

Introduction to the R Packages based on JDemetra+ 3rd version

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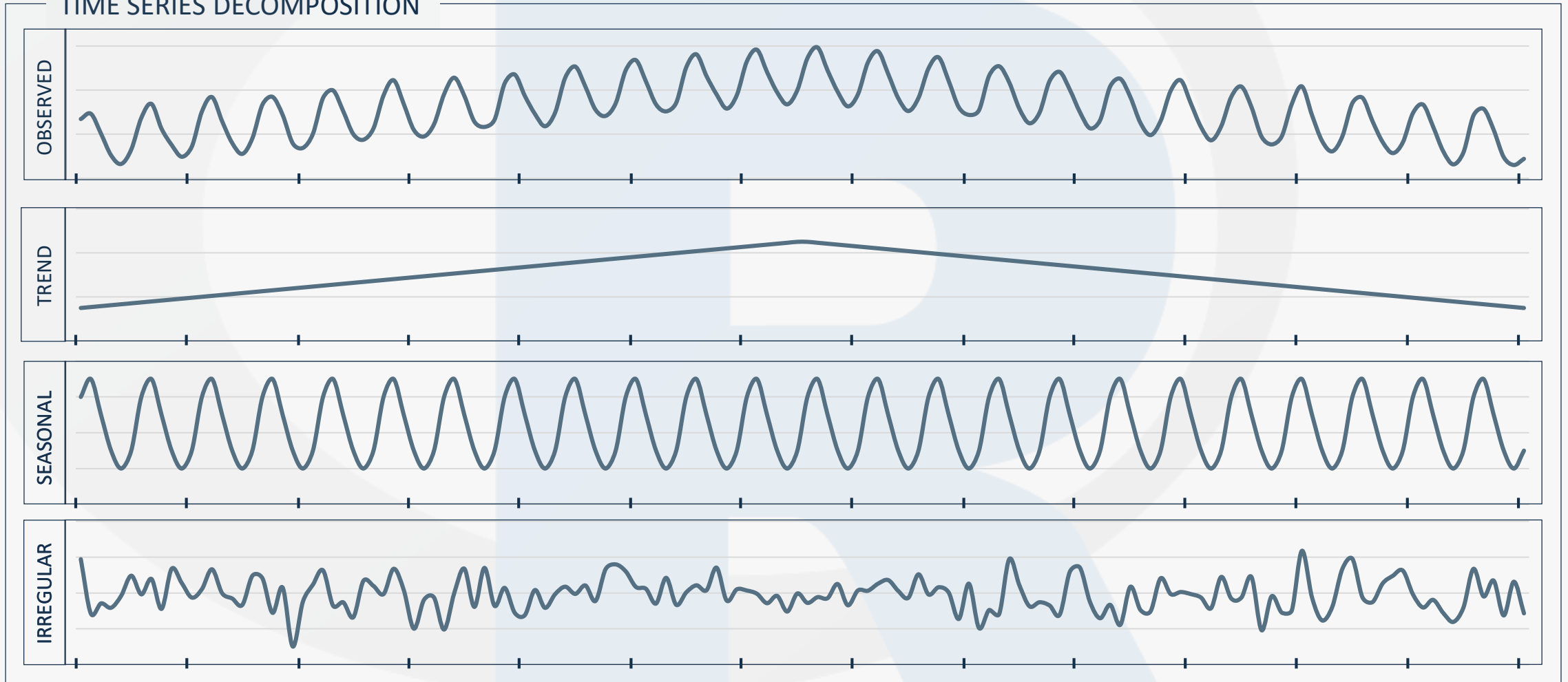
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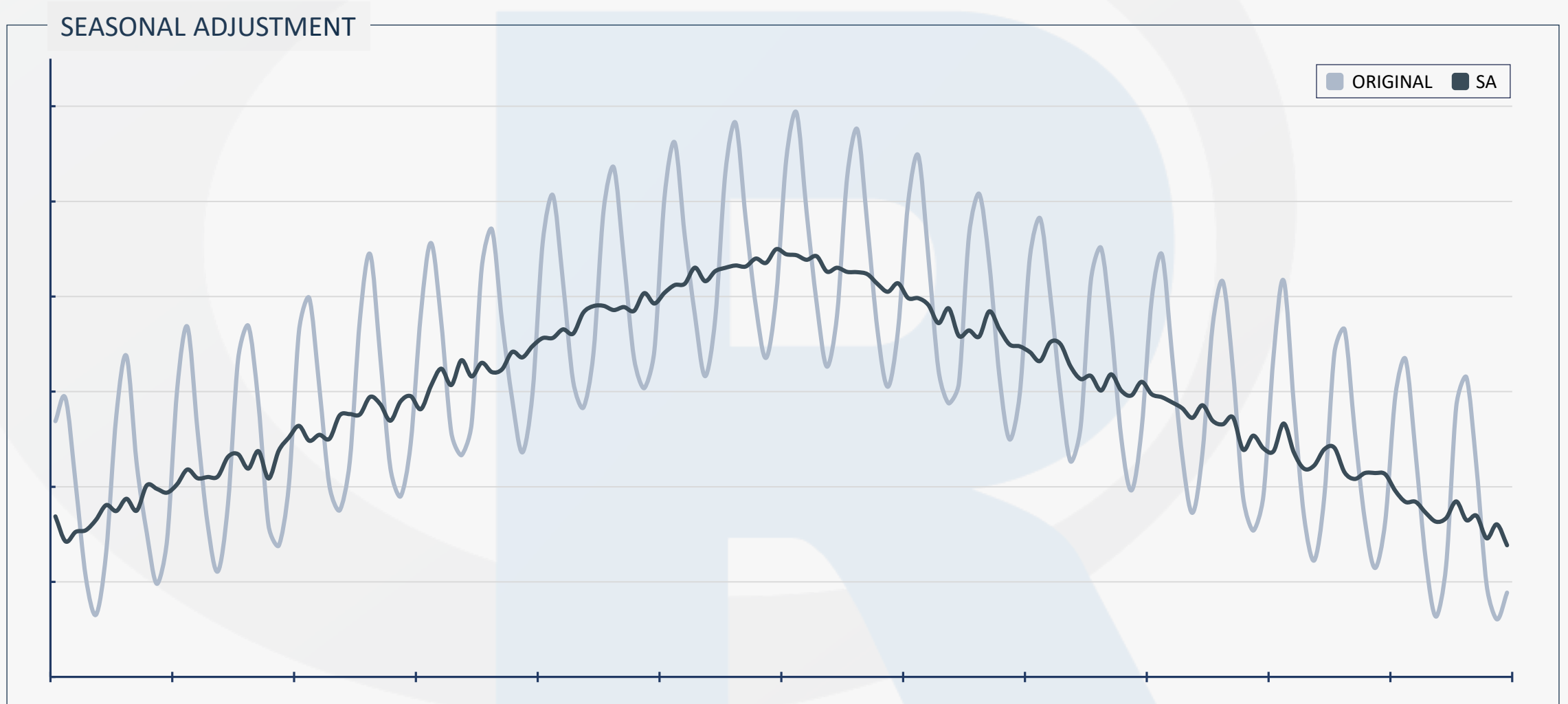


Introduction

TIME SERIES DECOMPOSITION

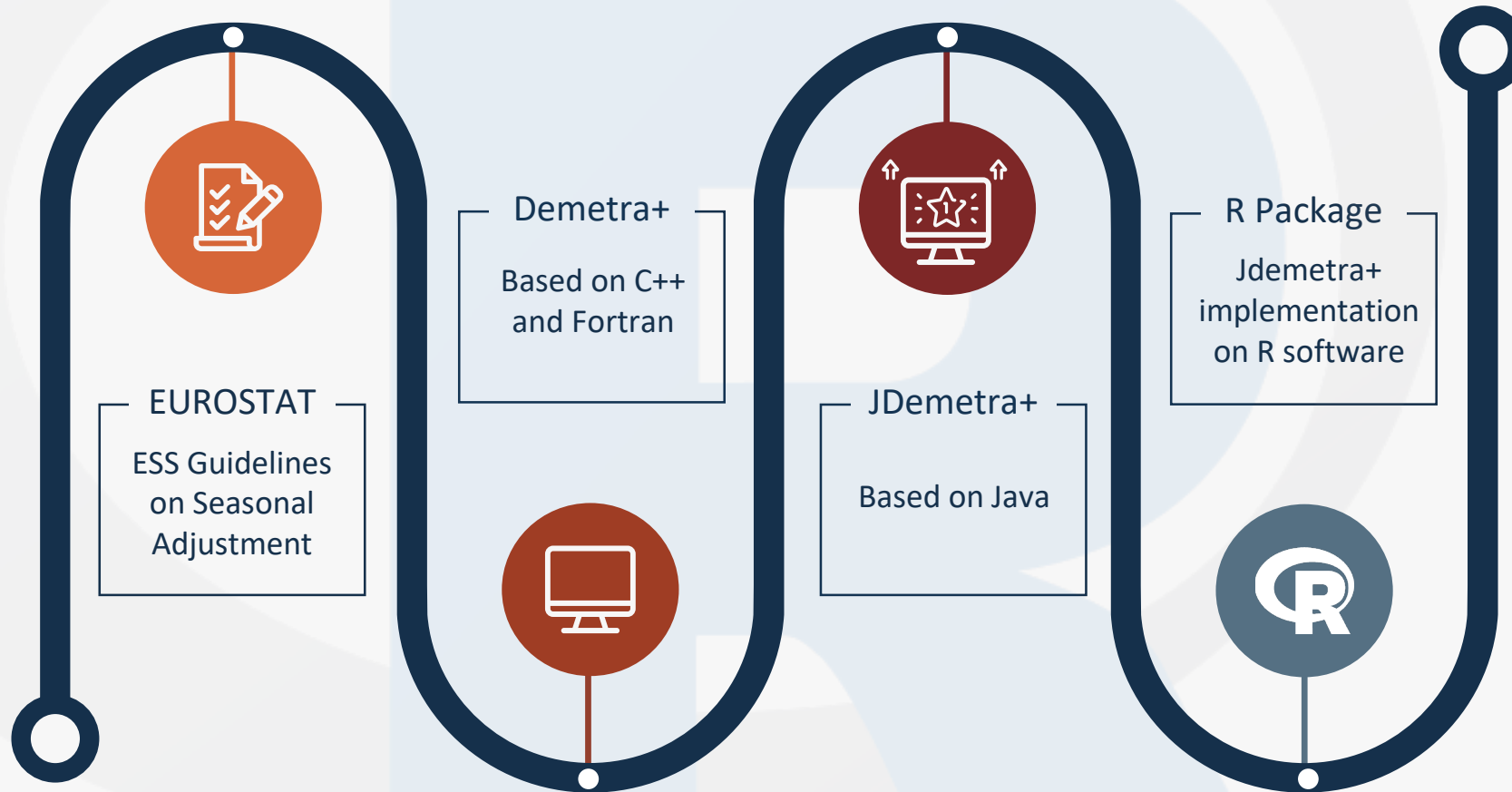


Introduction




Introduction


STATE OF ART



Current Status

COMPARISON

	Version 2.x	Version 3.x
X13 ARIMA	✓	✓
TRAMO-SEATS	✓	✓
X12+	✗	✓
STL	✗	✓
BSM	✗	✓
SEATS+	✗	
<hr style="border-top: 1px dashed black;"/>		
Low Frequency	2, 4, 12	2, 3, 4, 6, 12
High Frequency	✗	✓

 [Link to documentation v2 vs v3](#)

R PACKAGES

rjd3toolkit

Utility functions used in other rjd3 packages.

It allows to:

- Customize specifications and generate regressors or auxiliary variables
- Run ARIMA models estimations
- Perform tests

rjd3tramoseats

Gives access to TRAMO-SEATS seasonal adjustment algorithm.



[Link to documentation R packages](#)

R Workspace

HOW TO INSTALL THE PACKAGES?

Packages are available on  Github: [rjd3toolkit](#), [rjd3tramoseats](#).

i Running rjd3 packages requires Java 17 or higher. See the [installation manual](#).

rjd3toolkit

```
> # install.packages("remotes")
> remotes::install_github("rjdverse/rjd3toolkit@*release")
> remotes::install_github("rjdverse/rjd3toolkit")
```

rjd3tramoseats

```
> # install.packages("remotes")
> remotes::install_github("rjdverse/rjd3toolkit@*release")
> remotes::install_github("rjdverse/rjd3toolkit")
```

R Workspace

CREATE A MODEL

```
tramoseats(ts, spec = "rsa5", context = NULL, userdefined = NULL)  
tramoseats_fast(ts, spec = "rsa5", context = NULL, userdefined = NULL)  
.jtramoseats(ts, spec = "rsa5", context = NULL, userdefined = NULL)
```

ts	A univariate time series.
spec	The model specification. Can be either the name of a predefined specification or a user-defined specification.
context	The dictionary of variables.
userdefined	A vector containing the additional output variables (see <code>tramoseats_dictionary()</code>)

R Workspace

MODEL SPECIFICATIONS

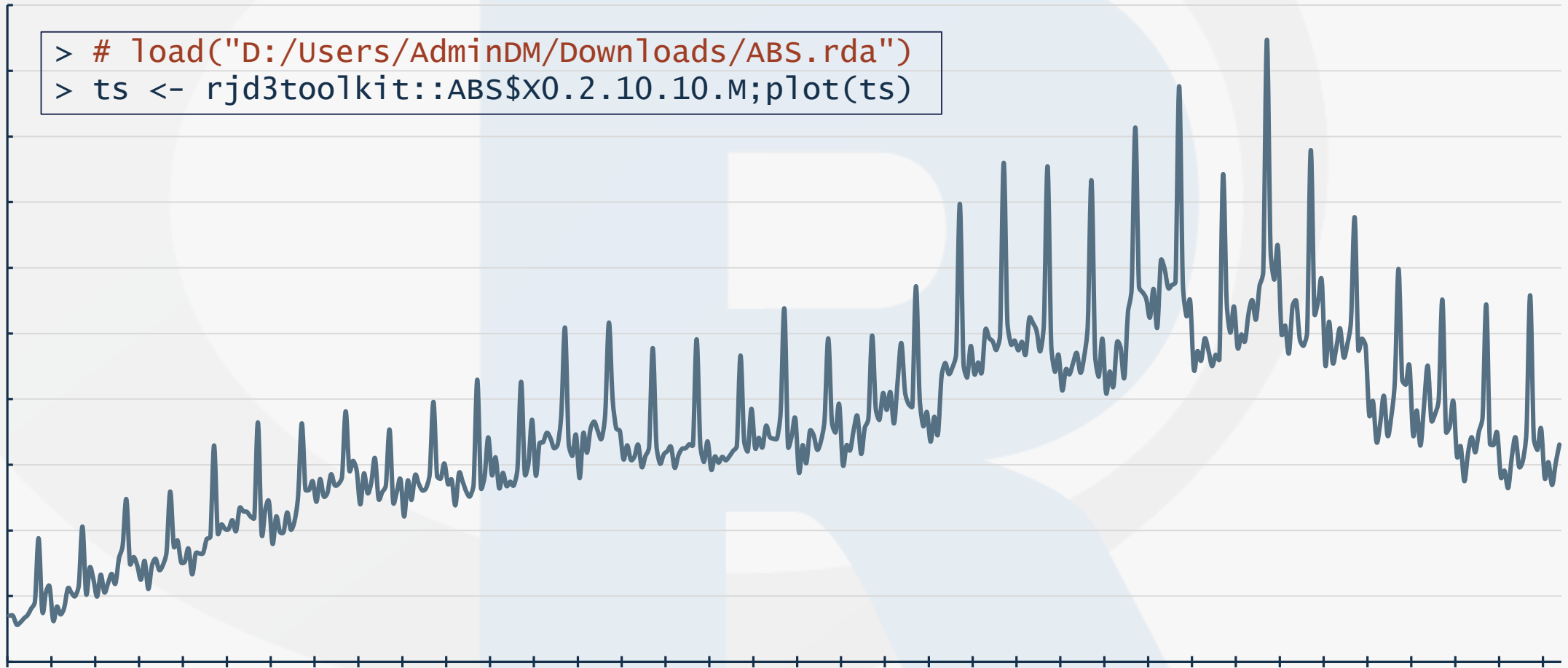
The model specification can be either the name of a predefined specification or a user-defined specification. A specification can be created with `tramo_spec()` or `tramoseats_spec()`.

IDENTIFIER	LOG LEVEL	OUTLIERS	CALENDAR EFFECTS	ARIMA	
RSA0	NA	NA	NA	Airline(+mean)	PREPROCESING (rjd3toolkit): set_arima(), set_easter(), set_outlier(), set_tradingdays(), set_automodel(), set_transform(), add_outlier() ...
RSA1	automatic	AO/LS/TC	NA	Airline(+mean)	
RSA2	automatic	AO/LS/TC	2 td vars + Easter	Airline(+mean)	
RSA3	automatic	AO/LS/TC	NA	automatic	
RSA4	automatic	AO/LS/TC	2 td vars + Easter	automatic	
RSA5	automatic	AO/LS/TC	7 td vars + Easter	automatic	
RSAfull	automatic	AO/LS/TC	automatic	automatic	DESCOMPOSITION: rjd3tramoseats::set_seats()
					BENCHMARKING: rjd3toolkit::set_benchmarking()

R Workspace

DATA

```
> # load("D:/Users/AdminDM/Downloads/ABS.rda")  
> ts <- rjd3toolkit::ABS$X0.2.10.10.M;plot(ts)
```



R Workspace

TRAMO-SEATS RESULTS

```
> results <- tramoseats_fast(ts, spec = "rsa4")
> class(results)
[1] "JD3_TRAMOSEATS_RSLTS" "JD3"
> summary(results)
```

	Length	Class	Mode
preprocessing	3	JD3_REGARIMA_RSLTS	list
decomposition	3	JD3_SEATS	list
final	6	-none-	list
diagnostics	7	-none-	list
user_defined	0	user_defined	list

PREPROCESING

Tramo specifications and results

DECOMPOSITION

Seats model, canonical decomposition, stochastic series

FINAL

Original, SA, trend, seasonal, irregular final and forecast series

DIAGNOSTICS

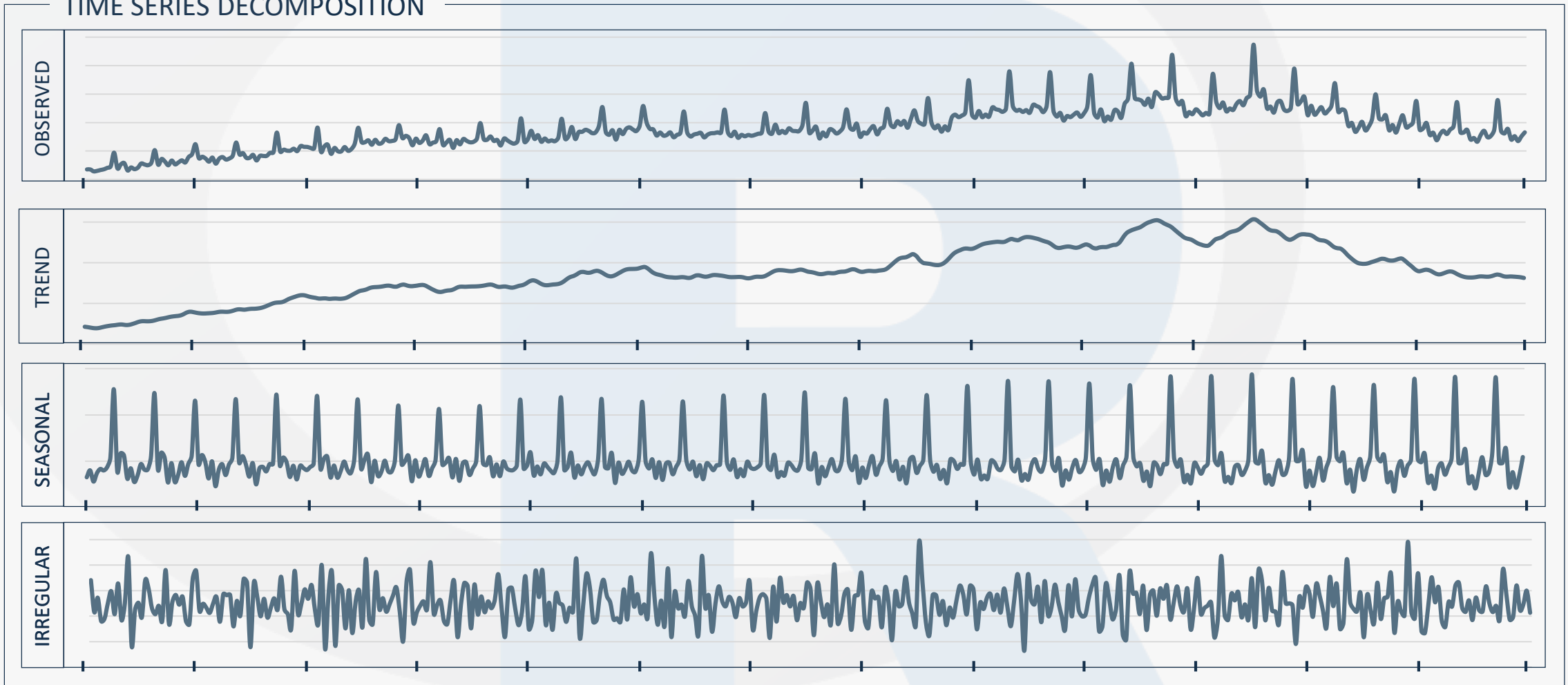
Tests results

USER_DEFINED

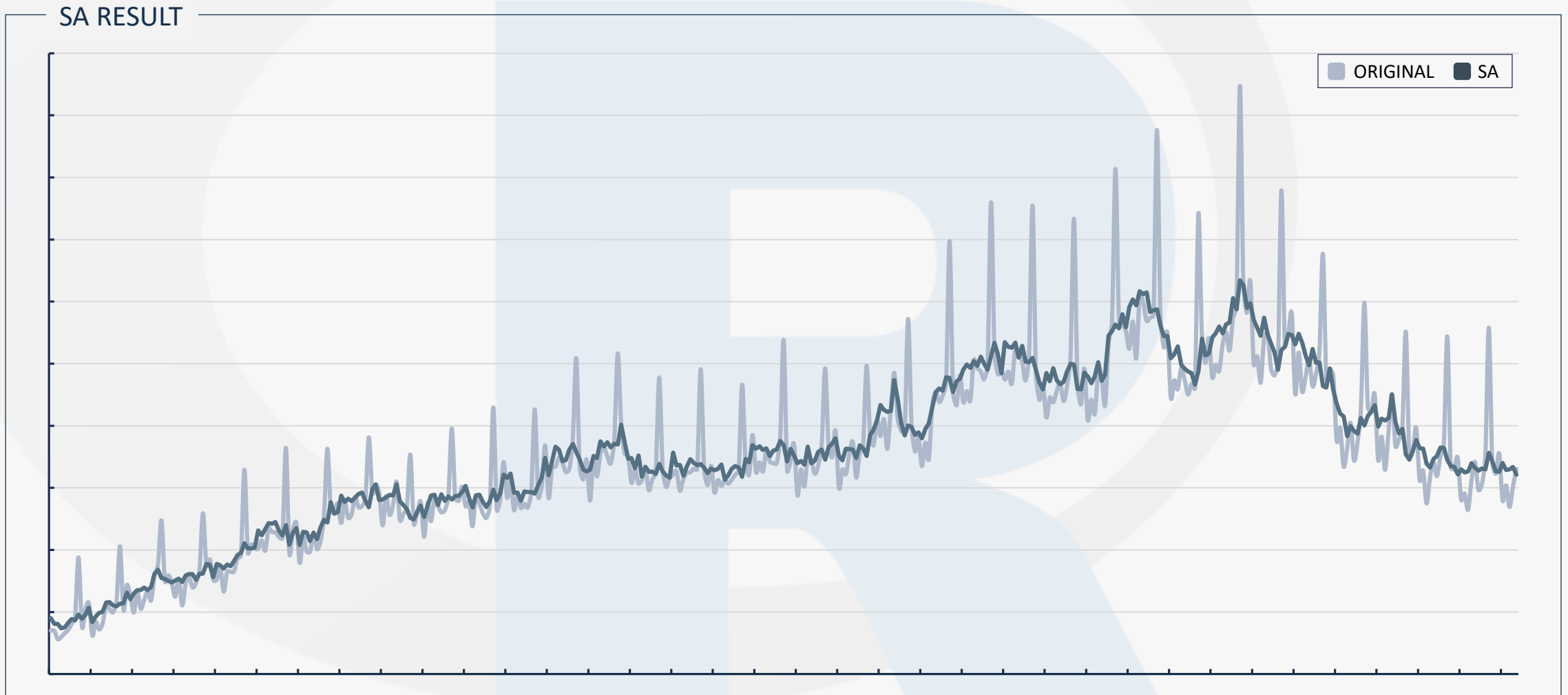
Additional output variables

R Workspace

TIME SERIES DECOMPOSITION



R Workspace



R Workspace

DIAGNOSTICS

```
> results<-tramoseats_fast(ts, spec="rsa4")  
> results$diagnostics
```

		VALUE	P-VALUE
SA SERIE	SEASONALITY F-TEST	0.124	0.999
	SEASONALITY QS-TEST	0	1.000
	TRADING DAYS F-TEST	3.545	0.002

IRREGULAR	SEASONALITY F-TEST	0.132	0.999
	SEASONALITY QS-TEST	0	1.000
	TRADING DAYS F-TEST	4.416	0.000

OTHER TESTS

Seasonality_canovahansen()

Canova-Hansen seasonality test

Seasonality_canovahansen_trigs()

Canova-Hansen test using trigonometric variables

Seasonality_friedman()

Friedman Seasonality Test

Seasonality_kruskalwallis()

Kruskall-Wallis Seasonality Test

R Workspace

RJD3WORKSPACE

EXPORT

```
> jws <- .jws_new() # Create a workspace or a multi-processing
> jsap <- .jws_sap_new(jws,"sa") # Add a new multi-processing
> add_sa_item(jsap, name = "tramo", x = results) # Add SAItem to SAProcessing
> save_workspace(jws, "name.xml") # Save workspace
```

IMPORT

```
> jws <- .jws_load(file = "name.xml") # Load a 'JDemetra+' workspace
> .jws_compute(jws) # Compute the models
> jsap <- .jws_sap(jws, idx = 1) # Access to first SAProcessing
> jsa <- .jsap_sa(jsap, idx = 1) # Access to first SAItem
> mod <- .jsa_read(jsa) # Extract all the informations of a SAItem
```

Conclusion

ACKNOWLEDGEMENTS

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REFERENCES



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<https://ec.europa.eu/eurostat/documents>
- ❖ Palate J, Quartier-la-Tente A, Barthelemy T, Smyk A (2024). rjd3toolkit: Utility Functions around 'JDemetra+ 3.0'. R package version 3.2.4.9000,
<https://github.com/rjdverse/rjd3toolkit>
- ❖ Palate J, Quartier-la-Tente A, Barthelemy T, Smyk A (2024). rjd3tramoseats: Seasonal Adjustment with TRAMO-SEATS in 'JDemetra+ 3.x'. R package versión 3.2.3.9000,
<https://github.com/rjdverse/rjd3tramoseats>.

Thanks!

Does anyone have any questions?



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