

Football Stadium. Evacuation Simulation Study Verified.

Franklin Field is the University of Pennsylvania's (USA) stadium for football and field hockey. The Field, deemed by the National Collegiate Athletic Association as the oldest field still operating for football, was the site of the nation's first scoreboard in 1895. The Cartographic Modeling Lab (CML) of Penn University performed a simulation with SimWalk for an evacuation model for the graduation event in the Franklin Field Stadium for Public Safety.

The goal was to create a simulation model and run several scenarios to generate multiple outcomes. The CML explored four options to pursue the problem: A raster model, a transportation model, a computational fluid dynamics model and an agent-based model.



CML recommended Public Safety to utilize SimWalk - an agent-based model and powerful analysis tool for pedestrian flows that helps simulate and evaluate security and walkability scenarios of pedestrians.

CML used SimWalk to create an evacuation model of 15'000 to 18'000 people during the graduation event at Franklin Field Stadium. The total seating capacity of the stadium is 52'593. For the graduation simulation 12'000 to 13'000 parents, 6'000 students, 70 academic council members, and 75 disabled were modeled.

Different timings were assigned to each agent group created and multiple scenarios were run. CML did multiple controlled and non-controlled simulations. The simulation results changed from 15 to 16 minutes in general.

Summary

The Cartographic Modeling Lab (CML) of Penn University simulated an evacuation incident at the Franklin football field, Pennsylvania, USA. The simulation study, comprising 15'000 to 18'000 visitors, resulted in an evacuation time of between 15 and 16 minutes. The accurateness of the result was validated later through an actual evacuation exercise of the Franklin football stadium.

In the same year the University of Pennsylvania's Division of Public Safety managed an actual evacuation event in the Franklin Field Stadium. The evacuation experiment was timed and the model was right on.



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