

Developing Standards for Research

Features of Time Series

When doing research on time series, it would help if researchers used the same comprehensive set of features to describe time series. This will make it easier to summarize results from different studies. In addition, it will help practitioners to match research findings to their situation.

The following 28 features were drawn from prior literature and from consultation with experts. They were published in the *Principles of Forecasting* handbook (p. 236),

Time Series Features

Domain Knowledge	Historical Data	
<ul style="list-style-type: none"> • Causal forces <ul style="list-style-type: none"> Growth Decay Supporting Opposing Regressing Unknown • Functional form <ul style="list-style-type: none"> Multiplicative Addictive • Cycles expected • Forecast horizon • Subject to events • Start-up series • Related to other series 	<p>Types of Data</p> <ul style="list-style-type: none"> • Only positive values possible • Bounded (e.g., percentages, asymptotes) • Missing observations <p>Level</p> <ul style="list-style-type: none"> • Biased <p>Trend</p> <ul style="list-style-type: none"> • Direction of basic trend • Direction of recent trend • Significant basic trend ($t > 2$) <p>Length of Series</p> <ul style="list-style-type: none"> • Number of observations • Time interval (e.g., annual) <p>Seasonality</p> <ul style="list-style-type: none"> • Seasonality present 	<p>Uncertainty</p> <ul style="list-style-type: none"> • Coefficient of variation about trend > 0.2 • Basic and recent trends differ <p>Instability</p> <ul style="list-style-type: none"> • Irrelevant early data • Suspicious pattern • Unstable recent trend • Outliers present • Recent run not long • Near a previous extreme • Changing basic trend • Level discontinuities • Last observation unusual

Suggestions are welcome. Send them to armstrong@wharton.upenn.edu.