Transportation lies at the heart of human endeavour and sustains most social and economic activity. Over the past 50 years, the field of transportation has benefited in a major way from advances in mathematical modeling, algorithmic design, as well as computer and information technology. This can be explained in part by the fact that most transportation problems can be modeled and solved using network representations and mathematical programming tools. Also, the large volumes and costs encountered in transportation systems mean that any saving can translate into large sums of money. In this talk I will examine some areas of transportation where mathematical optimization techniques have had the most impact. Examples will be provided in the fields of air transportation, public transit, urban traffic, trucking and ambulance dispatching.