

# Time Series

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## Time Series and Offset Analysis

How to find the offset between waste and case data

Pre merged waste and case data:

```
data(Case_data, package = "DSIWastewater")
totalcases <- Case_data %>%
  group_by(date) %>%
  summarise(sum_case = sum(conf_case)) %>%
  mutate(conf_case = roll_sum(sum_case,10,align = "right", fill = NA))
```

```
data(WasteWater_data, package = "DSIWastewater")
```

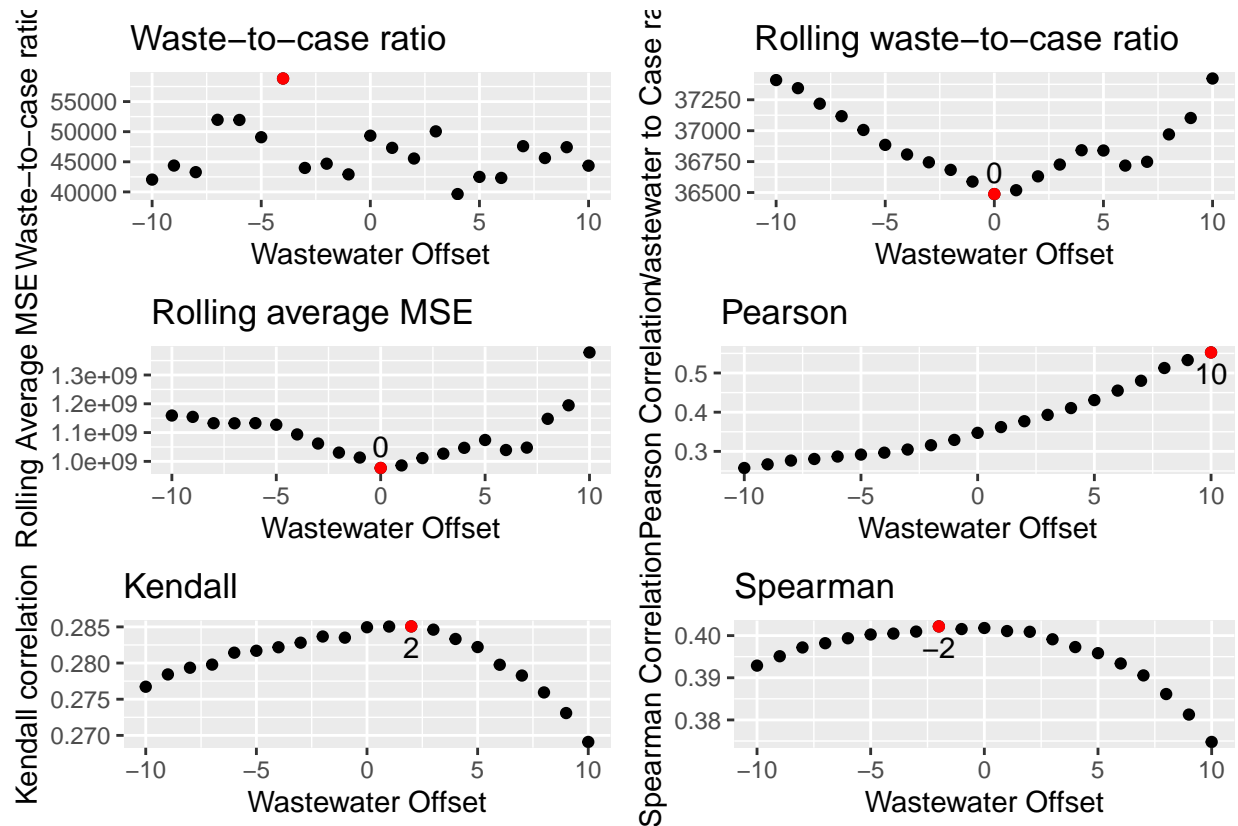
```
data(Covariants_data, package = "DSIWastewater")
```

```
data(pop_data, package = "DSIWastewater")
```

```
data(example_data, package = "DSIWastewater")
```

```
offsetDF <- OffsetDFMaker(10,as.Date("2020-08-01"), as.Date("2023-01-01"), Case_data, WasteWater_data)
```

```
OffsetDF_Plot(offsetDF, "All Wisconsin data over all time")
```

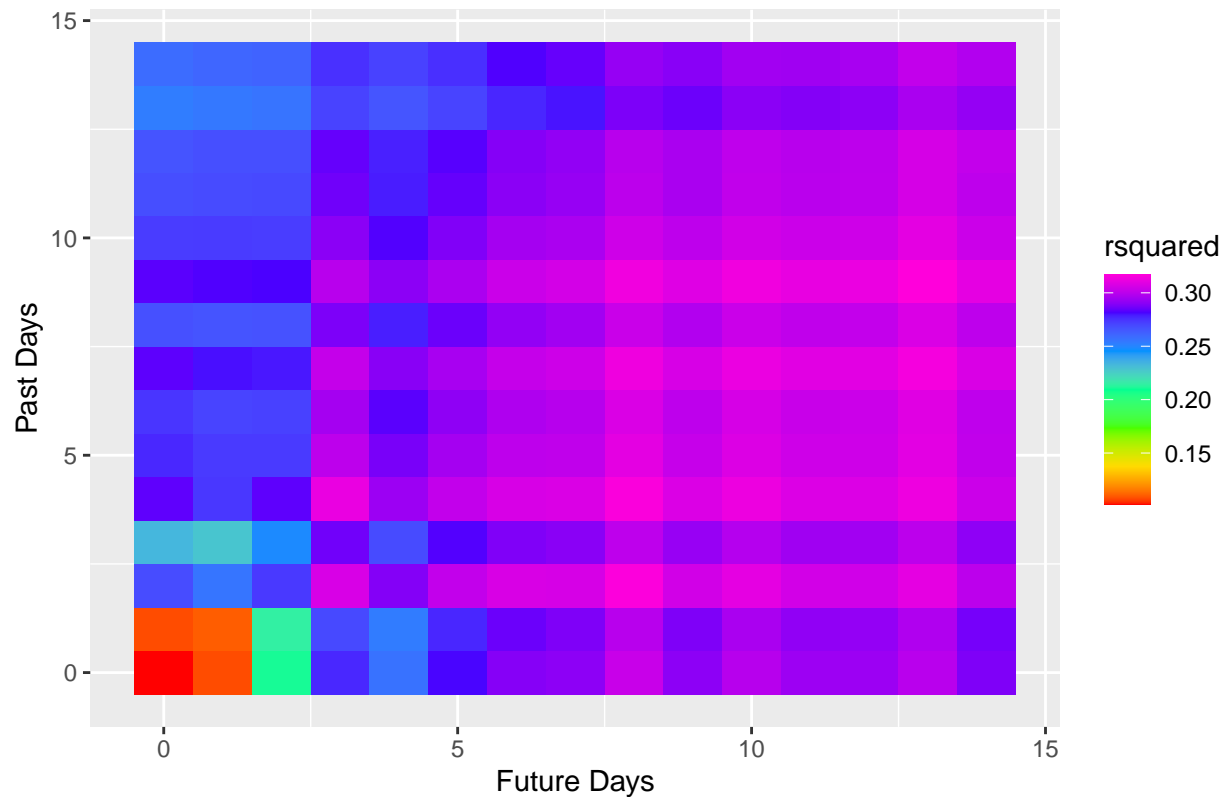


All Wisconsin data over all time

```
## TableGrob (4 x 2) "arrange": 7 grobs
##   z      cells      name      grob
## 1 1 (1-1,1-1) arrange      gtable[layout]
## 2 2 (1-1,2-2) arrange      gtable[layout]
## 3 3 (2-2,1-1) arrange      gtable[layout]
## 4 4 (2-2,2-2) arrange      gtable[layout]
## 5 5 (3-3,1-1) arrange      gtable[layout]
## 6 6 (3-3,2-2) arrange      gtable[layout]
## 7 7 (4-4,1-2) arrange text[GRID.text.3150]
```

```
heatmapcorfunc(Example_data)
```

Correlation of past and future days of N1 and N2 to current day cases



```
covarstarts <- c(as.Date("2020-08-17"),
  as.Date("2021-03-29"),
  as.Date("2021-07-05"),
  as.Date("2021-12-20"),
  as.Date("2022-03-28"),
  as.Date("2022-05-23"),
  as.Date("2022-07-04"))
covarends <- c(as.Date("2021-01-18"),
  as.Date("2021-05-24"),
  as.Date("2021-12-06"),
  as.Date("2022-03-14"),
  as.Date("2022-05-09"),
  as.Date("2022-06-06"),
  as.Date("2022-11-07"))
covarnames <- c("Robin1",
  "Alpha.V1",
  "Delta",
  "Omicron.21K",
  "Omicron.21L",
  "Omicron.22C",
  "Omicron.22B")
```

```
OffsetHeatmap("kendall_offset",2,WasteWater_data,Case_data,"pop",TRUE,TRUE)
```

```
## Joining with 'by = join_by(time)'
```

