# Data Key

## Landmark Estimation Task - Concise (landmark.csv)

The data used in primary analysis. Participants’ forearm length and error measured each trial.

### Grouping Variables

ppid **–** Participant Number. The identifier given to the participant’s data set.

order – where the block occurred, pre, first after tool-use, or second after tool-use.

trial **–** The block-relative trial of the sample. There were 18 trials in the landmark task.

time **–** The timing of the task, relative to the tool-use block.

target **–** The targeted landmark, wrist, elbow or forearm (halfway between the wrist and elbow).

closest\_to – The landmark that the estimate was actually closest to.

lapse – Whether the estimate qualified as a “lapse” by being >50% the participant’s arm length away from the actual target.

lapse\_fix\_target – The closest target to the estimate in the event of a lapse

### Outcome Variables

forearmlength – The participant’s forearm length as measured by (studies one and two, vr and real) the distance between two SteamVR trackers (in meters). For study 3 (avatar), this was taken from the IK targets for the wrist and elbow.

error – The offset between the stimulus at the moment of the participant’s estimation and the targeted landmark (in meters).

Lapse\_fix\_error – The offset between the stimulus and the (possible) real target of the estimate

## Landmark Estimation Task - Full (landmark\_full.csv)

Used for some supplemental/exploratory analyses. In addition to the above, coordinates of the three landmarks, and some characteristics of the stimuli (such as the random “noise” added to the oscillation points), for each trial.

### Grouping Variables

experiment – Experiment identifier (for later)

block – The experiment-relative order in which the set of trials was applied. There were 5 blocks in total.

### Outcome Variables

the pos\_x, pos\_y, and pos\_z columns are the coordinates of the wrist (w), elbow (e), forearm (f) and stimulus (s) respectively.

noisewrist, noiseelbow, and startposition correspond to the distance added to the wrist and elbow perturbations, and the stimuli’s start position, respectively.

trialtime corresponds to the length of time the participant took to make the estimate.