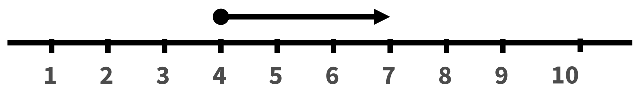
Multi-stage deterministic linkages and case definitions with diyar: : CHEAT SHEET

number_line objects

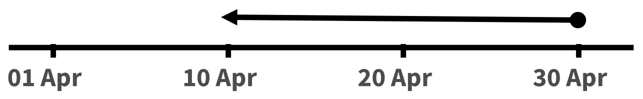
- A range of real numbers on a number line

```
number_line(4, 7)
```



- Also supports objects that can be coerced to numeric values

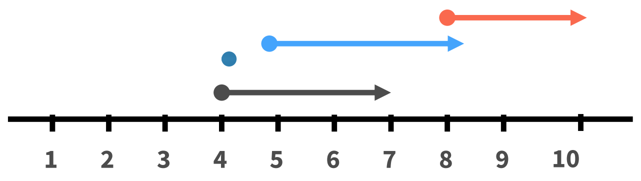
```
dates <- c("30/04/2019", "10/04/2019")
dates <- as.Date(dates, "%d/%m/%Y")
number_line(dates[1], dates[2])
```



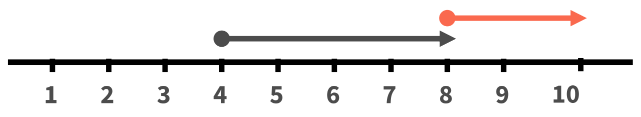
COMBINE NUMBER LINE OBJECTS

Overlapping number_line objects can be merged vertically

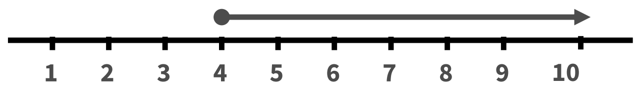
```
n1 <- number_line(4,7)
n2 <- as.number_line(4)
n3 <- number_line(5,8)
n4 <- number_line(8,10)
nl <- c(n1, n2, n3, n4)
```



```
compress_number_line(nl)
```

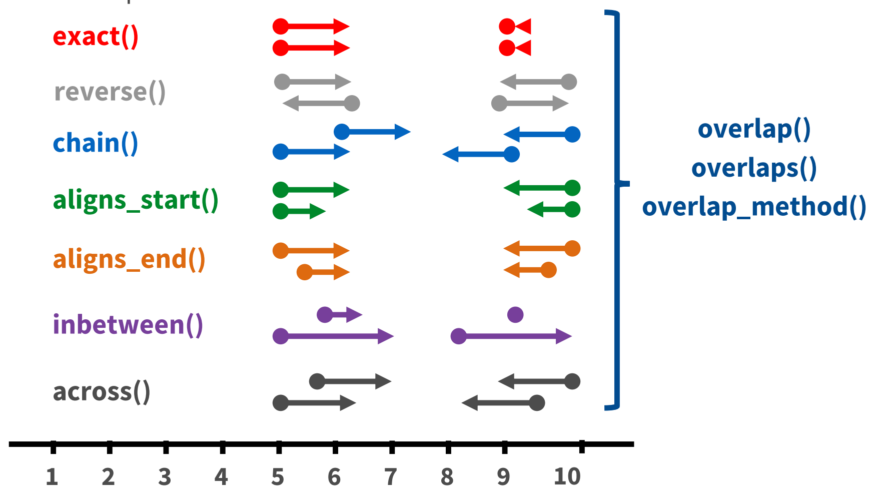


```
compress_number_line(nl, collapse =T)
```



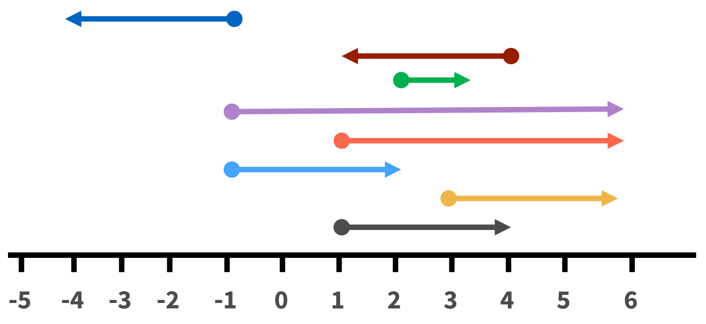
TEST FOR OVERLAPS

- overlap methods



MANIPULATE NUMBER LINE OBJECTS

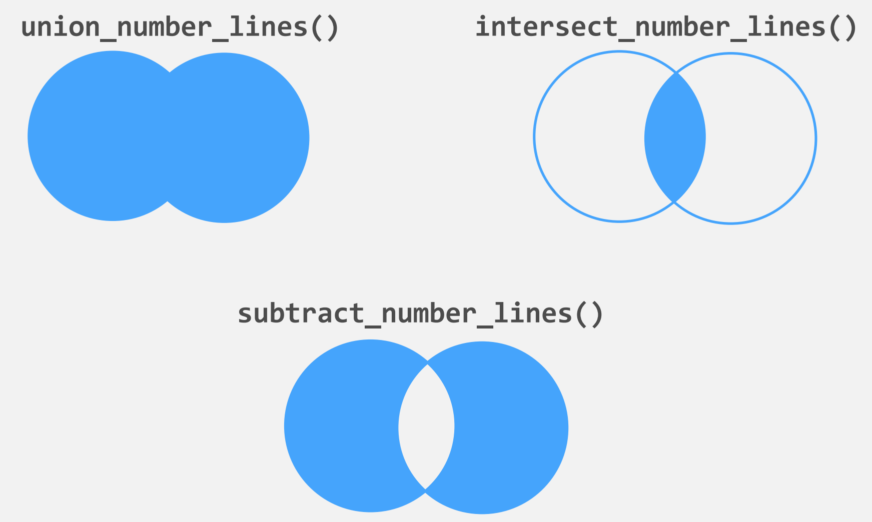
`nl <- number_line(1, 4)`	⬛
`shift_number_line(nl,2)`	🟨
`shift_number_line(nl,-2)`	🟦
`expand_number_line(nl, 2, "end")`	🟥
`expand_number_line(nl, 2)`	🟪
`expand_number_line(nl, -1)`	🟩
`reverse_number_line(nl)`	🟫
`invert_number_line(nl)`	🟦



STRUCTURE OF NUMBER LINE OBJECTS

```
> nl <- number_line(1,4); nl
[1] "1 -> 4"
> number_line_width(nl)
[1] 3
> number_line_sequence(nl, 1)
[1] 4 5 6 7
> number_line_sequence(nl, .5)
[1] 4.0 4.5 5.0 5.5 6.0 6.5 7.0
> left_point(reverse_number_line(nl))
[1] 7
> start_point(reverse_number_line(nl))
[1] 4
> right_point(reverse_number_line(nl))
[1] 4
> end_point(reverse_number_line(nl))
[1] 7
```

SET OPERATIONS ON NUMBER LINE OBJECTS



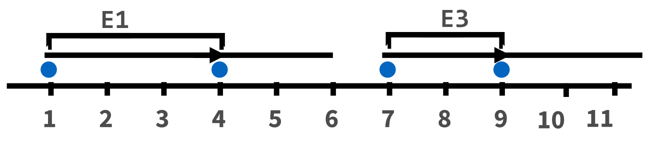
Multi-stage deterministic linkages and case definitions with diyar: : **CHEAT SHEET**

Episode tracking

FIXED EPISODES FROM POINTS IN TIME

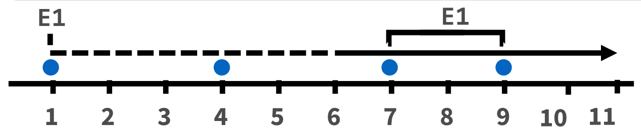
```
dates <- c("01","04","07","09")
dates <- paste(dates,"04/2019",sep= "/")
dates <- as.Date(dates, "%d/%m/%Y")

episodes(dates, case_length = 5)
```

- **A number of days after the index event**



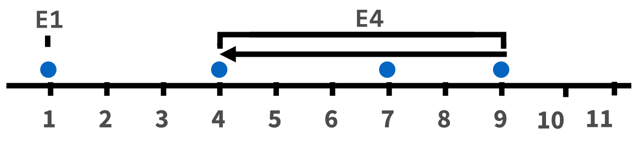
- **A range of days after the index event**

```
episodes(dates,
case_length = number_line(5, 10))
```



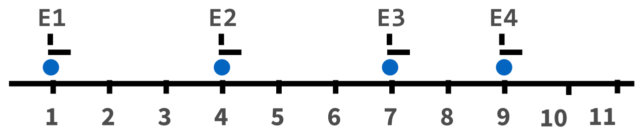
- **Track episode backwards in time**

```
episodes(dates, case_length = 5,
from_last = T)
```



- **Track episode in other units of time**

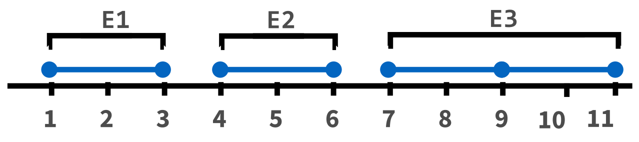
```
episodes(dates, case_length = 5,
episode_unit = "hours")
```



FIXED EPISODES FROM PERIODS IN TIME

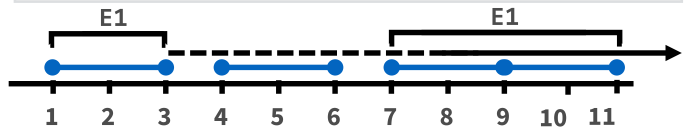
```
p <- as.number_line(dates)
p <- expand_number_line(p,2, "end")
periods <- p

episodes(periods,case_length = 0)
```

- **A number of days after the index period**



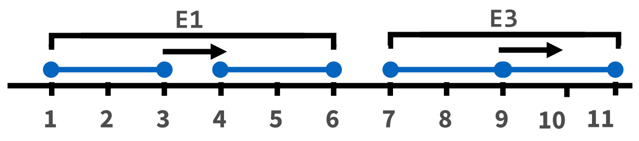
- **A range of days after the index period**

```
episodes(periods,
case_length = number_line(5,10))
```



- **Track episode backwards in time**

```
episodes(periods, case_length = 1)
```



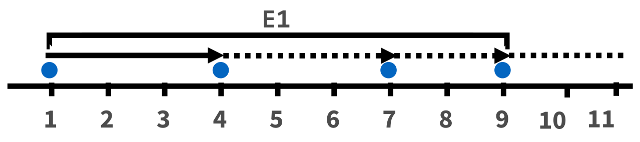
solid lines – case period
dotted lines – recurrence period
dashed lines – skipped period
solid end – start of an episode
arrow head – end of an episode

Learn more here!

ROLLING EPISODES FROM POINTS IN TIME

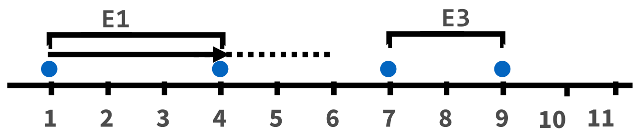
```
episodes(dates, case_length = 5,
episode_type = “rolling”)
```

- **Track episode from events that continue to recur**



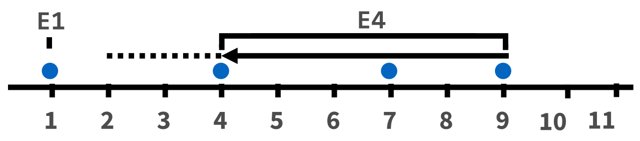
- **Track episode from events with a short period of recurrence**

```
episodes(dates, case_length = 5,
recurrence_length = 2, episode_type =
“rolling”)
```



- **Track episode backwards in time**

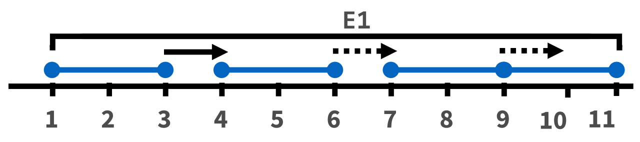
```
episodes(dates, case_length = 5,
recurrence_length = 2, from_last = T,
to_s4 = T, episode_type = “rolling”)
```



ROLLING EPISODES FROM POINTS IN TIME

```
episodes(periods, case_length = 1,
episode_type = “rolling”)
```

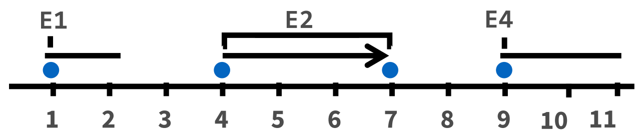
- **Track episode from periods that continue to recur**



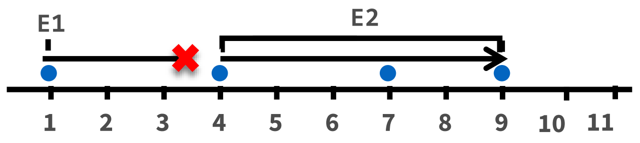
CONTROL CASE ASSIGNMENT

```
episodes(dates,
case_length = c(1,3,2,2))
```

- **Choose your own index event**



```
episodes(dates, case_length =5,
custom_sort = c(1,0,1,1))
```

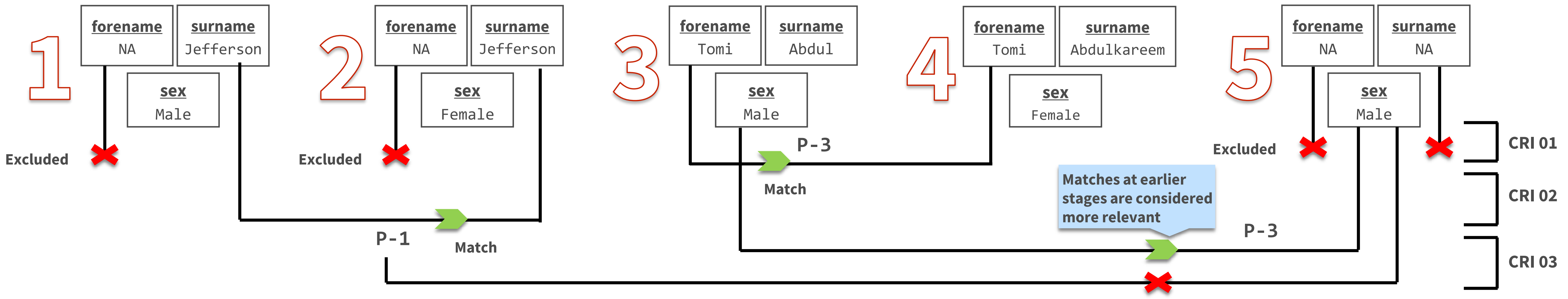


Multi-stage deterministic linkages and case definitions with diyar: : **CHEAT SHEET**

Data linkage

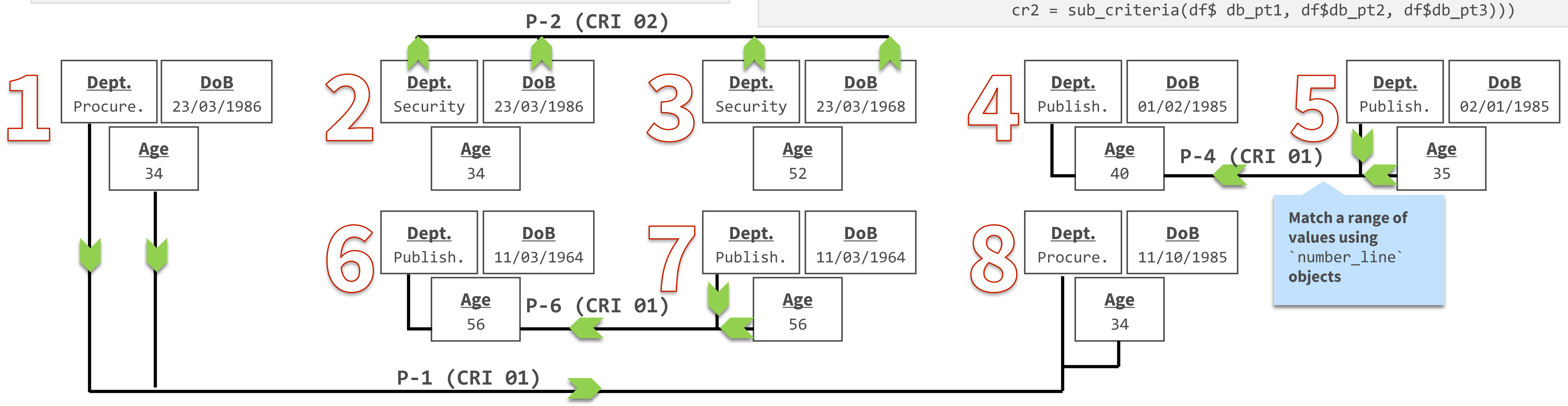
- **Multistage deterministic linkage**
- **Relevance of each stage controlled by `criteria`**
- **Use `sub_criteria` for additional matching conditions**
- **Missing data handled with alternative matching `criteria`**
- **Group records separately within subsets of a dataset with `strata`**

```
library(lubridate); df <- diyar::patient_list_2
links(criteria = list(df$forename, df$surname, df$sex))
```



```
df <- Opes[c("department","date_of_birth","db_pt1","db_pt2","db_pt3")]
df$age <- dmy("02/11/2019") -  dmy(df$date_of_birth)
df$age <- round(as.numeric(df$age)/365)
```

```
df$age_range <- number_line(df$age, df$age +5, gid=df$age)
links(criteria = list(df$department, df$department),
      sub_criteria = list(cr1 = sub_criteria(df$age_range, funcs = range_match_legacy),
                          cr2 = sub_criteria(df$ db_pt1, df$db_pt2, df$db_pt3)))
```


P-2 (CRI 02)
1
Dept. Procure.
DoB 23/03/1986
Age 34
2
Dept. Security
DoB 23/03/1986
Age 34
3
Dept. Security
DoB 23/03/1968
Age 52
4
Dept. Publish.
DoB 01/02/1985
Age 40
P-4 (CRI 01)
5
Dept. Publish.
DoB 02/01/1985
Age 35
Match a range of values using `number_line` objects
6
Dept. Publish.
DoB 11/03/1964
Age 56
P-6 (CRI 01)
7
Dept. Publish.
DoB 11/03/1964
Age 56
8
Dept. Procure.
DoB 11/10/1985
Age 34
P-1 (CRI 01)