

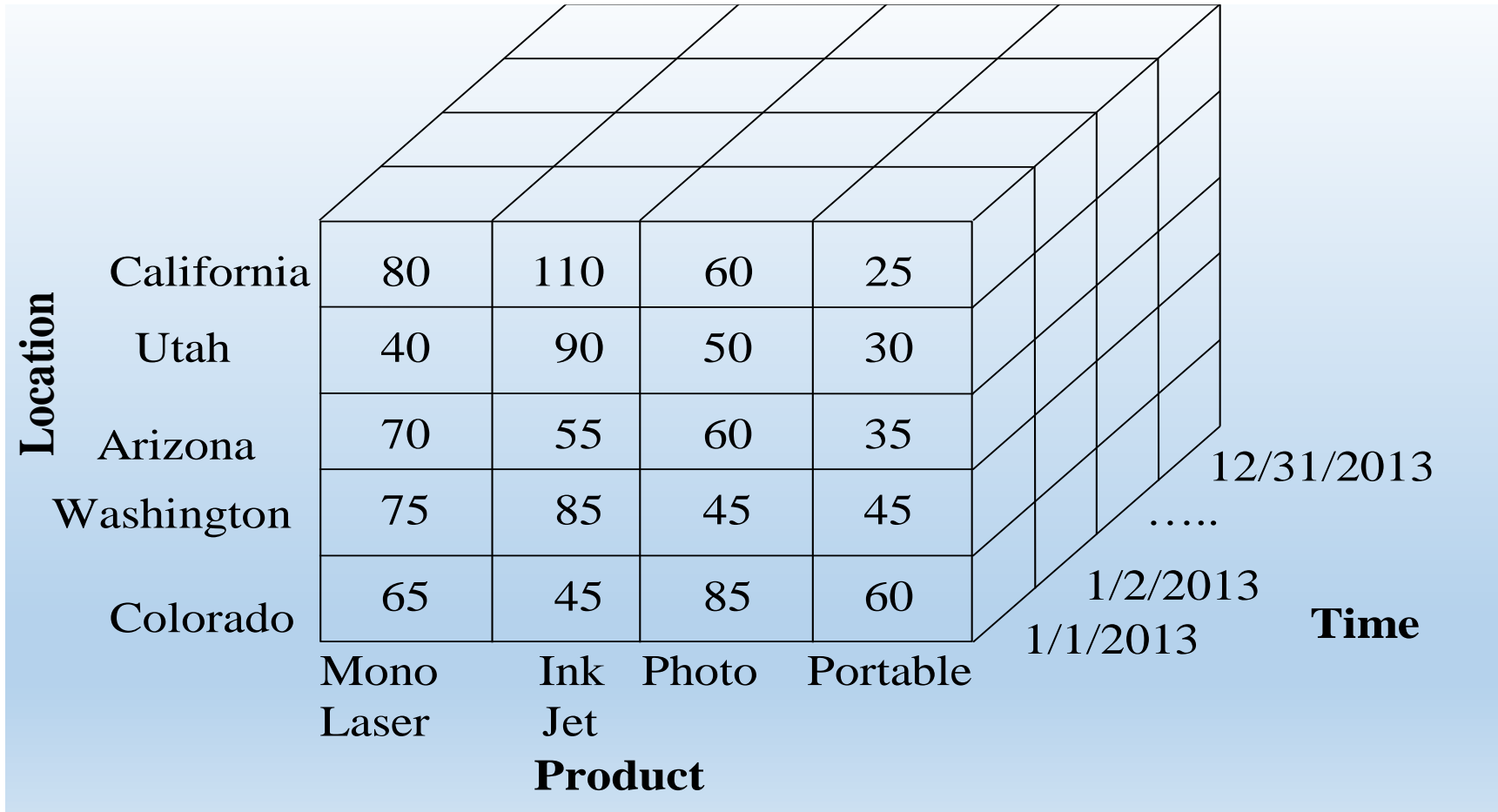
# Multidimensional data representation

Data cube concepts

# Business analyst model

- Factors or influencing variables of interest
- Quantitative variables
- Multidimensional arrangement

# Sales Data Cube Example



# Notes on Dimensions and Measures

- Hierarchical dimensions with sub members
- Sparsity
  - Many cells do not have values
  - Increases with dimension detail and number of dimensions
- Measures
  - Derived measures
  - Multiple measures in cells with the same granularity

# Measure Aggregation Properties

- Additive
  - Summarized by addition across all dimensions
  - Common measures such as sales, cost, and profit
- Semi-Additive
  - Summarized by addition in some but not all dimensions such as time
  - Periodic measurements such as account balances and inventory levels
- Non-Additive
  - Cannot be summarized by addition through any dimension
  - Historical facts such as unit price for a sale

# References

- Kimball, R. (2013).The Data warehouse toolkit, 3 ed, Jhon Wiley.
- Michael Mannino, Data Warehouse Essentials, Chicago Business Press.