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## **Combining Predictive Distributions**

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(Submitted on 8 Jun 2011)

Predictive distributions need to be aggregated when probabilistic forecasts are merged, or when expert opinions expressed in terms of probability distributions are fused. We take a prediction space approach that applies to discrete, mixed discrete-continuous and continuous predictive distributions alike, and study combination formulas for cumulative distribution functions from the perspectives of coherence, probabilistic and conditional calibration, and dispersion. Both linear and non-linear aggregation methods are investigated, including generalized, spread-adjusted and beta-transformed linear pools. The effects and techniques are demonstrated theoretically, in simulation examples, and in case studies on density forecasts for S&P 500 returns and daily maximum temperature at Seattle-Tacoma Airport.

Subjects: Statistics Theory (math.ST) MSC classes: 62C99 Cite as: arXiv:1106.1638v1 [math.ST]

## Submission history

From: Tilmann Gneiting [view email] [v1] Wed, 8 Jun 2011 19:54:19 GMT (65kb)

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