

Apportionment Method from the Viewpoint of Divergence

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Abstract

In apportionment problems, if we minimize the distance between quotas and apportionment, we have the Hamilton method (method of largest remainders) and many paradoxes. Here, we use divergence from quotas to apportionment under extensive conditions and induce the divisor method using the threshold of the Stolarsky mean, which includes the following: Adams' method, Hill's method, a divisor method using logarithmic mean, a divisor method using identric mean, Webster's method, and Jefferson's method. By minimizing the divergence from population quotient to apportionment quotient under the same extensive conditions, we have the divisor method with logarithmic mean as a unique apportionment method.

Keywords: Apportionment; Alpha divergence; Kullback–Leibler divergence; Divisor method; Stolarsky mean

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