BACKGROUND: The weight gain during pregnancy is influenced by maternal body weight and height. With this study we want to illustrate the relationship between weight, height, body mass index (BMI) and the weight gain in pregnancy. MATERIALS AND METHODS: Data of about 2.3 million singleton pregnancies were taken from the German perinatal statistics of 1995-2000. Weight gain was calculated as the difference between the weight at the end of the pregnancy and the weight at the first consultation. RESULTS: The distribution of the weight gain resembles a normal distribution. Overall mean weight gain is 12.8 kg. For women weighing < 63 kg, there is a rise in weight gain with increasing body weight at the first consultation. Beyond 63 kg the amount of weight gain falls with increasing body weight at the first consultation. Weight gain increases with increasing height. Overall there is a negative correlation between BMI and weight gain. However, women with the same BMI but different body weights and heights can differ significantly with regard to their weight gain. CONCLUSIONS: Height and body weight at the beginning of pregnancy are important determinants of the weight gain. They should therefore be used when assessing the weight gain in clinical practice. Use of the BMI, however, is not appropriate. We are investigating other ways of combining body weight and height. This will be discussed in a later publication.