Humana/Mays

2020 Healthcare Analytics Case Competition

Fourth Annual

Humana®

TEXAS A&M UNIVERSITY
Mays Business School

Today's 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

Texas A&M – Mays School of Business

 Dr. Arvind Mahajan | Associate Dean for Graduate Programs

Humana

 Geoff Monsees | Director, Shared Services – Enterprise Data & Analytics

 Genevy Dimitrion| VP, Data Strategy & Governance

 Dr. Andrew Renda| AVP, Population Health Strategy

 Gil Haugh| Director, Data Science – Enterprise Data & Analytics

About Texas A&M

o **Oldest public university** in Texas

o **Nearly 70k current students** ranks Texas A&M as the largest public university in the U.S.

o **Over 500K alumni** from the University

o **$13.5 Billion** University Endowment

o **Created the 12th man** in Football in 1921

o **Over 103K fans** can be held in Texas A&M's Football Stadium (Kyle Field)

TEXAS A&M UNIVERSITY
Mays Business School

About Humana

o **Founded in 1961** & Headquartered in Louisville, KY

o **Leading health care company** that offers a wide range of insurance products and health and wellness services

o **One of the nation's top providers of Medicare Advantage** benefits with over 30 years of experience and approximately 4.5 million members as of July 30, 2020

o **Approximately 3.8 million PDP members** as of July 30, 2020

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

o 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

o One entry per team; teams must have 2-3 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

o Students may only participate on one team

o Students must be currently enrolled and must not have graduated from the qualifying program at the time of the final case competition presentations

o Humana Employees are not eligible

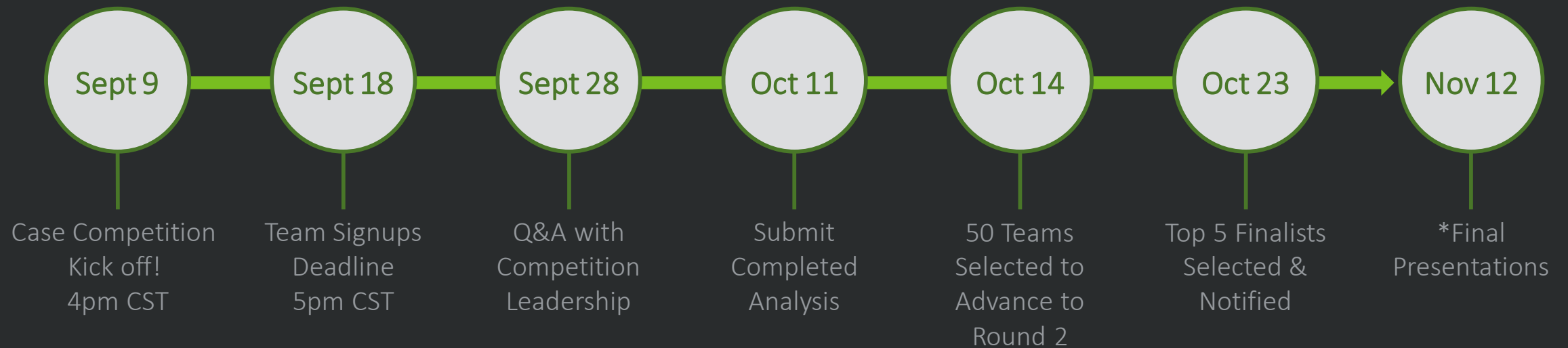|	2017	2018	2019
Participants	350	700	1300+
Teams	109	234	473
Universities	19	48	81
Prize Money	$10.5K	$35K	$52.5K

2020 Enhancements

Every year we make tweaks to improve the overall experience associated with Humana-Mays Analytic Case Competition.

Some of the changes include...

- Sharing Top 5 finalist submissions from 2019 (available on website)
  - Demonstrates what success looks like
  - Helps set the expectation for the required level of effort to be competitive

- Introduction of 'fast track' job interviews associated with being a finalist
  - Interviews will be scheduled during finals event
  - Of course, all participants are welcome to pursue job opportunities within Humana.

- Use of synthetic data
  - Allows for more robust data
  - Demographics

Competition Timeline

Sept 9 ── **Sept 18** ── **Sept 28** ── **Oct 11** ── **Oct 14** ── **Oct 23** ──▶ **Nov 12**

Sept 9	Sept 18	Sept 28	Oct 11	Oct 14	Oct 23	Nov 12
Case Competition Kick off! 4pm CST	Team Signups Deadline 5pm CST	Q&A with Competition Leadership	Submit Completed Analysis	50 Teams Selected to Advance to Round 2	Top 5 Finalists Selected & Notified	*Final Presentations

*Final presentations will be completed virtually to ensure the safety and wellbeing of the finalists, judges, and support staff.

Competition Prizes

First Place
$40,000

Second Place
$20,000

Third Place
$10,000

Getting Started

Register Your Team @ https://mays.tamu.edu/humana-tamu-analytics

Information Needed:
o Team Name
o Team Member Names
o Designated Team Leader
o School Represented
o Signed NDA *for each team member*

Team Registration Deadline:
o September 18th, 5:00 CST

Data Release:
o Starts September 14th (must have completed team registration)

Issues with Registration? Send an email to humanacasecomp@tamu.edu

2020 Case

Social determinants of health are the conditions in the environments in which people live, learn, work, play, worship and age that affect a wide range of health, functioning and quality-of-life outcomes and risks. Transportation challenges is one of these determinants.

- Using the data provided and potentially supplementing with public data, create a model to predict which Medicare members are most likely struggling with Transportation Challenges.

- Propose solutions for overcoming these barrier to accessing care and achieving their best health.

Case in Context |
Social Determinants of Health
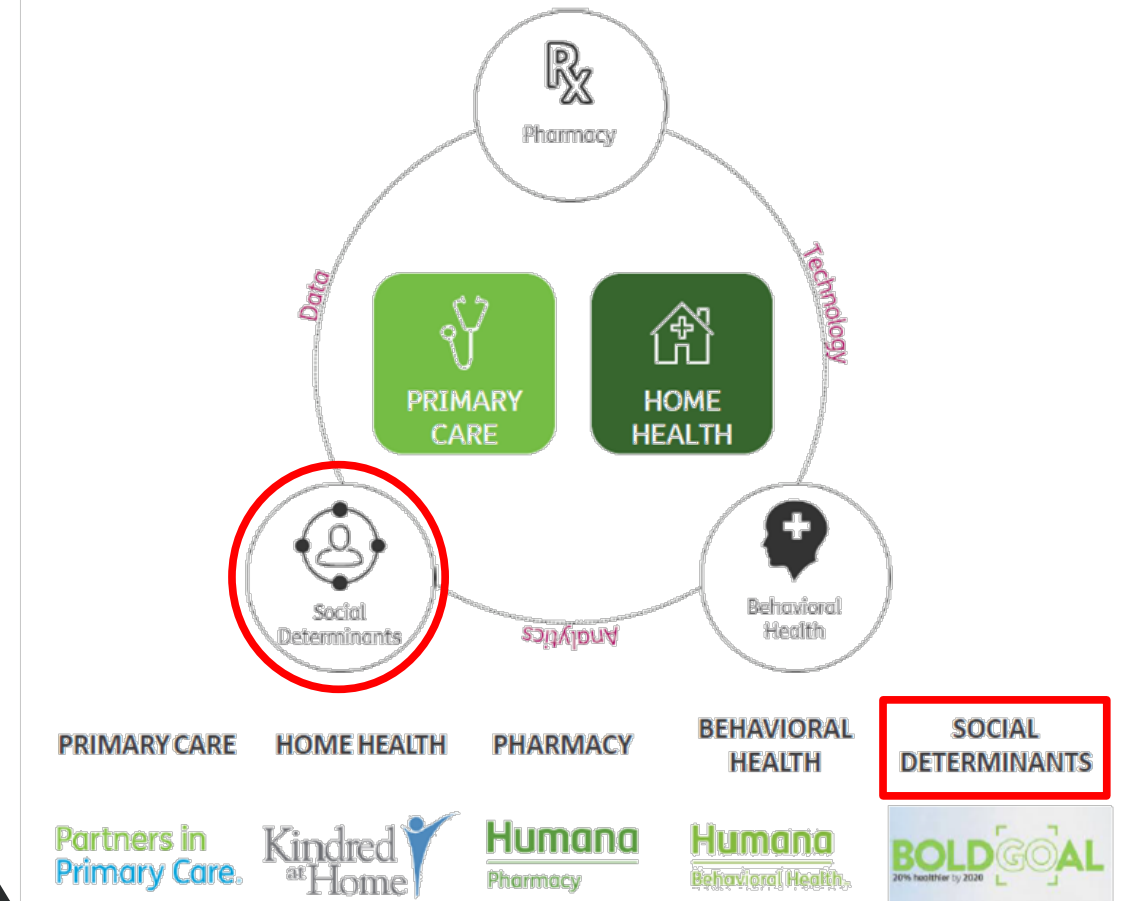## *Transportation Challenges*

The Motivation

Social Determinants of Health are a key component of Humana's integrated value-based health ecosystem.   60% of what creates health has to do with the interplay between our socio-economic and community environments and lifestyle behaviors.* Humana is seeking that "broader view" of our members to better understand the whole person and to assist them in new ways towards achieving their best health.

The Goal

In the absence of regular, universal screening for SDoH, Humana needs to utilize robust data and advanced data science to understand which of our members are struggling with SDoH. This challenge will focus on *Transportation Challenges*, so provided with member data that can be supplemented with public data, the goal is to identify Medicare members most likely experiencing Transportation Challenges and propose viable solutions.

Integrated Value-based Health Ecosystem
with Social Determinants as a Key Component

*https://about.kaiserpermanente.org/community-health/news/making-a-down-payment-on-health-kaiser-permanente-invests-in-cre

Case Requirements | Key Components

Problem Statement

Social determinants of health are the conditions in the environments in which people live, learn, work, play, worship and age that affect a wide range of health, functioning and quality-of-life outcomes and risks. Transportation is one of these determinants. Using the provided data and potentially supplementing with public data, create a model to predict if which members are likely struggling with Transportation.

Goal

To identify Medicare members most at risk for a Transportation Challenge and propose solutions for them to overcome this barrier to accessing care and achieving their best health.

Definitions

- *Transportation screening* question is coming from the Accountable Health Communities – Health Related Social Needs Screening Tool.

- *The question reads:* "In the past 12 months, has a lack of reliable transportation kept you from medical appointments, meetings, work or from getting things needed for daily living?" Yes / No

- The date the survey was completed is on the file.

Challenging Problem

- *Predictive model* - Since screening all Medicare members is challenging, having a effective predictive model to accurately identify members most likely struggling with Transportation Challenges is valuable. Data is provided and can be supplemented with publically available data.

- *Proposed solutions* – It is likely that members struggling with Transportation Challenges are not homogeneous and hence there are perhaps different solutions for different segments of members.

Data Included:

- Medical claims features
- Pharmacy claims features
- Lab claims features
- Demographic / Consumer data
- Credit data features
- Clinical Condition related features
- CMS Member Data elements
- Other features

Case Data | Overview

o   Target population: Humana MAPD members
o   Event: Each member will have a binary flag to indicate transportation challenges
o   Lookback: Data will provide a 1-year lookback for a member before event collection
o   Data warehouse: 800+ features

Medical Claims Features

CCS Procedure Code Categories
BETOS Procedure Code Categories
Utilization by Category (IP admits/ER
visits/Outpatient/Ambulance etc.)

Pharmacy Claims Features

Prescription Days Covered
Brand/Generic Prescription
Mailed/Non-mailed Prescription
Maintenance Prescription
GPI2 Level Prescription Utilization

Lab Claims Features

Abnormal Lab Results Indicator
Abnormal Lab Results Indicator by
Category (Cholesterol/
EGFR/HbA1c/Hemoglobin etc.)

Demographics/Consumer Data

Age
Geography
Census Education Level
Household Composition
Homeowner Status
Census Percent Motor Vehicle
Ownership

Credit data

Balance All Mortgage Accts Past Due
% HH Bank Card Accts - Severe
Derogatory Accts
Number All Mortgage Accts - 120 Days
Past Due or Collections
% Balance to High Mortgage Credit

Condition Related Features

Behavioral Health Condition Indicator
Charlson Comorbidity Index
Functional Comorbidity Index
Diabetes Complication and Severity
Index
CMS Diagnosis Code Categories
MCC Diagnosis Code Categories

CMS Features

Disability
Dual Eligibility
Low Income Subsidy
CMS Risk Score
CMS Total Payment Amount

Other features

Health Program Participation/Status
HEDIS-like Features
Provider Specialty Features
Revenue Code Features
Behavioral Segmentation

Judging Criteria

Competition Judging | Three Rounds

Round 1: Model Accuracy *Open to all teams*	o Ability to predict members most at risk for transportation challenge o Observed ROC curve and AUC metric using a scored secondary data set

Round 2: Written Submission Evaluation
Top 50 teams from Round 1
	o Multiple judges will review each submission creating a composite score based on the entirety of the solution: approach, analytics, insights, recommendations, and actionability.
	
	    o 15% - Establishing key performance indicators aligned with business issue
	
	    o 35% - Depth and description of analysis resulting in actionable business insights
	
	    o 50% - Ability to provide meaningful implications and recommendations based on results/insights

Round 3: Presentation *Top 5 teams from Round 2*	o Build on previous rounds by demonstrating the solution's ease of understanding, impact to the business, and viable with regards to implementation. o Panel of Humana Executives and Texas A&M Professors will listen and evaluate final presentations o 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 a 2nd data set to be used in evaluation of model accuracy
- Teams will apply their model to the 2nd data set and produce a resultant score (i.e. predictive value)
- Teams will return, as part of their submission, a scored file in CSV format that includes the following fields:
  - ✓ ID (Unique identifier provided with 2nd data set)
  - ✓ Predicted Value (Resulting score from modeling algorithm)
  - ✓ Individual Rank (Most likely individual based on predicted scored = 1, 2nd most likely individual = 2, etc...)

Humana will access model accuracy

- Humana will append 'outcome' to the scored file provided by each team
- ROC curves will be developed for each scored file
- Based on the ROC curve, AUC metric will be assigned to each team's submission
- Top 50 teams will be identified and selected using AUC metric

Round Two | Written Submission Evaluation

Establish key performance indicators aligned to business issue | 15%
- o Explicit statement of the business issue and a translation into a data problem.
- o 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 | 35%
- o Analytical approach conveys an appreciation of varying data types, variable relationships, and background research.
- o Data have been cleaned, manipulated, and labeled appropriately ensure analyses are broadly applicable.
- o Key drivers of outcomes are identified and explained
- o Performance/evaluation of analytical approach are provided along with rationale for final selection.

Ability to provide implications and recommendations based on results/insights | 50%
- o Tell the story of why your results matter and how they should be actioned….'So What?'
- o Include a clear statement of recommendations – *based on your findings & results.*
- o Based on the recommendations, include the potential impact to the business.

Round Three | Presentation

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

Professionalism and Communication

o Presentation is visually engaging and professionally delivered

o Business problem, analytical approach, and results are well connected and clearly articulated.

o Recommendations and Implications to Humana are well-defined and appropriate to the payer context.

o Presenters are well prepared and able to address questions in a clear and concise manner

Final Submissions

Submissions due on Tuesday, October 11th at 11:59PM CT | <u>Late submissions will not be accepted</u>

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

Scored File Format: *CSV* (Fields include: ID, SCORE, RANK) | Example:

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

Written Submission Format: *MS Word, PDF*

Final submission file names should be in the following format, using the first and last names of your team captain

- o   CaseCompetition_*FirstName_LastName*.csv
- o   CaseCompetition_*FirstName_LastName*.doc

Judging is Blinded | <u>Do not include names or school in content of submission</u>

If you have any issues with your submission, please email: *humanacasecomp@tamu.edu*

Questions?

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

Email: *humanacasecomp@tamu.edu*