# Introduction

A *tournament* is a contest in which prizes are awarded to the top N contestants as ranked by the quality of their solution.

A *race* is a contest in which prizes are awarded to the first N contestants to hit a certain quality level.

Assuming no feedback, contestants will be exerting effort if the expected time to develop a solution is sufficiently low or equivalently the cost of speeding up production is sufficiently small.

As soon as top coders face lower costs of production, they should enter the competition.

On the one hand, the fastest contestant may not be the one also capable of providing the best quality. For example, top coders may have more constraints on the time to spend on a competition.

We plan to gather data on

1. Number & quality of the solutions submitted.
2. Self-reported measures of hours worked.

## Possible outcomes

|  |  |  |
| --- | --- | --- |
| **Race\Tournament** | Someone’s solution is above the required level | No solution is above the required level |
| Someone’s solution is above the required level | (A) Race < Tournament? | (B) Race > Tournament? |
| No solution is above the required level | (C) Race < Tournament? | (D) |

If (A) occurs, this implies that competition in the tournament was not very intense. The race

# Experimental Design

* Registration phase.
* Split into groups:
  + If sample size is large enough, we create groups of different size to study variation in group size.
  + Randomize by rating? Or experience?
* **Race**
  + **The first 2 to hit a quality threshold are awarded a prize.**
  + **Evaluation of solutions** 
    - Participants receive feedback based on the testing dataset.
    - In the background we also compute the final score.
    - As soon as someone hit the threshold, we send a notification.
* **Tournament**
  + **The top ranked 2 are awarded a prize.**
    - Minimum quality level for their solutions?

# Literature Review

## Theory

* Moldovanu & Sela (2001)
  + We extend to incorporate a race.
* Harris & Vickers (ReStud, 1985) “Racing with uncertainty”
  + Interplay of *uncertainty* in the outcomes of effort and *strategic interaction* between competitors.
  + Leaders make greater efforts as the gap with the followers widens.
* Fudenberg, Gilbert, Stiglitz, Tirole (EER, 1983)
  + When races are neck-to-neck and when degenerate into monopoly?
* Zizzo (IJIO, 2002)
  + lab. experiment on H&V predictions.
  + Not as predicted!
* Baye & Hoppe (GEB, 2003)
  + Tullock contest function races are equivalent to tournaments.

## Surveys

* Konrad (book)
* Decheneaux, Kovenock, Sheremeta (2012)
  + Dynamic contest: one paragraph on races. Mainly Zizzo’s results.

## Something to read

* Hoppe & Lehman-Grube (JET, 2005), “Innovation timing games: a general framework with applications“