The aim of this study was to investigate bone mass using different cone-beam computed tomographies (CBCTs) combined with image analysis and to determine whether bone quantity or quality was detected. Different measurements recorded on mandible bones of pigs in the retromolar region were evaluated on ProMax 3D (Planmeca Oy, Finland) and the ILUMA(TM)CT (IMTEC(TM) Imaging, Ardmore, OK) to calculate a calibration curve. The spatial relationships of pig mandible halves relative to adjacent defined anatomical structures were assessed by means of 3D visualization software. In addition to the screenshot, their bone quality was evaluated in accordance with the Lenkholm and Zarb classification. The CBCT calibration curves based on the measurements taken from the ProMax and ILUMA CT showed linear correlation. Huge Hounsfield units intervals were found between the 2 CBCTs and there was no correlation with the computed tomography. Exact information on the micromorphology of the bone cylinders was not available. A subjective correlation according to Lenkholm and Zarb showed overlapping in all groups. CBCT is a good choice for analyzing bone mass. However, it does not provide any information on bone quality. To obtain information on the microarchitecture of the spongiosa, it is necessary to use a computed tomography with finite element analysis.