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Equilibria and Optima

This lecture covers the theory of traffic congestion on road networks. It begins by reviewing statistics on the severity of traffic congestion in cities around the world. It then proceeds to explain the fundamentals of traffic congestion. Both static and dynamic models are described with allowance for heterogeneity in the characteristics of drivers and vehicles. Optimal congestion tolls are derived for the two types of models. Attention then turns to optimal capacity and its relationship to optimal congestion tolls. The lecture concludes by reviewing the cost recovery (i.e., self-financing) theorem whereby optimal congestion tolls pay for the cost of optimal capacity.