**Data exploration and preparation**

[Next:**2. Summary of data science activities ►**](https://lms.latrobe.edu.au/mod/book/view.php?id=5780644&chapterid=780982)

**1. What is data analytics used for**

The main types of analytics

**Descriptive analytics : What happened?**

In this type of activities, the goal is to find a the proper representations of the data. This could be achieved by

* Compress data into smaller, more useful pieces of information;
* Standard and ad-hoc reporting
* Dashboards, mostly static
* Query & drill down into details

**Diagnostic: Why did it happen?**

* Data analysis by employing predefined criteria;
* Rules-based data analysis e.g. controls testing, suspicious transaction activity etc.;
* Essential to process rectification and improvement

**Explorative: What might be interesting?**

* Manual (interactive dashboard);
* Automated discovery (machine learning, e.g. clustering);
* Non-rule based data discovery;
* Uncover underlying structure, patterns, anomaliesDraft: do not circulate

**Predictive: What is likely to happen?**

* Predictive modelling on historical data to produce future likelihood of events
* Prediction, e.g. Random Forest, NN, Deep Learning, GBM etc.
* Forecasting, e.g. statistical(smoothing/ trend/seasonality),

**Prescriptive: What can we do about it?**

* Suggests the best option for handling a future scenario;
* Convergence of prior analytic activities
* Optimisation under uncertainty;
* Closed loop between analytics and process; Draft: do not circulate
* Simulation