Table of Contents

Introduction

The purpose of this job aid is to provide an explanation of dimensional data modeling and of using dimensions and facts to build analyses within the Human Resources – Workforce Deployment Subject Area.

Dimensional Data Model

The dimensional model is comprised of a fact table and many dimensional tables and is used for calculating summarized data. Since Business Intelligence reports are used in measuring the facts (aggregates) across various dimensions, dimensional data modeling is the preferred modeling technique in a BI environment.

STARS - OBI data model is based on Dimensional Modeling. The underlying database tables are separated as Fact Tables and Dimension Tables. The dimension tables are joined to fact tables with specific keys. This data model is called the Star Schema.

The star schema separates business process data into facts, which hold the measurable, quantitative data about the business and dimensions, which are descriptive attributes related to fact data.

Examples of fact data include Comp Rate, Daily Rate and Employee Headcount.

Related dimension attribute examples include HR Event Type, Department, Employment and Time

Fact Tables:

Fact tables record measurements or metrics for a specific event. Fact tables consist of numeric values and foreign keys to dimensional data where descriptive information is kept. Fact tables are designed to a low level of uniform detail (referred to as "granularity" or "grain"), meaning facts can record events at a very atomic level. This can result in the accumulation of a large number of records in a fact table over time. Fact tables are assigned a surrogate key in ensuring each row is uniquely identified.

Dimension Tables:

Dimension tables have a relatively small number of records compared to fact tables, but each record may have a very large number of attributes to describe the fact data. Dimensions can define a wide variety of characteristics, but some of the most common attributes defined by dimension tables include
- Time
- Department
- HR Event Type

Dimension tables are assigned a surrogate primary key, usually a single-column integer data type, mapped to the combination of dimension attributes that form the natural key.

Star Schema:

Star schemas are optimized for querying large data sets and are used in data warehouses and data marts to support OLAP cubes, business intelligence analytic applications, and ad hoc queries.

Within the data warehouse or data mart, a dimension table is associated with a fact table by using a foreign key relationship. The dimension table has a single primary key that uniquely identifies each member record (row). The fact table contains the primary key of each associated dimension table as a foreign key. Combined, these foreign keys form a multi-part composite primary key that uniquely identifies each member record in the fact table.

The Fact Table name in **STARS - OBI** Subject Areas is usually preceded with the name **FACT.** This is done to distinguish the Fact tables from the Dimension Tables.

In the example provided below, the underlying Dimension Tables in this Subject Area are joined to the Fact table to form the star schema.

Subject Area:

A subject area contains folders; attribute columns (Dimensions) and measure columns (Facts) that represent information about the areas of an organization's business or about groups of users within an organization. Subject areas usually have names that correspond to the types of information that they contain, such as Human Resources – Workforce Deployment.

There are common **Dimensions Tables** across Human Resource Subject Areas such as Time, Department and Position Details. These common Dimensions are followed by Subject Area Specific Dimensions such as Compensation, Payroll, Workforce Deployment and Time & Labor. There are **FACT Tables** across specific Subject Areas.

Human Resources – Workforce Deployment Analysis

The Human Resources - Workforce Deployment subject area is the information foundation for workforce analysis. It provides the comprehensive core workforce information to support analysis on headcount, workforce diversity, employee performance, supervisor information and contingent labor utilization. By using this subject area, we can show current employee headcount and employee headcount growth % over past year by organization, #Hires, #Terminations, Headcount by Organization and by location.

Using Dimensions and Facts to create an analysis:

These objects in the left pane are based on database tables in the backend, and the data model behind these subject area tables is the dimensional modeling.

The tables listed from Time, HR Event Type, Department and Worker tables are a few of the **Dimension Tables** in this subject area.

There is one Fact table for this Subject Area called **Fact – Human Resources – Workforce Deployment**. Under this one Fact table there are multiple sub tables. The Fact Table name in STARS subject areas is usually preceded with the name **FACT.** This is done to distinguish the Fact tables from the Dimension Tables.

Here is an example of **Human Resources – Workforce Deployment** Subject Area analysis:

Select all the highlighted columns as shown:

Workforce Deployment Dimension and Fact Job Aid

Criteria Tab

Selected Columns

Selected Filters

Add filters to the analysis criteria by clicking on Filter option for the specific column in the Sele...

- Department **is equal to / is in** MacDougall/WRSMU
- AND Agency **is equal to / is in** Department of Correction
- AND Job Description **is equal to / is in** CorrectionOfficer
- AND Year **is equal to / is in** 2017

Results Tab

| Department	Location Short Description	Employee ID	Full Name	Employee Record Number	Job Code	Job Indicator Code	Union Code	Employee Headcount	Length of Service (Years)
MacDougall/WRSMU	Macdoug			0	2259CO	Y	08	1	14.17
				0	2259CO	Y	08	1	14.17
				0	2259CO	Y	08	1	14.17
				0	2259CO	Y	08	1	14.17
				0	2259CO	Y	08	1	14.17
				0	2259CO	Y	08	1	15.00
				1	2259CO	Y	08	1	9.03
				0	2259CO	Y	08	1	13.86
				0	2259CO	Y	08	1	13.86
				0	2259CO	Y	08	1	13.36
				0	2259CO	Y	08	1	13.36
				0	2259CO	Y	08	1	13.36
				0	2259CO	Y	08	1	13.36
				0	2259CO	Y	08	1	13.36
				2	2259CO	Y	08	1	3.74
				0	2259CO	Y	08	1	12.93
				0	2259CO	Y	08	1	12.60
				0	2259CO	Y	08	1	12.52
				0	2259CO	Y	08	1	12.52
				0	2259CO	Y	08	1	12.52
				0	2259CO	Y	08	1	12.52
				1	2259CO	Y	08	1	6.08
				0	2259CO	Y	08	1	12.37
				0	2259CO	Y	08	1	12.06
				0	2259CO	Y	08	1	12.06
				0	2259CO	Y	08	1	12.06
				0	2259CO	Y	08	1	12.06
				0	2259CO	Y	08	1	11.75
				0	2259CO	Y	08	1	11.33
				0	2259CO	Y	08	1	11.33
				0	2259CO	Y	08	1	11.33
				0	2259CO	Y	08	1	11.33
				0	2259CO	Y	08	1	11.22
				0	2259CO	Y	08	1	11.14
				0	2259CO	Y	08	1	11.14
				0	2259CO	Y	08	1	11.14
				0	2259CO	Y	08	1	11.14
				0	2259CO	Y	08	1	11.06
				0	2259CO	Y	08	1	11.06
				0	2259CO	Y	08	1	10.83
				0	2259CO	Y	08	1	10.83
				0	2259CO	Y	08	1	10.83
				0	2259CO	Y	08	1	10.83
				0	2259CO	Y	08	1	10.83
				0	2259CO	Y	08	1	10.83
				0	2259CO	Y	08	1	10.72

## Human Resources – Workforce Deployment Subject Area:

The Human Resources – Workforce Deployment is a detailed subject area that gives the information of a list of employees and their details, such as Department, Hire Dates, Event Types, Comp Rate, etc. You have the ability to view headcount and FTE distribution by geography and organization. It also provides details of Organizational Headcount Movement where we can view headcount movement (hires, transfers, promotions and terminations) by line of business.

This subject area can also be used to create reports on Headcount Demographic Trend by showing quarterly trends by ethinicity, age band and gender.

Workforce Deployment Subject Area Dimensions
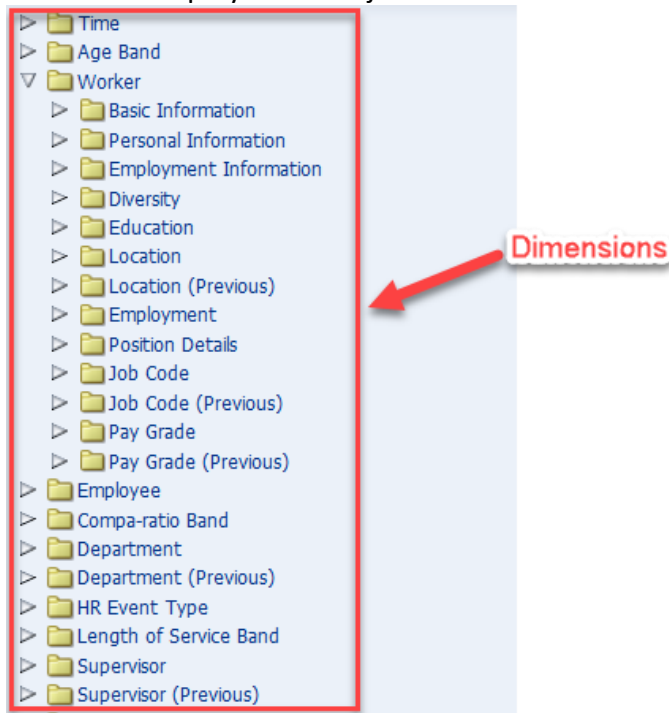
Workforce Deployment Subject Area Fact
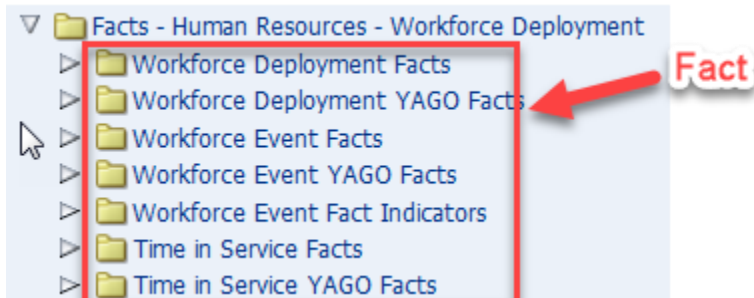
Workforce Deployment Facts - Measure Definitions:

Age (Years) : This column is used to calculate Employees Age in Years based on Date of Birth.

Standard Hours : This column is used to get the standard workweek hours of an employee.

Comp Rate : Workers' comp insurance premiums are calculated according to how employees are classified (with regards to the specific type of work they perform) and the rate assigned to each employee classification.

Daily Rate : The price/cost that the State will pay for Employees one day's work.

Annual Rate : The salary paid to an employees by the State over the period of a year.

Employee Headcount : This column is used to get the count of active employees working for the State based on Department or Agency or any other dimension.

FTE (Employee) : Full Time Equivalent is an employee who is working on a full-time basis.

Compa-ratio : A Compa-Ratio of 1.00 or 100% means that the employee is paid exactly what the industry average pays and is at the midpoint for the salary range. A ratio of 0.75 means that the employee is paid 25% below the industry average and is at the risk of seeking employment with competitors at a higher pay that is perceived equitable.

Workforce Deployment YAGO Facts - Measure Definitions:

Employee Headcount YAGO : This column is used to get the count of active employees Year AGO working for the State based on Department or Agency or any other dimension.

% Change Employee Headcount YAGO :

$$100 * \left(\frac{\text{Employee Headcount} - \text{Employee Headcount YAGO}}{\text{Employee Headcount YAGO}} \right)$$

Workforce Event Facts - Measure Definitions:

Employee Hire Count : It gives the total no.of Employees hired into a department, jobcode, union code, etc. in a month or year based on the selected dimension.

Employee Termination Count : It gives the total no.of Employees terminated, both voluntarily and involuntarily, from a department, union code, job code, etc. in a month or year based on the selected dimension.

Employee Voluntary Termination Count : It gives the total no.of Employees who voluntarily terminated in a month or year based on the selected dimension. For Example: Employees who retired or resigned fall into this category.

Employee InVoluntary Termination Count : It gives the total no.of Employees who involuntarily terminated in a month or year based on the selected dimension. For Example: Employees who lost their jobs involuntarily.

Event Headcount : It gives the total no.of Events of an Employee that have occurred as of the CURRENT DATE**.**

Transfer Count : It gives the total no.of Employees who were transferred to different departments, union codes, job codes, etc. in a month or year based on the selected dimension.

Promotion Count : It gives the total no.of Employees who have received promotions in a month or year based on the selected dimension.

Demotion Count : It gives the total no.of Employees who were demoted in a month or year based on the selected dimension.

Reassignment Count : It gives the total no.of Employees who were reassigned to different job codes in a month or year based on the selected dimension.

Employee Event – Length of Service (Years) : It gives the total no.of years of an employee for a particular event.

Bi-Weekly Rate : Hourly Rate $* 80$

Workforce Event YAGO Facts - Measure Definitions:

Columns in this table represent the data from YAGO (One Year Ago).

<u>Time in Service Facts – Measure Definitions:</u>

Length of Service (Years) : It gives the total Length of Service of an Employee in Years**.**

Length of Service (Months) : It gives the total Length of Service of an Employee in Months**.**

Average Length of Service (Years) :

$$\frac{\text{Length of Service (Years)}}{\text{Employee Headcount}}$$

Time in Department (Days): It gives the total no.of days by an Employee in a Department based on Department Entry Date.

Time in Job Code (Days): It gives the total no.of days by an Employee in a Job Code based on Job Entry Date.

Time in Salary Grade (Days): It gives the total no.of days of an Employee in a Salary Grade based on Salary Grade Entry Date.

Time in Position (Days): It gives the total no.of days of an Employee in a Position based on Position Entry Date.

Time in Location (Days): It gives the total no.of days of an Employee in a Location based on Location Entry Date.