Types of Analytics:

**Descriptive methodologies** focus on analyzing historic data for identifying patterns or trends. Analytic techniques that fall into this category are associated with exploratory data analysis which identifies central tendencies, variations, and distributional shapes. Descriptive methodologies can also search for underlying structures within data when no *a priori* knowledge about patterns and relationships.

Classical Analyses

* [Numerical data desciptive statistics](http://uc-r.github.io/descriptives_numeric)
* [Categorical data descriptive statistics](http://uc-r.github.io/descriptives_categorical)
* [Assumption of normality](http://uc-r.github.io/assumptions_normality)
* [Assumption of homogeneity](http://uc-r.github.io/assumptions_homogeneity)
* [Assessing correlations](http://uc-r.github.io/correlations)
* [Univariate statistical inference](http://uc-r.github.io/univariate_inference)
* [Multivariate statistical inference](http://uc-r.github.io/multivariate_inference)
* [Bootstrapping for parameter estimates](http://uc-r.github.io/bootstrapping)

Text Mining

* [Tidying Text & Word Frequency](http://uc-r.github.io/tidy_text)
* [Sentiment Analysis](http://uc-r.github.io/sentiment_analysis)
* [Term vs. Document Frequency](http://uc-r.github.io/tf-idf_analysis)
* [Word Relationships](http://uc-r.github.io/word_relationships)
* [Converting Between Tidy and Non-tidy Formats](http://uc-r.github.io/text_conversion)

Unsupervised Learning

* [Principal Component Analysis](http://uc-r.github.io/pca)
* [K-means Cluster Analysis](http://uc-r.github.io/kmeans_clustering)
* [Hierarchical Cluster Analysis](http://uc-r.github.io/hc_clustering)

**Predictive methodologies** use knowledge extracted from historical data, to predict future, or otherwise unknown, events. this category include a wide range of approaches to include parametric methods such as time series forecasting, linear regression, multilevel modeling, simulation methods such as discrete event simulation and agent-based modeling;

Machine Learning

* [Preparing for Machine Learning Tasks](http://uc-r.github.io/regression_preparation)
* [Linear Regression](http://uc-r.github.io/linear_regression)
* [Linear Model Selection](http://uc-r.github.io/model_selection)
* [Naïve Bayes](http://uc-r.github.io/naive_bayes)
* [Logistic Regression](http://uc-r.github.io/logistic_regression)
* [Regularized Regression](http://uc-r.github.io/regularized_regression)
* [Multivariate Adaptive Regression Splines](http://uc-r.github.io/mars)
* [Regression Trees & Bagging](http://uc-r.github.io/regression_trees)
* [Random Forests](http://uc-r.github.io/random_forests)
* [Gradient Boosting Machines](http://uc-r.github.io/gbm_regression)
* [Linear & Quadratic Discriminant Analysis](http://uc-r.github.io/discriminant_analysis)
* [Support Vector Machines](http://uc-r.github.io/svm)

Deep Learning

* [Neural Network Fundamentals](http://uc-r.github.io/ann_fundamentals)
* [Neural Network for Regression](http://uc-r.github.io/ann_regression)
* [Neural Network for Classification](http://uc-r.github.io/ann_classification)
* [Feedforward Deep Learning with Keras & Tensorflow](http://uc-r.github.io/feedforward_DNN)

Time Series

* [Exploring & Visualizing Times Series](http://uc-r.github.io/ts_exploration)
* [Benchmark Methods & Forecast Accuracy](http://uc-r.github.io/ts_benchmarking)
* [Moving Averages](http://uc-r.github.io/ts_moving_averages)
* [Exponential Smoothing](http://uc-r.github.io/ts_exp_smoothing)

Machine Learning Interpretation

* [Local Interpretable Model-agnostic Explanations (LIME)](http://uc-r.github.io/lime)
* [Model Interpretability with DALEX](http://uc-r.github.io/dalex)
* [Interpreting Machine Learning Models with the iml Package](http://uc-r.github.io/iml-pkg)

Feature Engineering

* [Creating text features bag-of-words, n-grams, parts-of-speach and more](http://uc-r.github.io/creating-text-features)

Resampling Methods

* [Resampling Basics](http://uc-r.github.io/resampling_methods)

**Prescriptive methodologies** not only look into the future to predict likely outcomes but they also attempt to shape the future by optimizing the targeted business objective while balancing constraints. Analytic techniques that fall into this category include optimization techniques such as linear programming, goal programming, integer/mixed-integer programming, and search algorithms; artificial intelligence optimization techniques such as genetic algorithms and swarm algorithms; and multi-criteria decision models such as analytic hierarchy process, analytic network, process, multi-attribute utility and value theories, and value analysis. The following tutorials walk you through common forms of prescriptive analytics.