Replication of Payne et al 2017
"Economic inequality increases risk taking"
PNAS 114(18), 4643-4648.
http://www.pnas.org/content/114/18/4643

The original paper contains several studies. We randomly chose experiment one. In this between-subject experiment, participants are randomized to either a low or high inequality condition. Inequality is manipulated by showing participants a distribution of previous participants' earnings, which can have high or low variance. Participants then make three risky choices, each containing five different options that vary in risk. Risk taking is higher in the high inequality condition than in the low inequality condition.

Hypothesis to replicate and bet on: High inequality leads to higher risk-taking than low inequality. To evaluate this hypothesis, the authors perform an independent samples *t*-test on the average probability of getting the low outcome across all three gambles ($t(219) = 2.21$, $p = 0.028$); p. 4644. This test was chosen since it was the key result in study 1.

Criteria for replication: The criteria for replication are an effect in the same direction as the original study and a *p*-value < 0.05 in a two-sided independent samples *t*-test.

Power analysis: The original sample size was 221. The standardized effect size (Cohen's *d*) was $d = 0.297$. To have 90% power to detect 67% of the original effect size, a sample size of $n = 1070$ is required.

Sample: The original paper mentions no restrictions on who could participate. We will make sure that participants can only participate once from the same account in this specific study, and we will only recruit participants with a HIT approval rate of 95% or higher. We will also check all IP addresses via https://www.ipqualityscore.com/; and we will remove any participants where one or more of the following is true: fraud score >= 85; TOR = True; VPN = True; Bot = True; abuse velocity = high. The replication sample size is the sample size after any exclusions of participants.

Materials: We will use the same material as in the original study. In particular, we will use the *Qualtrics* survey kindly provided by the original authors.

Procedure: We will closely follow the procedures of the original study. The following summary of the experimental procedure is therefore largely based on the description of the experiment in the article's main text (p. 4644) and Materials and Methods section (pp. 4647–4648).

Participants will be recruited to participate in a "*Decision game.* Participants will first be shown a Captcha, and will thereafter provide informed consent. After this we will include an attention check that participants will need to pass to continue to the study. This attention check is in addition to any other potential attention check(s) used in the original study. Participants will be told that many people have played this game before and shown a graph of the distribution of payoffs of previous players. In the high inequality condition, the graph will show a high variance in payoffs, while in the low inequality condition, the graph will show a low variance in payoffs. Participants will then

be asked what their minimum earnings (from $0.00 to $2.50) would have to be for them to feel satisfied with their performance, and what their highest expectations of earnings are.

Participants will then make three choices over lotteries, each choice involving five lotteries of the form *"p chance of winning $x, 1-p chance of winning $0."* The lotteries will have equal expected earnings but differing variance. Risk-taking will be defined as the average probability of winning $0, averaged over all three lottery choices.

Analysis: The analysis will be performed as in the original paper. In particular, we will perform an independent samples *t*-test comparing the average probability of winning $0 in the high inequality condition and the low inequality condition.

Subject payments: We are standardizing payments across all replications so that studies have a certain show-up fee depending on the expected length of the study, with an hourly wage from the show-up fee of $8 and a minimum payment of $1 (for studies with incentive payment we use the same incentive payment as in the original study; and this payment is paid in addition to the show-up fee). If we have problems recruiting, we will increase the show-up fee.