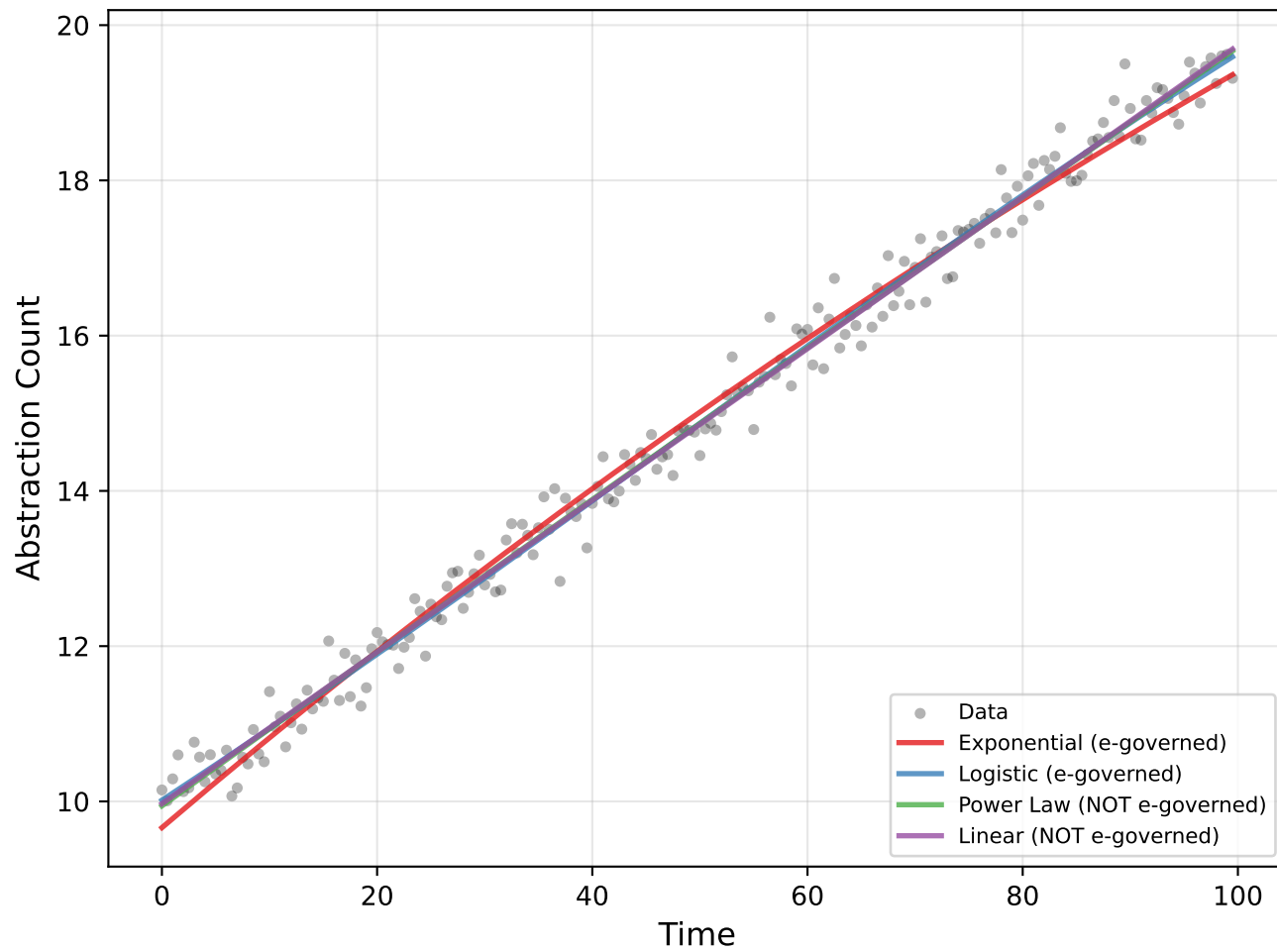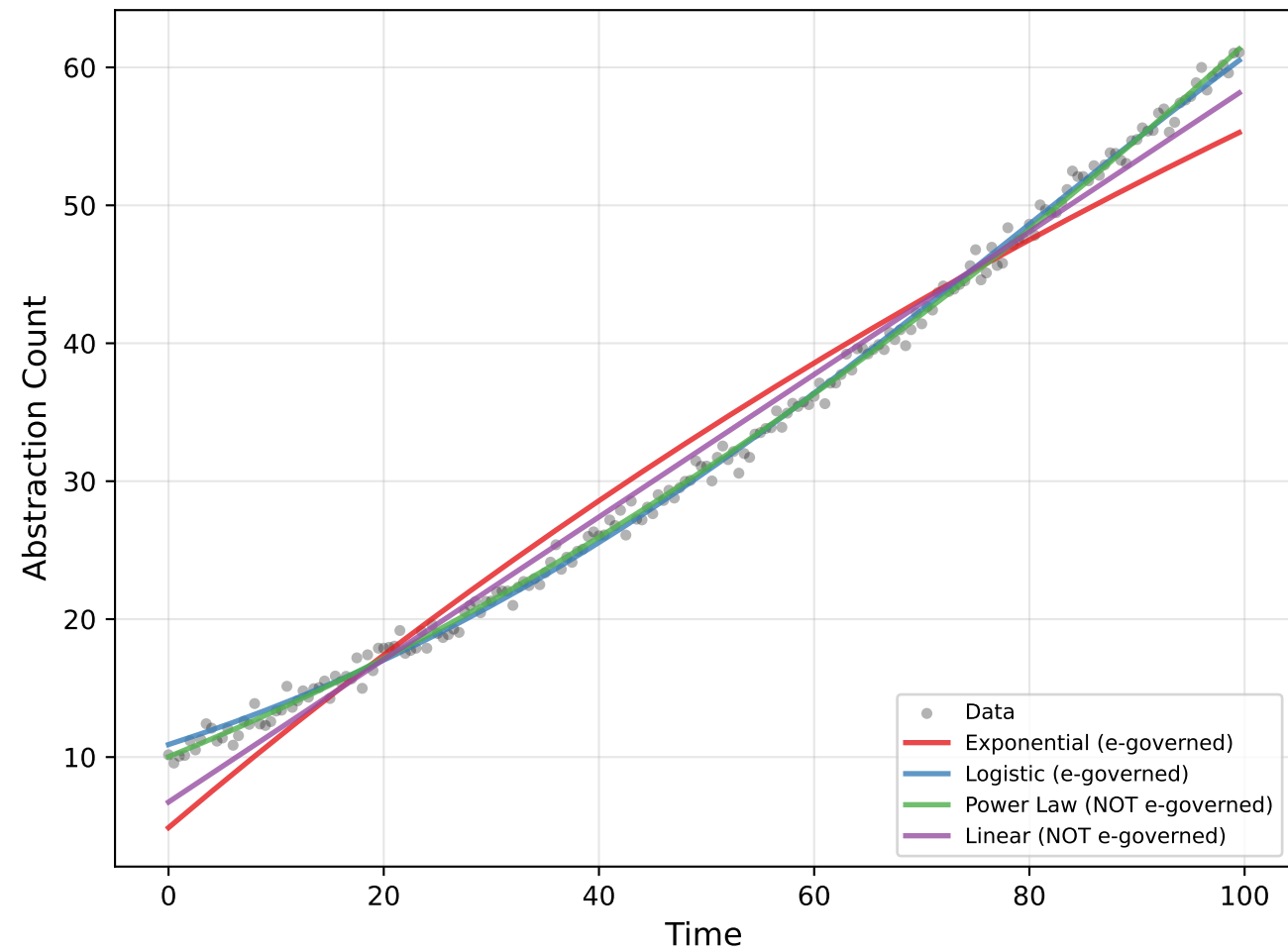Study 1: Compositional Dynamics Across β Values
(Mathematical Verification)