The aim of this study was to derive percentile values for birth weight, length, head circumference, and weight for length for singleton neonates based on the German perinatal survey of 2007-2011 (using data from all 16 states of Germany). We also compared these new percentile values with the percentile values of 1995-2000 that so far have been considered standard values. Data of 3,187,920 singleton neonates from the German perinatal survey of the years 2007-2011 were kindly provided to us by the AQUA Institute in Göttingen, Germany. Sex specific percentile values were calculated using cumulative frequencies. Percentile values at birth were computed for the 3(rd), 10(th), 25(th), 50(th), 75(th), 90(th), and 97(th) percentiles for 21-43 completed weeks of gestation. Percentile curves and tabulated values for the years 2007-2011 were compared with the published values of 1995-2000. Overall the new percentile curves closely resemble the previous ones. Minimal differences can be found for the 10(th) percentile and generally for early weeks of gestation. Values for the 10(th) percentile in the 2007-2011 dataset are somewhat higher than values of 1995-2000 for birth weight, length, and weight for length. We recommend the use of these new percentile values instead of the old.