Probabilistic Forecasting at Scale with Numpyro

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KEYWORDS — Probabilistic Models, Forecasting, JAX, NumPyro

I. JAX and NumPyro

II. Classical Time Series Models

i. Exponential Smoothing

ii. ARIMAX

iii. Croston's Method

iv. TSB

III. Hierarchical Models

i. Hierarchical Exponential Smoothing

ii. Hierarchical State Space Models

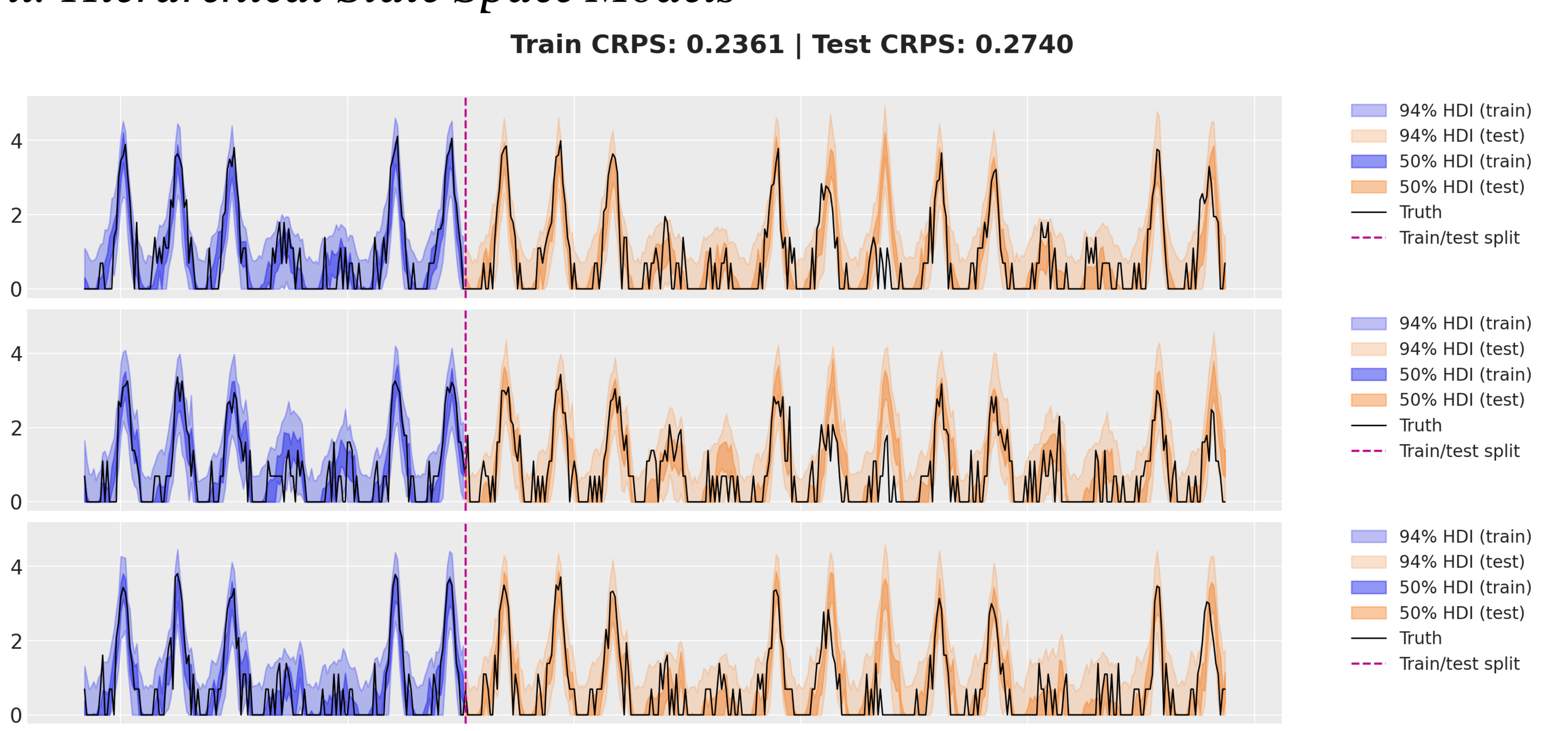

Figure 1: Hierarchical State Space Models

IV. Censoring Likelihoods

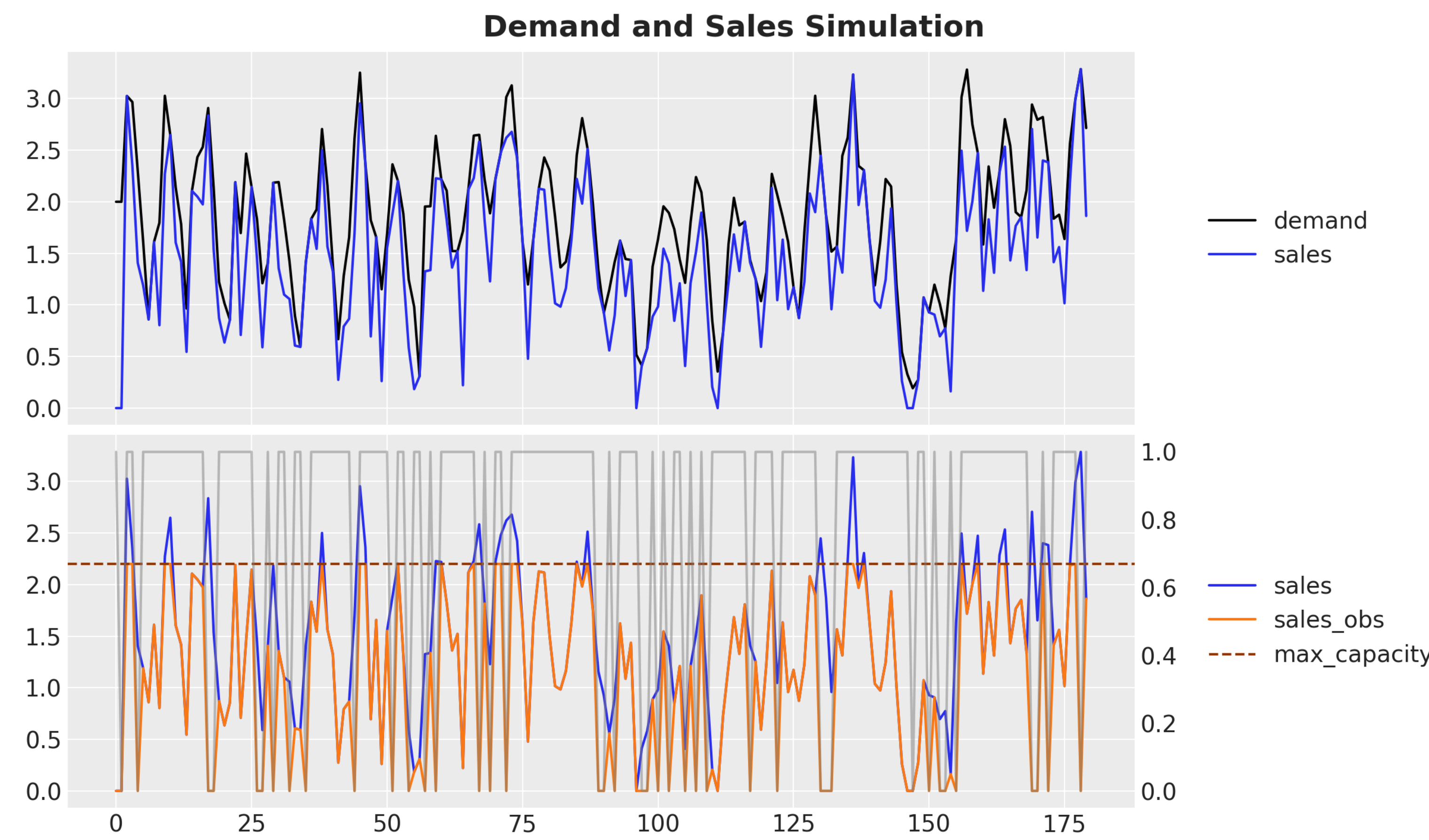

Figure 2: Censoring Data

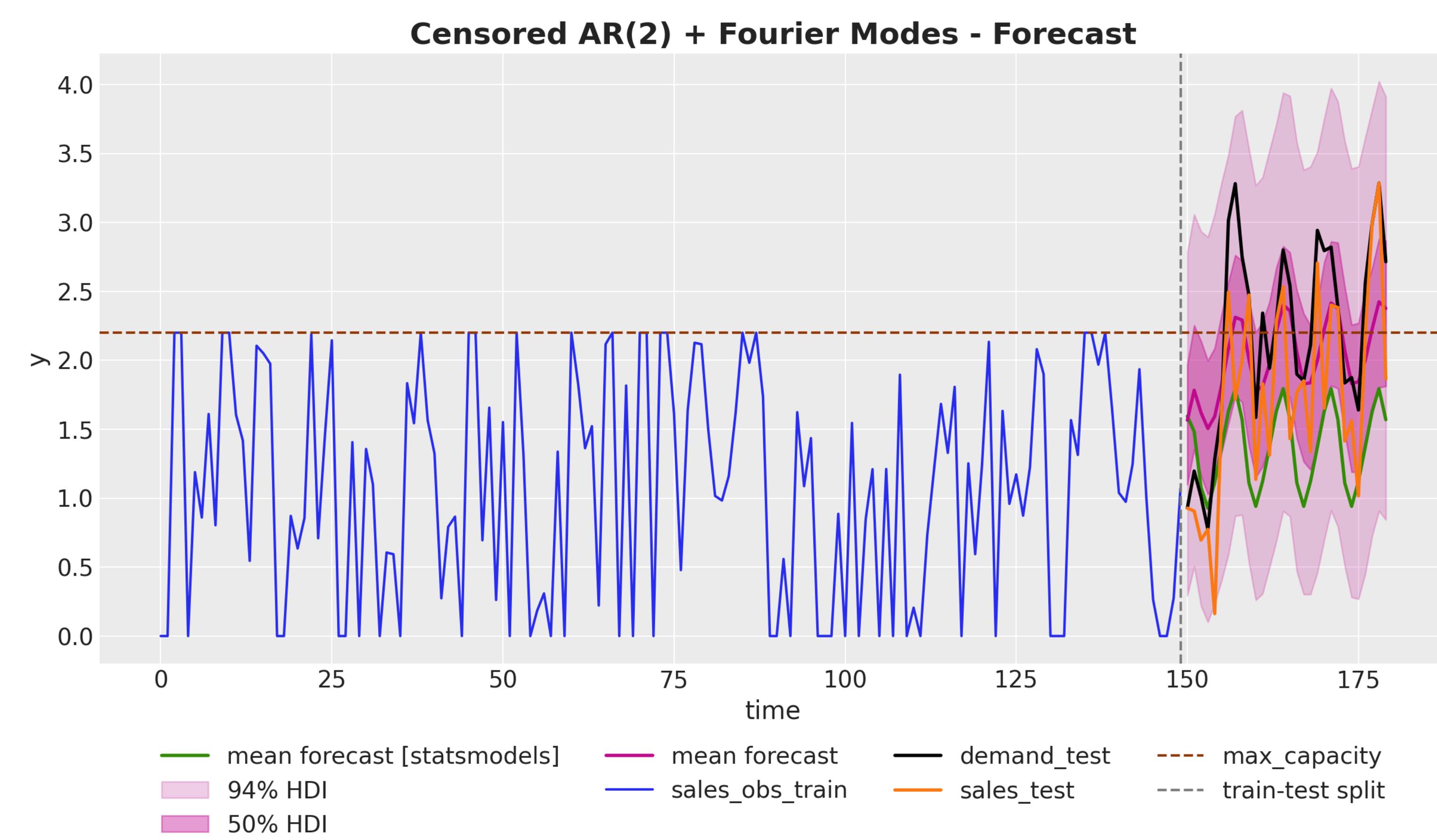

Figure 3: Censored Data

V. Dynamic Models & Calibration

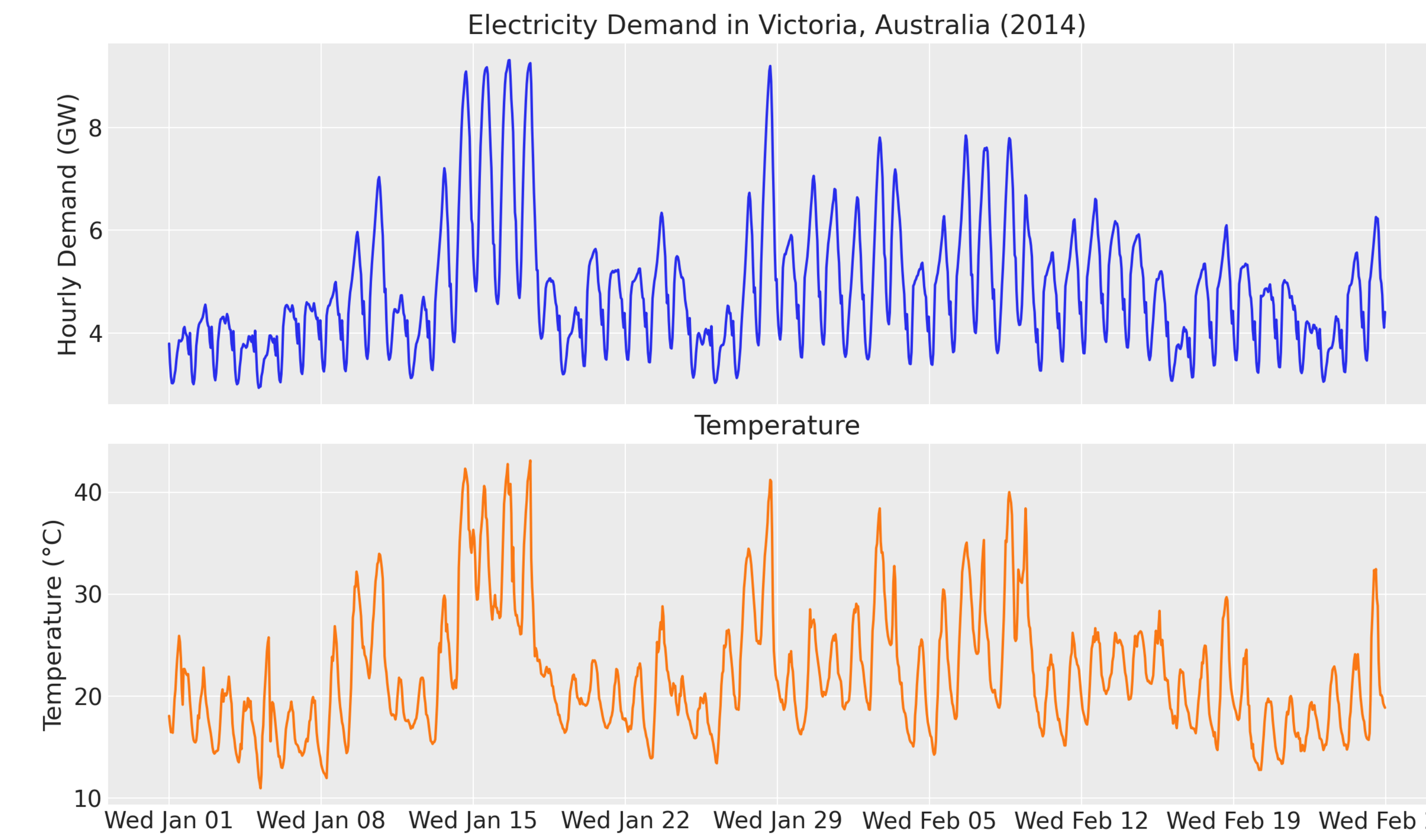

Figure 4: Electricity Demand

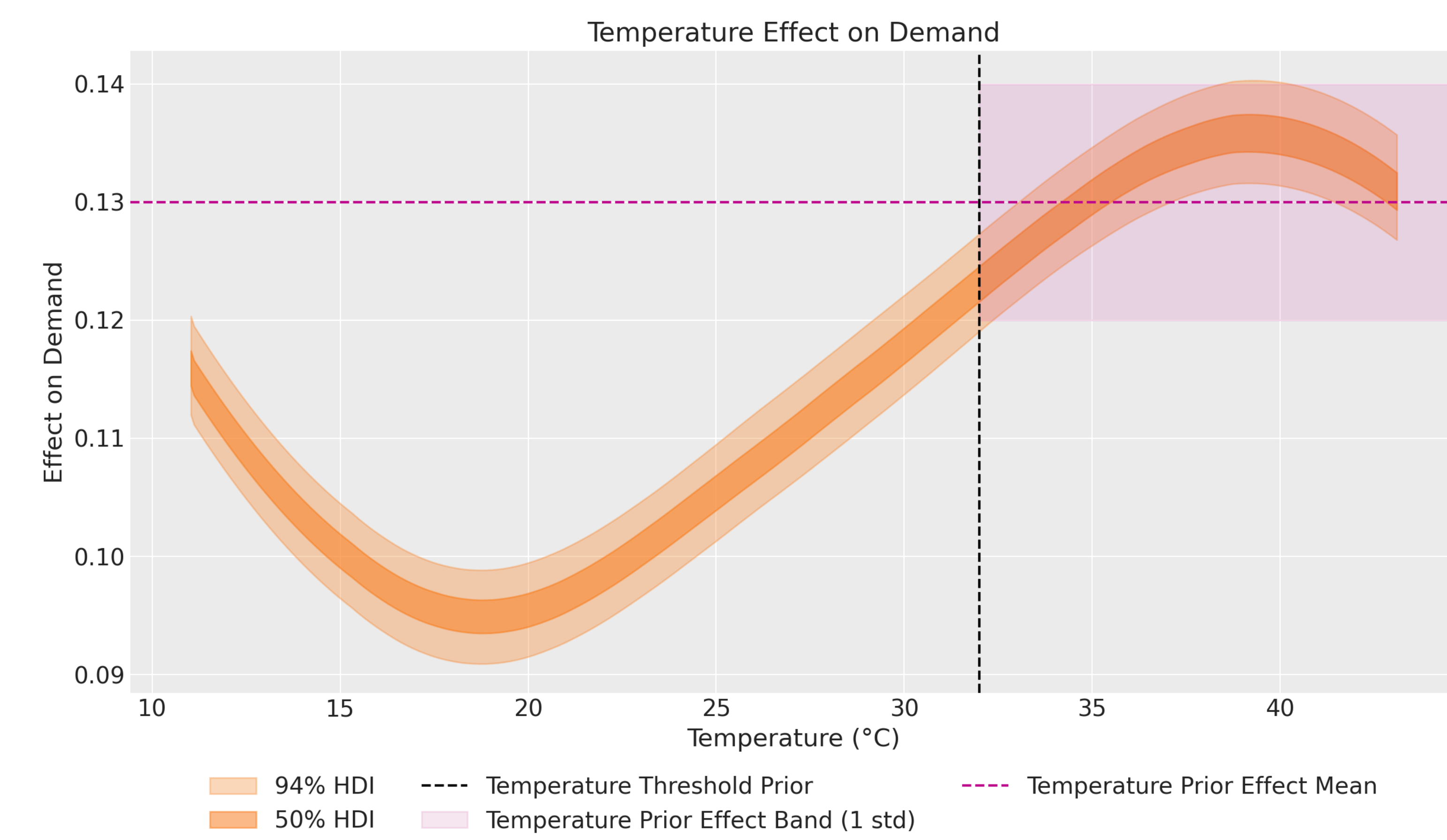

Figure 5: Calibrated Gaussian process dynamic latent variable