understanding of the underlying business issue



Is grounded in the data that has been provided



Is a combination of technical accuracy and practical application



Provides a clear & articulate path forward



# Competition Judging | Three Rounds

## Round 1: Model Accuracy & Fairness

*Open to all teams*

- Ability to predict members most likely to experience an ADE and discontinue therapy
  - ✓ Observed ROC curve and AUC metric
- Ability to ensure fairness in the modeling solution
  - ✓ Observed Disparity Score

## Round 2: Written Submission Evaluation

*Top 50 teams from Round 1*

- Multiple judges will review each submission creating a composite score based on the entirety of the solution: approach, analytics, insights, recommendations, and actionability.
  - ✓ 20% - Establishing key questions & performance indicators aligned with business issue
  - ✓ 30% - Depth and description of analysis resulting in actionable business insights
  - ✓ 50% - Ability to provide meaningful implications and recommendations based on results/insights

## Round 3: Presentation

*Top 5 teams from Round 2*

- Build on previous rounds by demonstrating the solution's ease of understanding, impact to the business, and viability with regards to implementation.
- Panel of Humana Executives and Texas A&M Professors will listen to and evaluate final presentations
- Clarity of the solution, visualization, implications for the business, actionability, and professionalism are the key components the judges will be focused on



# Round One | Model Accuracy

## Participants to “score” model using secondary data file

- Humana will provide secondary data to be used in the evaluation of model accuracy and fairness
- Teams will apply their model to the secondary data and produce a resultant score (i.e. predictive value)
- Teams will return, as their Round 1 submission, a scored file in CSV format that includes the following fields:
  - **ID** (Unique identifier provided with secondary data)
  - **SCORE** (Resulting score from modeling algorithm)
  - **RANK** (Most likely individual based on predicted scored = 1, 2nd most likely individual = 2, etc...)

## Humana will access model accuracy and fairness

- Humana will append ‘outcome’ to the scored file provided by each team
- Judging metrics will be established based on each team’s scored file
  - ROC curves generated & AUC metric will be calculated
  - Disparity Score and corresponding weighting will be calculated utilizing RACE & SEX
- Based on the 2 metrics, a final combined metric will be assigned to each team’s submission
  - Combined Metric = AUC \* Disparity Score Weight
- Top 50 teams will be identified and selected using a combined metric



# Round One | Leaderboard

## Mid-Cycle Leaderboard

- Provide teams an ability to see where their model ranks – in terms of performance – compared to other participants
- Leaderboard results will be posted daily on the competition website
- Mid-cycle Leaderboard will be available from September 25 – October 5<sup>th</sup>
- Teams may submit once per day to the mid-cycle Leaderboard
  - The highest performance score for each team will be recorded and used in the Leaderboard rankings
- Teams are not required to participate in the mid-cycle evaluation, however, must submit a scored holdout file by 5:00 pm CT on October 6<sup>th</sup> to be considered for Round 2.
  - Mid-cycle Leaderboard provides relative guidance only...it is not a guarantee of final placement

## The final Leaderboard will be posted on October 6<sup>th</sup>

- All teams who submit a valid scored holdout file will see their final metrics and rankings
- Top 50 teams will be confirmed via email

Additional details related to the Leaderboard can be found on the competition website in a document titled: *“Humana Mays Case Competition – Round 1 Leaderboard Guide”*



# Round Two | Written Submission Evaluation

## **Establish key performance indicators aligned to business issues | 20%**

- Explicit statement of the business issue and a translation into a data problem
- Statement and definition of the metrics that will be used to evaluate the abovementioned business problem

## **Depth and description of analysis resulting in actionable business insights | 30%**

- Analytical approach conveys an appreciation of varying data types, variable relationships, and background research
- Data have been cleaned, manipulated, and labeled appropriately to ensure analyses are broadly applicable
- Key drivers of outcomes are identified and explained
- Performance/evaluation of the analytical approach is provided along with rationale for final selection
  - *What makes your approach unique or best suited for this problem/data?*

## **Ability to provide implications and recommendations based on results/insights | 50%**

- Tell the story of why your results matter and how they should be actioned...‘So What?’
- Include a clear statement of recommendations – *based on your findings and results*
  - *Is there anything you would differently if you had more time and/or data?*
- Based on the recommendations, include the potential impact on the business



## Round Three | Presentation

The final round is the culmination of the challenge where everything gets pulled together and presented virtually to a team of executives

### **Professionalism and Communication**

- Presentation is visually engaging and professionally delivered
- Business problem, analytical approach, and results are well-connected and clearly articulated
- Recommendations and Implications to Humana are well-defined and appropriate to the payer context
- Presenters are well-prepared and able to address questions in a clear and concise manner





# Final Submissions - <https://mays.tamu.edu/humana-tamu-analytics>

## Late submissions will not be accepted\*

- **Round 1 Submission:** Due on Friday, October 6<sup>th</sup> @ 5:00 PM CST
- **Round 2 Submission:** Due Sunday, October 15<sup>th</sup> @ 11:59 PM CST
  - Only Top 50 from Round 1 need to submit for Round 2

## Must follow prescribed file formats to be accepted\*

- **Round 1 Holdout File Format:** CSV (Fields include: ID, SCORE, RANK) | Example:
- **Round 2 Written Submission Format:** MS Word, PDF

ID,SCORE,RANK  
1545,0.8954,1  
32,0.8532,2  
368,0.7976,3

## Must follow the following naming conventions\* (using the first and last names of your team captain)

- **Leaderboard/Round 1:** 2023CaseCompetition\_FirstName\_LastName\_2023mmdd.csv
- **Round 2:** 2023CaseCompetition\_FirstName\_LastName.doc

Judging is Blinded | Do not include names or school in content of submission

If you have any issues with your submission, please email: [humanacasecomp@tamu.edu](mailto:humanacasecomp@tamu.edu)

\*Failure to comply with submission requirements may result in disqualification



**Website:** <https://mays.tamu.edu/humana-tamu-analytics>

**Email:** [humanacasecomp@tamu.edu](mailto:humanacasecomp@tamu.edu)

**Facebook:** <https://www.facebook.com/humanacasecomp>

**Humana**<sup>®</sup>

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