Heavy trucks represent major loads to highway bridges. With economic developments, truck loads change their patterns over time. This paper discusses the trend of truck load change as well as its impact on highway bridge structures.

Specifically, one of the issues to be tackled here is the impact of truck weight limit change on a bridge network, such as a county, state, province, or a country. Aspects of significant impact of truck weight limit change have been studied and prioritized. These impact aspects are then researched in details in order to quantify them. A computer software program has been developed to efficiently perform this type of analysis.

Another issue related to truck load’s effect on bridge design load is also focused here. In a local area in the transportation system, the truck load spectrum may be significantly different from other areas. It should be pointed out that, on the other hand, the design truck load for bridges often remain constant for the bridge network the local area belongs to. This design load usually represents an average of the extreme truck loads in the network. Unfortunately, this design load may not envelope those heavy loads in the particular local area, such as a metropolitan area where economic and manufacturing activities are intensive. For those areas where extremely intensive truck loads are present, detailed analysis is warranted with regard to bridge safety. This paper presents an example of such analysis for the metropolitan Detroit area in the US. Results show that the current state-wide design load (AASHTO HS25) is not adequate for this area’s bridges, simply because the truck loads are much more severe than other areas in the state and the entire country.