**Skeletal Data and Age-of-Transition Curve Estimation**

TA3-V1.0 skeletal data are in Age Estimation Data2.xlsx and Curve\_Estimation\_data.xlsx. Code for the generation of age-of-transition curves is in Transition Curve Estimation.r. Age-of-transition curves were generated from Curve\_Estimation\_data.xlsx.

For the most part, column headings correspond to skeletal age indicators described in accompanying publications. The same is true of Region, either Other or North America. Collection refers to skeleton origin, with those designated BM from Portugal, CM from Thailand, UP from South Africa, and UT and M from the United States.

In the Age Estimation Data2.xlsx file, there are three options for each cell: blank, 0, and 1. Blank cells can indicate missing data (skeletal structure not observable). The situation is more complicated for skeletal structures that are observable.

For characters with only one transition – only two stages such as absent and present – the cell will either have a 0 indicating absent or a 1 indicating present. A blank indicates the observation is missing.

For characters with two transitions – there are three character stages (0, 1, 2) – the 0 stage is indicated in two adjacent cells by a 0 followed by a blank (0, blank). For the intermediate stage, the scores in the two cells would be 1 followed by a 0 (1, 0). For the advanced stage, the scores in the two cells would be a blank followed by a 1 (blank, 1).

For characters with three transitions – there are four character stages (0, 1, 2, 3) – the scoring is similar. The 0 stage is indicated by a 0 followed by two blanks (0, blank, blank). For the second stage, the scores in the adjacent cells would be 1 followed by a 0 and blank (1, 0, blank). For the third stage, the scores in the cells would be blank followed by a 1 and then a 0 (blank, 1, 0). For the fourth (the terminal) stage, the scores in the cells would be blank and blank followed by a 1 (blank, blank, 1).

In the Curve\_Estimation\_data.xlsx file, there are again three options for each cell: blank, 0, and 1. Blank cells can indicate missing data (skeletal structure not observable).

For characters with a single transition – only two stages such as absent and present – the cell will either have a 0 indicating absent or a 1 indicating present. A blank indicates the observation is missing.

For characters with two transitions – there are three character stages (0, 1, 2) – the 0 stage is indicated in two adjacent cells by a 0 followed by a 0 (0, 0). For the intermediate stage, the scores in the two cells would be 1 followed by a 0 (1, 0). For the advanced stage, the scores in the two cells would be a 1 followed by a 1 (1, 1).

For characters with three transitions – there are four character stages (0, 1, 2, 3) – the scoring is similar. The 0 stage is indicated by a 0 followed by two 0s (0, 0, 0). For the second stage, the scores in the adjacent cells would be 1 followed by two 0s (1, 0, 0). For the third stage, the scores in the cells would be 1 followed by a 1 and then a 0 (1, 1, 0). For the fourth (the terminal) stage, the scores in the cells would be three 1s in a row (1, 1, 1).

The R program, Transition\_Curve\_Estimation, estimates transition curves using GLM on original age data, GLM on log-transformed age data, and GAM models. The curve with the lowest AIC value is chosen as the most parsimonious. A file with the log of the transition probability for each character is produced. A log transition avoids values so close to zero that the precision would be considered zero.