The file WBNB_May05.xls on the course website contains weigh-in-motion data from I5 northbound at the Woodburn station. The data is collected over a relatively short period of time and from two of the three available lanes on the highway.

1) Determine the mean and standard deviation of the top 20% of the gross vehicle weight (GVW) data. Consider each lane separately and then lump the lanes together. Does a normal distribution adequately describe the GVW data? Are data from the two lane positions different?

2) What is the expected maximum GVW for a single truck in 5 years and in 75 years if the ADTT volume is considered to be constant (and represented by the data). Consider only the lumped lane location data.

3) What is the expected maximum GVW for a single truck in 5 years and in 75 years if the ADTT volume is considered to grow at a rate of 5% annually (with the present data representing the first year volume). Consider only the lumped lane location data (ignoring which lane position the trucks occupy).

4) Considering gross vehicle weight (GVW) as the notional parameter that will be used to determine the magnitude of the live load factor. What load factor should be used if the federal legal truck (defined as a 72,000 lb GVW truck) is used as the design vehicle. Develop live load factors for a 75 year design life and a 5 year rating evaluation period.

5) If every 15th truck is considered to be side-by-side, (with the 16th truck), what is the combined GVW of the two trucks. Determine the mean and standard deviation of the combined side-by-side trucks (Use all data that are coincident). Determine the maximum combined GVW for two side-by-side trucks in 75 years with constant truck volume. Note: use line 15 with 16, 30 with 31, 45 with 46, etc. in the order they appear in the original raw data set.