

# Package ‘planr’

April 17, 2024

**Title** Tools for Supply Chain Management, Demand and Supply Planning

**Version** 0.4.0

**Description** Perform flexible and quick calculations for Demand and Supply Planning, such as projected inventories and coverages, as well as replenishment plan. For any time bucket, daily, weekly or monthly, and any granularity level, product or group of products.

**License** MIT + file LICENSE

**Encoding** UTF-8

**RoxygenNote** 7.3.1

**Imports** dplyr, tidyr, lubridate, magrittr, RcppRoll

**URL** <https://github.com/nguyennico/planr>

**BugReports** <https://github.com/nguyennico/planr/issues>

**Depends** R (>= 2.10)

**LazyData** true

**Suggests** highcharter, knitr, reactable, reactablefmtr, rmarkdown, shiny, tidyverse, sparkline, DT, DiagrammeR, networkD3, testthat (>= 3.0.0)

**VignetteBuilder** knitr

**Config/testthat/edition** 3

**NeedsCompilation** no

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**Repository** CRAN

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blueprint	<i>blueprint</i>
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## Description

This dataset contains the basic features to calculate projected inventories and coverages. And also 2 additional info: a minimum and maximum targets of stock coverage. We can apply on it the `proj_inv()` function, it will return calculated projected inventories and coverages as well as an analysis of the position of the projected inventories versus the minimum and maximum stocks targets.

## Usage

```
data(blueprint)
```

## Format

A data frame with 520 rows and 7 variables

## Details

- DFU, an item
- Period, a date
- Demand, a consumption in units
- Opening, available inventories at the beginning in units
- Supply, a Replenishment Plan in units
- Min.Cov, a Minimum Stocks Targets in number of Periods
- Max.Cov, a Maximum Stocks Targets in number of Periods

## Author(s)

Nicolas Nguyen <nikonguyen@yahoo.fr>

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`blueprint_drp``blueprint_drp`

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## Description

This dataset contains the basic features to calculate a Replenishment Plan (also called DRP) and its related projected inventories and coverages. We can apply on it the `drp()` function, it will return the calculated Replenishment Plan and its related projected inventories and coverages.

## Usage

```
data(blueprint_drp)
```

## Format

A data frame with 520 rows and 9 variables

## Details

- DFU, an item
- Period, a date
- Demand, a consumption in units
- Opening, available inventories at the beginning in units
- Supply, a Replenishment Plan in units
- FH, defines the Frozen and Free Horizon. It has 2 values: Frozen or Free. If Frozen : no calculation of Replenishment Plan yet, the calculation starts when the period is defined as Free. We can use this parameter to consider some defined productions plans or supplies (allocations, workorders,...) in the short-term for example.
- SSCov, the Safety Stock Coverage, expressed in number of periods
- DRPCovDur the Frequency of Supply, expressed in number of periods
- MOQ the Multiple Order Quantity, expressed in units, 1 by default or a Minimum Order Quantity

## Author(s)

Nicolas Nguyen <nikonguyen@yahoo.fr>

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blueprint_light	<i>blueprint_light</i>
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**Description**

This dataset contains the basic features to calculate projected inventories and coverages. Just 5 features are needed for this: a DFU, a Period, a Demand, an initial Opening Inventory and a Supply Plan. We can apply on it the `light_proj_inv()` function, it will return calculated projected inventories and coverages.

**Usage**

```
data(blueprint_light)
```

**Format**

A data frame with 520 rows and 5 variables

**Details**

- DFU, an item
- Period, a date
- Demand, a consumption in units
- Opening, available inventories at the beginning in units
- Supply, a Replenishment Plan in units

**Author(s)**

Nicolas Nguyen <nikonguyen@yahoo.fr>

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const_dmd	<i>Calculates the Projected Inventories and Coverages as well as the Constrained Demand and informs a Tag about the part of the Demand already covered by the Opening Inventories</i>
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**Description**

Calculates the Projected Inventories and Coverages as well as the Constrained Demand and informs a Tag about the part of the Demand already covered by the Opening Inventories

**Usage**

```
const_dmd(dataset, DFU, Period, Demand, Opening, Supply)
```

**Arguments**

dataset	a dataframe with the demand and supply features for an item per period
DFU	name of an item, a SKU, or a node like an item x location
Period	a period of time monthly or weekly buckets for example
Demand	the quantity of an item planned to be consumed in units for a given period
Opening	the opening inventories of an item in units at the beginning of the horizon
Supply	the quantity of an item planned to be supplied in units for a given period

**Value**

a dataframe with the calculated Projected Inventories and Coverages as well as the Constrained Demand and a Tag informing the part of the Demand already covered by the Opening Inventories

**Examples**

```
const_dmd(dataset = demo_const_dmd, DFU, Period, Demand, Opening, Supply)
```

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demo_const_dmd	<i>demo_const_dmd</i>
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**Description**

This dataset contains the basic features to calculate projected inventories and coverages. Just 5 features are needed for this: a DFU, a Period, a Demand, an initial Opening Inventory and a Supply Plan. The idea is to use this dataset to calculate a constrained demand for each Product, on top of the projected inventories & coverages. A constrained demand is a possible demand, which can be answered considering the projected inventories. Then we can apply on this dataset the const\_dmd() function, it will add 2 variables : a Constrained.Demand and a Current.Stock.Available.Tag . The Constrained.Demand is the Demand which can be answered considering the projected inventories, i.e which quantity can be answered and when it can be answered. The Current.Stock.Available.Tag informs the part of the Demand which is already covered by the Opening Inventories.

**Usage**

```
data(demo_const_dmd)
```

**Format**

A data frame with 144 rows and 5 variables

**Details**

- DFU, an item
- Period, a date
- Demand, a consumption in units
- Opening, available inventories at the beginning in units
- Supply, a Replenishment Plan in units

**Author(s)**

Nicolas Nguyen <nikonguyen@yahoo.fr>

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demo\_in\_transit      *demo\_in\_transit*

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**Description**

This dataset contains the detailed ETA and ETD for the current and next in transit, as well as the Transit Time for a defined DFU. ETA stands for Estimated Time of Arrival. ETD stands for Estimated Time of Departure. There are 2 types of in transit : the current in transit and the next one, not yet shipped. There are 6 variables in this dataset: a DFU, a Period, an ETA Current Goods In Transit, an ETD & ETA Next Goods In Transit, and a Transit Time. Note that the difference between ETD and ETA is the Transit Time. The idea is to use this dataset to project the Goods In Transit. We can apply on this dataset the `proj_git()` function, it will calculate the Proj.GIT which gathers the current and next In Transit quantities.

**Usage**

```
data(demo_in_transit)
```

**Format**

A data frame with 447 rows and 6 variables

**Details**

- DFU, a location and an item
- Period, a date in weekly bucket format
- ETA.Current, some quantities currently in transit displayed at their ETA date in units
- ETA.Next, some quantities to be shipped, not yet in transit, displayed at their ETA date in units
- ETD.Next, some quantities to be shipped, not yet in transit, displayed at their ETD date in units
- TLT, the Transit Lead Time, expressed in weeks, represents the difference between ETA and ETD dates

**Author(s)**

Nicolas Nguyen <nikonguyen@yahoo.fr>

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demo_monthly_dmd	<i>demo_monthly_dmd</i>
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**Description**

This dataset contains a set of Monthly Demand for two Products. There are 3 variables: a DFU, a Monthly Period, a Monthly Demand. The idea is to use this dataset to convert the Demand from Monthly into Weekly bucket. We can apply on this dataset the `month_to_week()` function, it will create a weekly bucket Period and convert the Demand from Monthly into Weekly bucket.

**Usage**

```
data(demo_monthly_dmd)
```

**Format**

A data frame with 24 rows and 3 variables

**Details**

- DFU, an item
- Period, a date in monthly format
- Demand, a consumption in units

**Author(s)**

Nicolas Nguyen <nikonguyen@yahoo.fr>

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drp	<i>Calculates a Replenishment Plan (also called DRP : Distribution Requirement Planning) and the related Projected Inventories and Coverages</i>
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**Description**

Calculates a Replenishment Plan (also called DRP : Distribution Requirement Planning) and the related Projected Inventories and Coverages

**Usage**

```
drp(dataset, DFU, Period, Demand, Opening, Supply, SSCov, DRPCovDur, MOQ, FH)
```

**Arguments**

dataset	a dataframe with the demand and supply features for an item per period
DFU	name of an item, a SKU, or a node like an item x location
Period	a period of time monthly or weekly buckets for example
Demand	the quantity of an item planned to be consumed in units for a given period
Opening	the opening inventories of an item in units at the beginning of the horizon
Supply	the quantity of an item planned to be supplied in units for a given period
SSCov	the Safety Stock Coverage, expressed in number of periods
DRPCovDur	the Frequency of Supply, expressed in number of periods
MOQ	the Multiple Order Quantity, expressed in units, 1 by default or a multiple of a Minimum Order Quantity
FH	defines the Frozen and Free Horizon. It has 2 values: Frozen or Free. If Frozen : no calculation of Replenishment Plan yet, the calculation starts when the period is defined as Free. We can use this parameter to consider some defined productions plans or supplies (allocations, workorders,...) in the short-term for example.

**Value**

a dataframe with the calculated Replenishment Plan and related Projected inventories and Coverages

**Examples**

```
drp(dataset = blueprint_drp, DFU, Period, Demand, Opening, Supply, SSCov, DRPCovDur, MOQ, FH)
```

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light_proj_inv	<i>Calculates projected inventories and coverages</i>
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**Description**

Calculates projected inventories and coverages

**Usage**

```
light_proj_inv(dataset, DFU, Period, Demand, Opening, Supply)
```

**Arguments**

dataset	a dataframe with the demand and supply features for an item per period
DFU	name of an item, a SKU, or a node like an item x location
Period	a period of time monthly or weekly buckets for example
Demand	the quantity of an item planned to be consumed in units for a given period
Opening	the opening inventories of an item in units at the beginning of the horizon
Supply	the quantity of an item planned to be supplied in units for a given period



**Value**

a dataframe with the calculated projected inventories and coverages and the related analysis

**Examples**

```
light_proj_inv(dataset = blueprint_light, DFU, Period, Demand, Opening, Supply)
```

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month_to_week	<i>Convert a Demand expressed in Monthly buckets into Weekly buckets</i>
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**Description**

Convert a Demand expressed in Monthly buckets into Weekly buckets

**Usage**

```
month_to_week(dataset, DFU, Period, Demand)
```

**Arguments**

dataset	a dataframe with the demand in monthly bucket for each item
DFU	name of an item, a SKU, or a node like an item x location
Period	a monthly period of time that we want to convert into weekly buckets
Demand	the quantity of an item planned to be consumed in units for a given period

**Value**

a dataframe with the Demand expressed in weekly buckets for each item

**Examples**

```
month_to_week(dataset = demo_monthly_dmd, DFU, Period, Demand)
```

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proj_git	<i>Calculates the projected in transit for a defined DFU</i>
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**Description**

Calculates the projected in transit for a defined DFU

**Usage**

```
proj_git(dataset, DFU, Period, ETA.Current, ETA.Next, ETD.Next, TLT)
```

**Arguments**

dataset	a dataframe which contains the different variable below for each DFU
DFU	name of a node, which is an item x location
Period	a period of time, expressed in weekly bucket
ETA.Current	quantities currently in transit displayed at their ETA date in units
ETA.Next	quantities to be shipped, not yet in transit, displayed at their ETA date in units
ETD.Next	quantities to be shipped, not yet in transit, displayed at their ETD date in units
TLT	Transit Lead Time, expressed in weeks, represents the difference between ETA and ETD dates

**Value**

a dataframe with the projected in transit quantity calculated for each DFU

**Examples**

```
proj_git(dataset = demo_in_transit, DFU, Period, ETA.Current, ETA.Next, ETD.Next, TLT)
```

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proj_inv	<i>Calculates projected inventories and coverages and perform an analysis vs stocks targets</i>
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**Description**

Calculates projected inventories and coverages and perform an analysis vs stocks targets

**Usage**

```
proj_inv(dataset, DFU, Period, Demand, Opening, Supply, Min.Cov, Max.Cov)
```

**Arguments**

dataset	a dataframe with the demand and supply features for an item per period
DFU	name of an item, a SKU, or a node like an item x location
Period	a period of time monthly or weekly buckets for example
Demand	the quantity of an item planned to be consumed in units for a given period
Opening	the opening inventories of an item in units at the beginning of the horizon
Supply	the quantity of an item planned to be supplied in units for a given period
Min.Cov	minimum stocks target of an item expressed in periods
Max.Cov	maximum stocks target of an item expressed in periods

**Value**

a dataframe with the calculated projected inventories and coverages and the related analysis

**Examples**

```
proj_inv(dataset = blueprint, DFU, Period, Demand, Opening, Supply, Min.Cov, Max.Cov)
```

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slob	<i>slob</i>
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**Description**

This dataset contains the detailed Opening Inventories for two Products. There are 4 variables: a DFU, a Period, a Demand and the breakdown of the Opening Inventories by expiry date or minimum Remaining Shelf Life for use. The idea is to use this dataset to calculate the Short Shelf Life quantities, called here SSL Qty. We can apply on this dataset the `ssl()` function, it will calculate a SSL Qty field.

**Usage**

```
data(slob)
```

**Format**

A data frame with 44 rows and 4 variables

**Details**

- DFU, an item
- Period, a date in monthly format
- Demand, a consumption in units
- Opening, the breakdown of the opening inventories in units by expiry date

**Author(s)**

Nicolas Nguyen <nikonguyen@yahoo.fr>

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ssl	<i>Calculates the short shelf life of an opening inventories, also called obsolescence risks</i>
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**Description**

Calculates the short shelf life of an opening inventories, also called obsolescence risks

**Usage**

```
ssl(dataset, DFU, Period, Demand, Opening)
```

**Arguments**

dataset	a dataframe with the demand in weekly or monthly bucket for each item
DFU	name of an item, a SKU, or a node like an item x location
Period	a period of time, expressed in monthly or weekly bucket
Demand	the quantity of an item planned to be consumed in units for a given period
Opening	the breakdown of the opening inventories by expiry date, or percentage of minimum remaining shelflife for use

**Value**

a dataframe with the SSL.Qty related to the Opening Inventories of each item

**Examples**

```
ssl(dataset = slob, DFU, Period, Demand, Opening)
```

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