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Tiffany N Kolba* (tiffany.kolba@valpo.edu). *The Mathematics Behind Twin Motherhood.*

The phenomenon of twins, triplets, quadruplets, and other higher order multiples has fascinated humans for centuries and has even captured the attention of mathematicians who have sought to model the probabilities of multiple births. This talk gives an overview of the previous mathematical research on multiple births, as well as my own contributions to the field, which were motivated by my personal experience of twin motherhood. In particular, this talk presents novel estimates for the zygosity type frequencies of twins, triplets, and quadruplets, where the zygosity of a set of multiples is defined as the number of eggs from which they derived. Twins can be either monozygotic (identical) or dizygotic (fraternal), while triplets can be mono-, di-, or trizygotic and quadruplets can be mono-, di-, tri-, or quadrazygotic. The zygosity type estimates rely upon modeling the relative rates of the two distinct biological mechanisms that produce multiple births, namely, division and polyovulation. (Received July 31, 2019)