

The measurements were divided into groups based upon the adult size of the dog and the age at measurement, e.g., six weeks, seven weeks, etc. For each group, probabilities were calculated to determine the range of measurements at which at least 95 percent of the dogs in that range would end up oversize; similar 95 percent ranges were determined for insize and undersize Shelties. These ranges were then plotted on a graph.

Two charts have been drawn using the study data. The first chart, titled "Nobel Litter Chart," depicts growth curves between 6 and 12 weeks of age. The second chart, titled "Nobel Individual Growth Chart," depicts growth curves from 12 weeks to 10 months.

The Litter Chart

The litter chart allows the breeder to simultaneously chart the growth of several puppies. It has both daily and weekly demarcations, so if it is inconvenient to measure puppies on the same day each week, they can be measured on any day and still be placed accurately on the chart.

The chart is divided into three main zones, marked "oversize," "safe," and "undersize." These zones are separated by a gray area, which acts as a "danger zone."

If a puppy's measurement falls in the oversize area, it has at least a 95 percent risk of going oversize as an adult. This means that out of 100 puppies with a single measurement in this zone, only five or less have a chance at remaining insize. The likelihood of maturing insize falls to less than one in 100 after a pup has measured in the zone for a month.

Similarly, if a puppy measures below the gray area and in the undersize zone, it has a 95 percent chance of maturing at less than 13 inches.

Puppies whose measurements fall in the safe zone have at least a 95 percent chance of remaining insize. The longer a dog tracks in this area, the better its chances become. Once a pup has measured for one month in the zone, it is extremely unlikely to go over or under.

Some puppies will not fall into one of these clearly marked zones, and will instead measure in the gray area. Dogs measuring in this gray area are at risk of "going out," and accurate size predictions cannot be made for them. After nine weeks of age, the gray zone splits into an upper and lower limb. Dogs in the upper limb are at risk for oversize; dogs in the lower limb are likely to mature at 14 inches or less, and are at risk for undersize.

Surprisingly, there is no safe zone for puppies under nine weeks of age. According to the study data, size is almost completely unpredictable in these younger pups. Very large pups, and very small ones, may measure into the over- or undersize zones, but all the rest fall into the gray area. The position the pup occupies in the gray area has very little predictive value; it is possible for a pup near the bottom of the gray zone at six weeks to go oversize, and for a pup near the top to go under (see Figure 1). A pup measuring in the gray area should be followed weekly, and the slant of the line can be used as a guide to predict its eventual path.

Because most breeders are accustomed to using a line-type chart, there is a tendency to "forgive" a dog for measuring "just a little" above the line. It is important to note that on this chart, the gray area already encompasses a

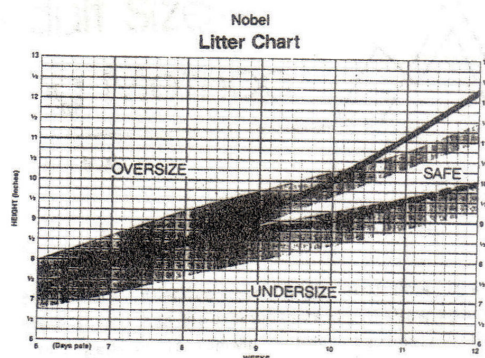


Figure 1.

Before nine weeks of age, size cannot be accurately predicted. The larger of these two pups grew slowly, ending up at a mere 14 inches. The smaller pup, showing rapid growth after the ninth week, matured well over 16 inches.

wide margin of error in measuring. A dog that consistently measures above the gray area and into the oversize zone, even if it is only an eighth of an inch above, will almost certainly go over. Breeders should give very careful consideration before retaining a pup charting in the oversize zone.

The majority of dogs destined to measure between 14 and 15½ inches at maturity will be tracking in the safe zone by the time they reach 12 weeks. A breeder who wishes to avoid extremes and have minimal risk of size problems can use this as a guideline for selecting and discarding puppies. On the other hand, just because a dog is tracking in the upper gray zone does not mean it is doomed. Almost 66 percent of the dogs tracking in this zone on the litter chart eventually slow down and mature insize. For breeders willing to take a 30 percent or greater risk of oversize or for those who prefer larger dogs, puppies tracking in this area will be worth retaining.

The Individual Growth Chart

Once a pick pup reaches 12 weeks of age, it can be transferred to the individual chart. This will allow its growth to be followed until it reaches its adult size.

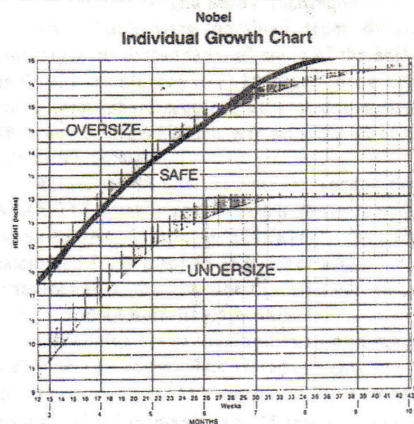


Figure 2.

A dog can track along the lower edge of the gray area and still mature oversize. This Sheltie had a growth spurt after six months, and was definitely oversize by nine months. A dog must be considered at risk for oversize as long as its measurements are in contact with the gray area.