

# Allocation Rules on Networks

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## Abstract

Given geographical or infrastructure constraints, it is important to understand how scarce resources should be allocated. An example where such network constraints are essential is water resources. We depict the water distribution infrastructure as a network between sources and cities which are linked by rivers and pipelines. In a stylized model, we assume that sources are only connected to cities and cities are only connected to sources. We define the proportional rule, the constrained equal awards and the constrained equal losses rules and give algorithms how to calculate these allocation rules. The objective is to identify allocation rules that are well-behaved from the normative and strategic viewpoints. In addition to efficiency, we look for distributional fairness. We also give axiomatic characterizations of before mentioned rules.

*Keywords: Networks, Claims Problems, Constrained Proportional Rule, Constrained Equal Awards Rule, Constrained Equal Losses Rule*