

Christoph Töglhofer

A short history of using



in research and tech companies

Vienna R Meetup, Dec 17th

# THE DATA SCIENCE **HIERARCHY OF NEEDS**

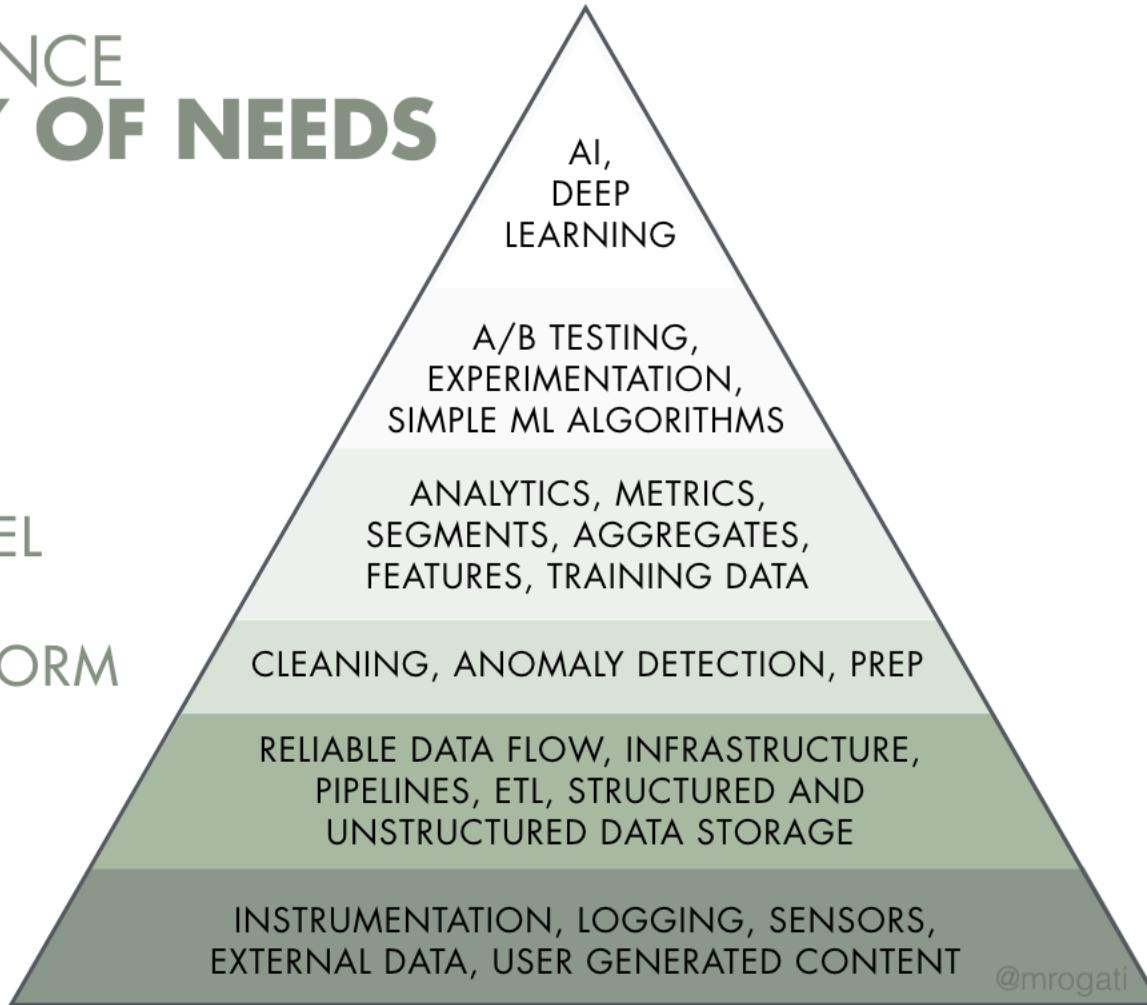
LEARN/OPTIMIZE

AGGREGATE/LABEL

EXPLORE/TRANSFORM

MOVE/STORE

COLLECT

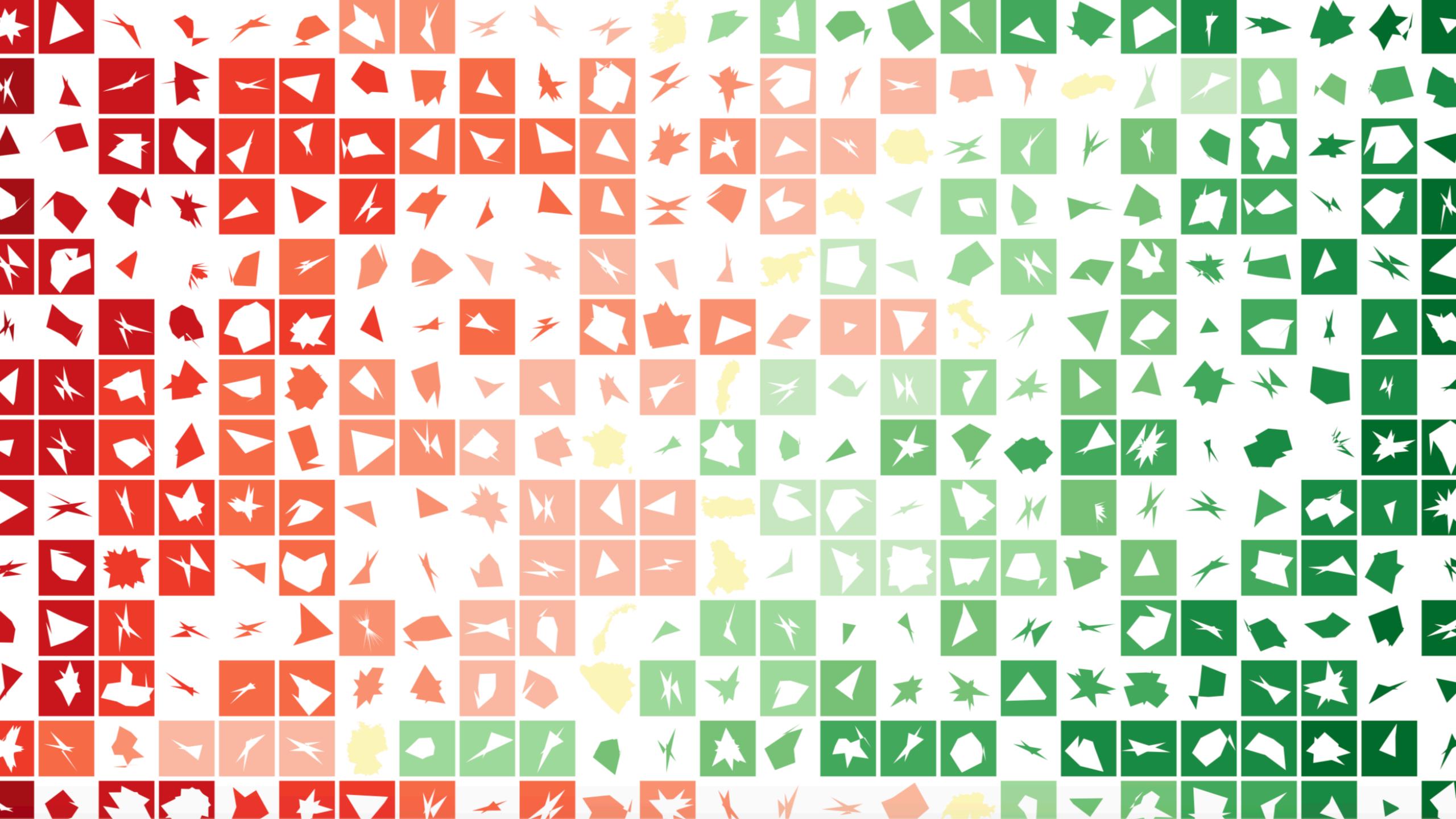


Source: Monica Rogati's Medium post "The AI Hierarchy of Needs"

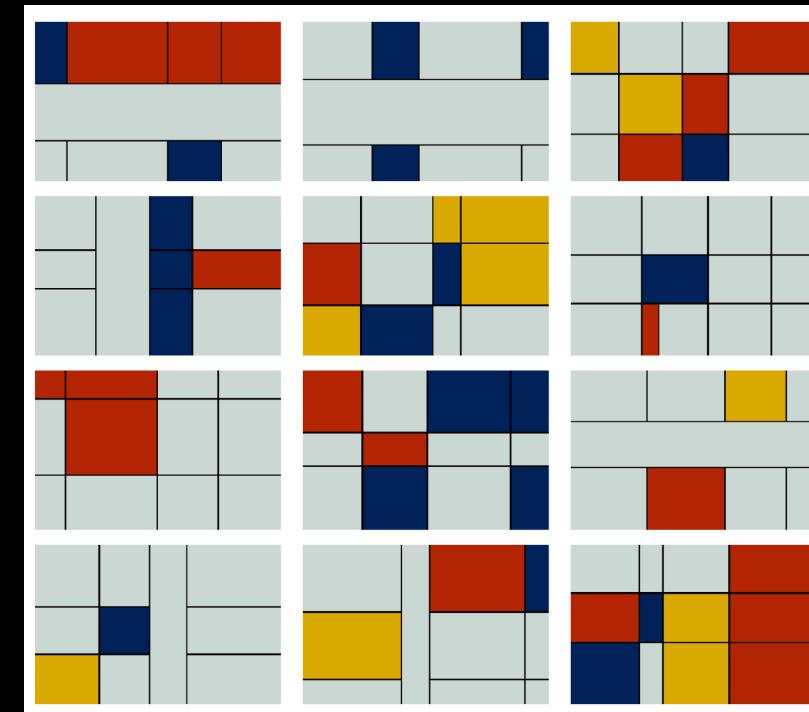
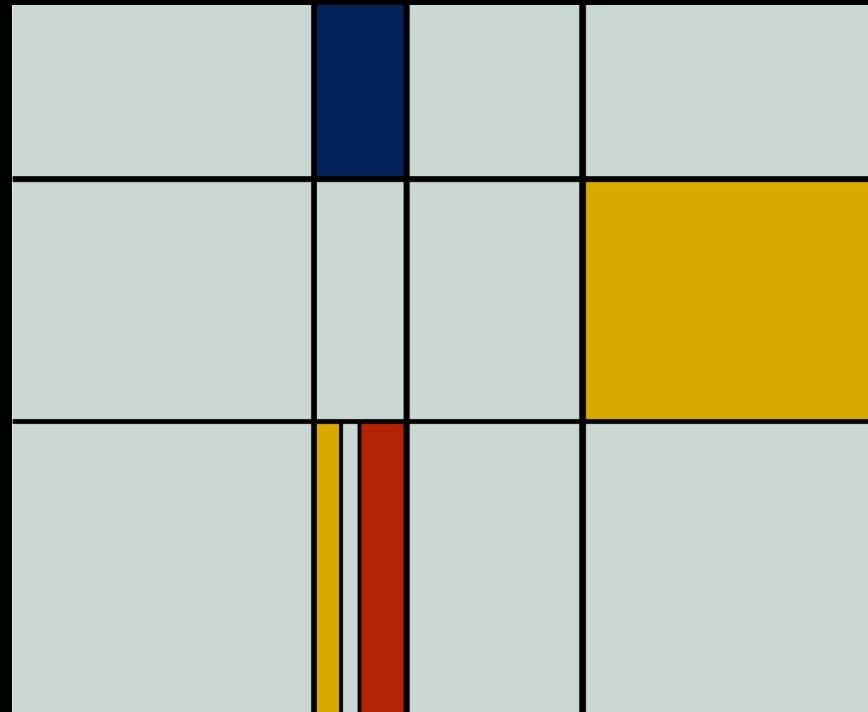
Data science skill evaluation

R Shiny app (will follow)

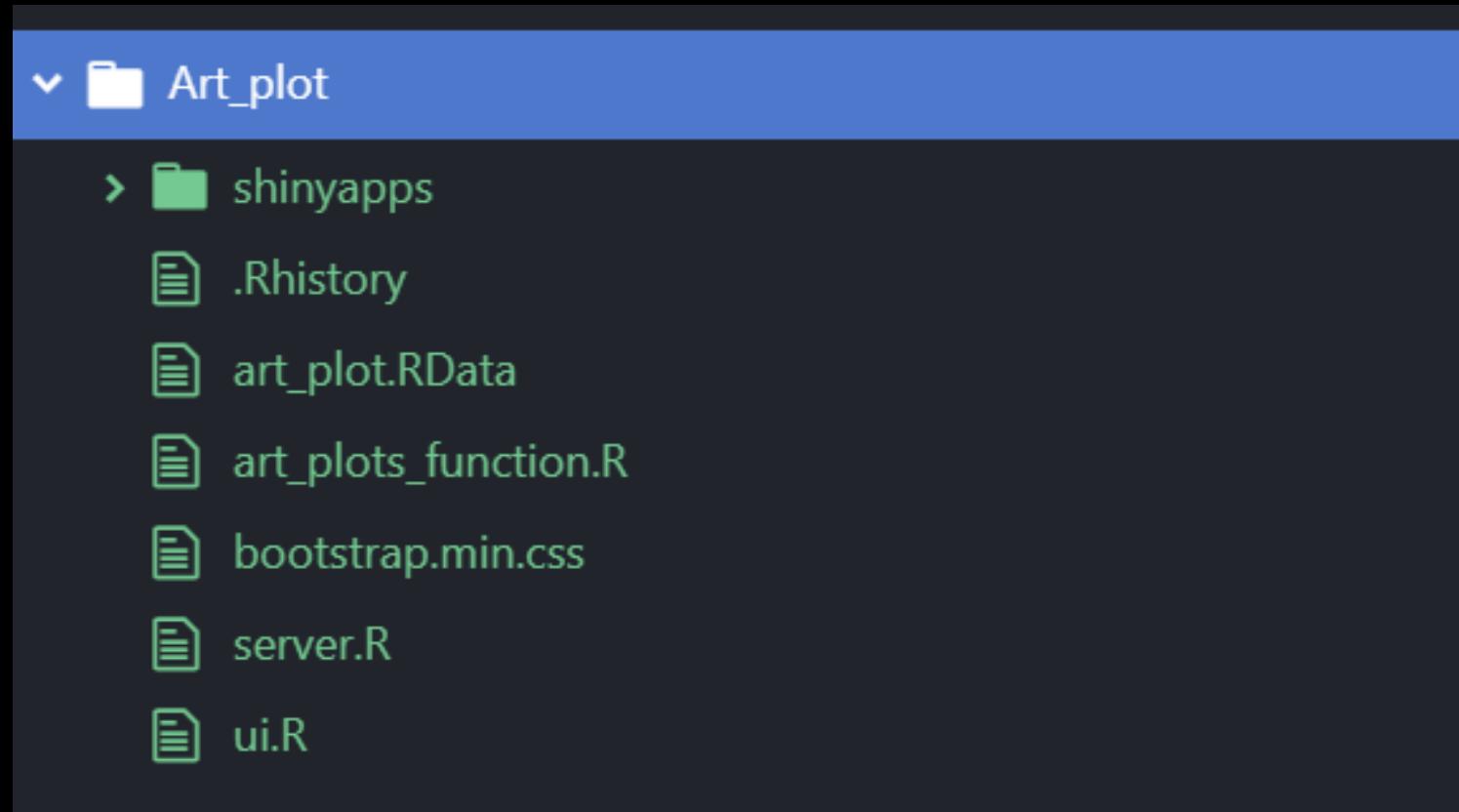
A Q R T



```
if(zufall_form==0){
  rect(0,0,10,10,border=NA,col=col_mat1[i])
  polygon(5+cosx*lang,5+sinx*lang,,border=NA,col="white")
}else{
  rect(0,0,10,10,border=NA,col="white")
  polygon(5+cosx*lang,5+sinx*lang,,border=NA,col=col_mat1[i])
}
```



[https://non-productivity-linked-ideas.shinyapps.io/Art\\_plot/](https://non-productivity-linked-ideas.shinyapps.io/Art_plot/)



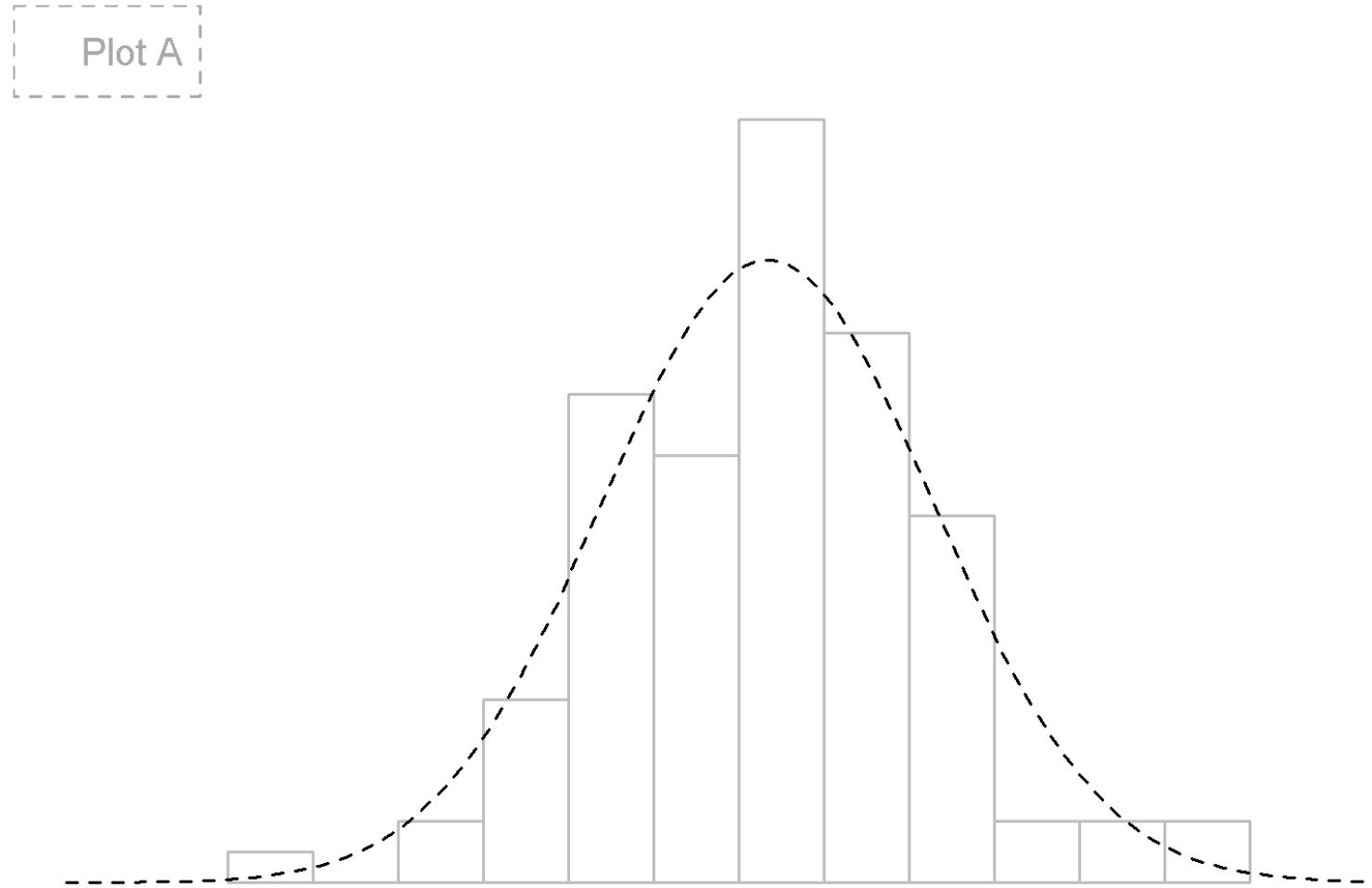
[https://non-productivity-linked-ideas.shinyapps.io/Art\\_plot/](https://non-productivity-linked-ideas.shinyapps.io/Art_plot/)



is a combination of the  
probability of an event  
and its potential impact

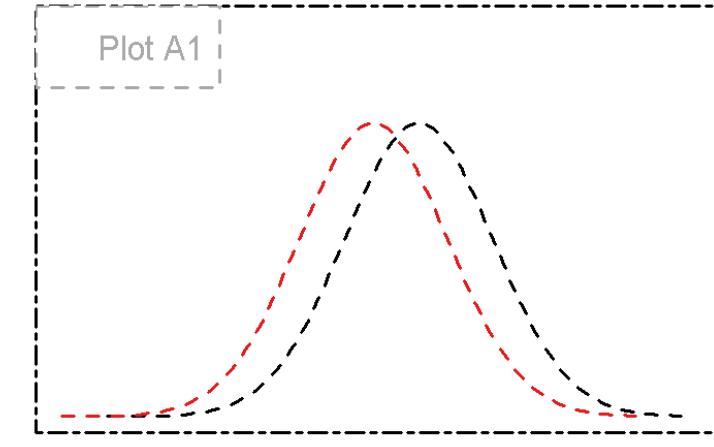
Density

## Probability

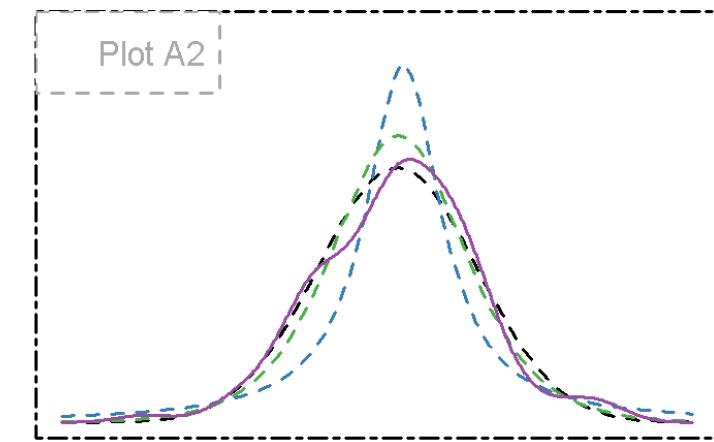


Weather index

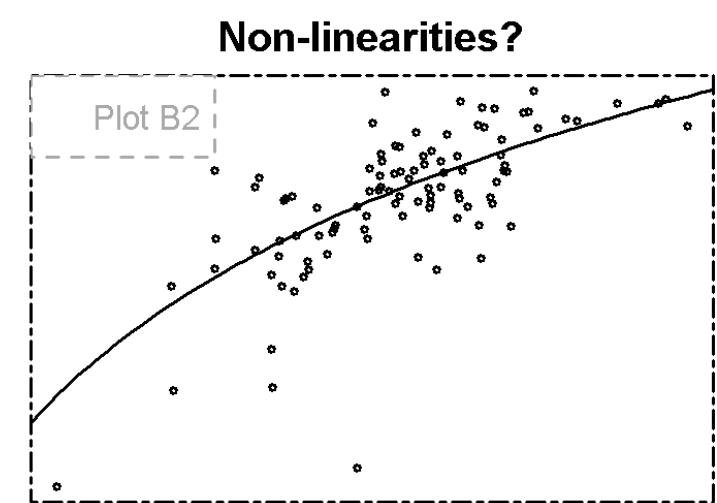
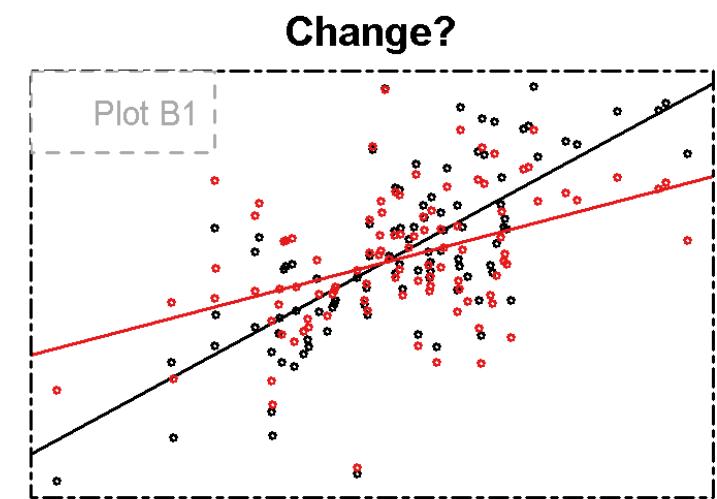
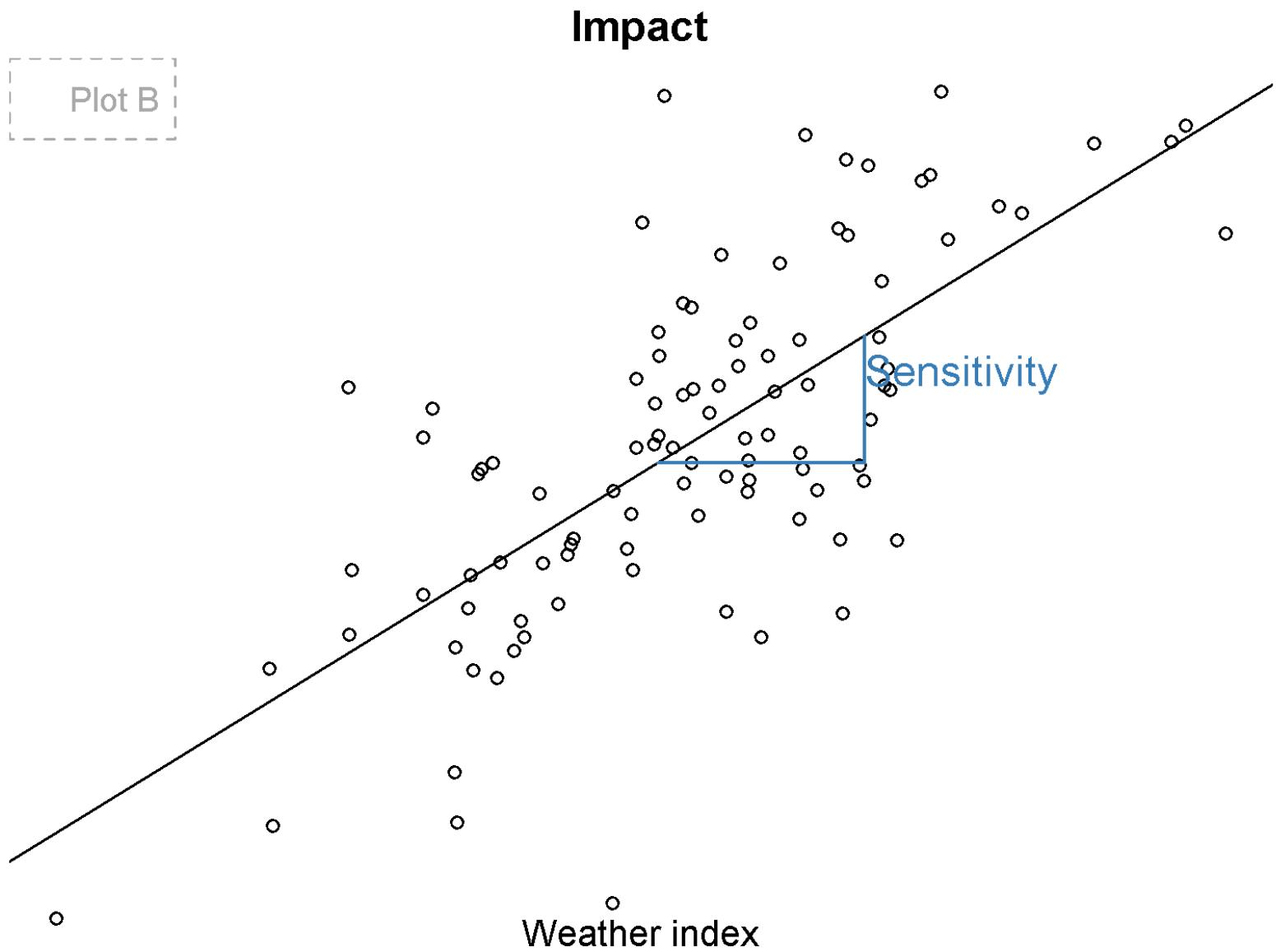
## Change?



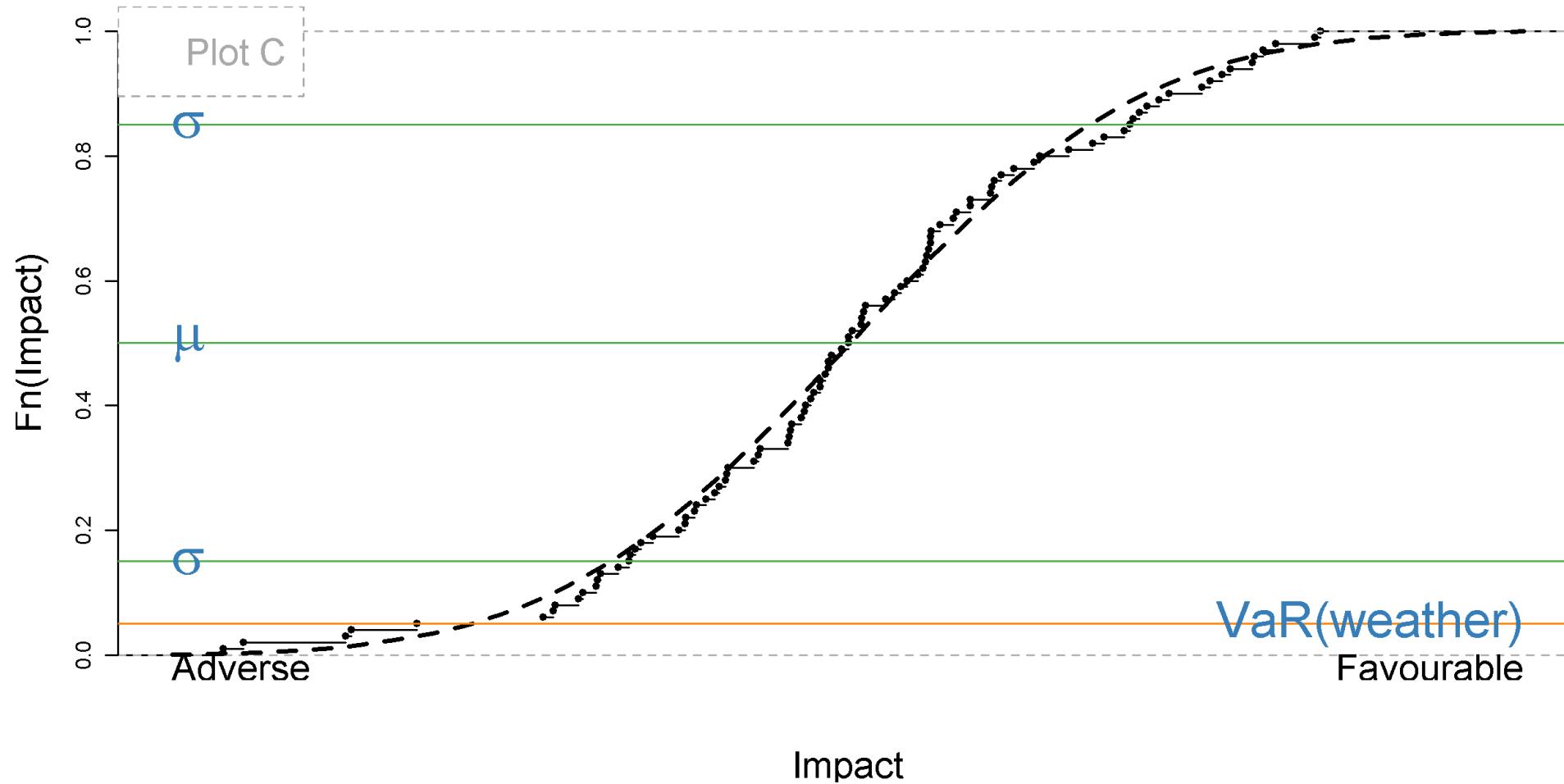
## Distribution?



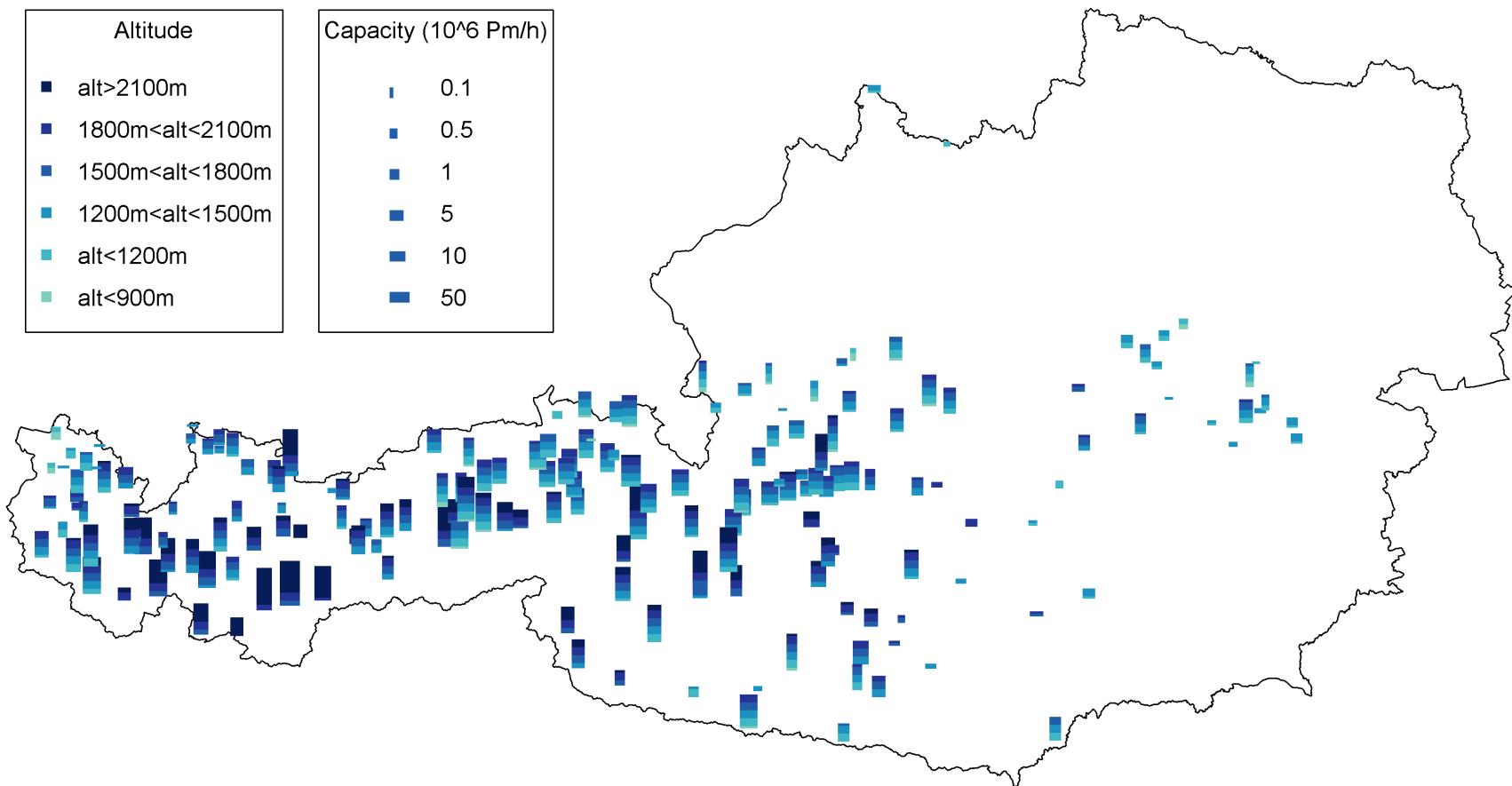
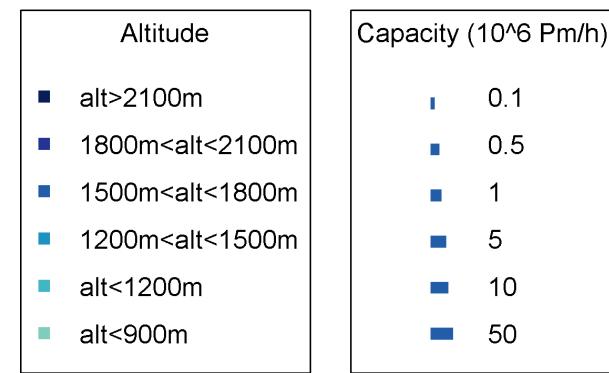
Economic or Business Indicator



## Weather Risk

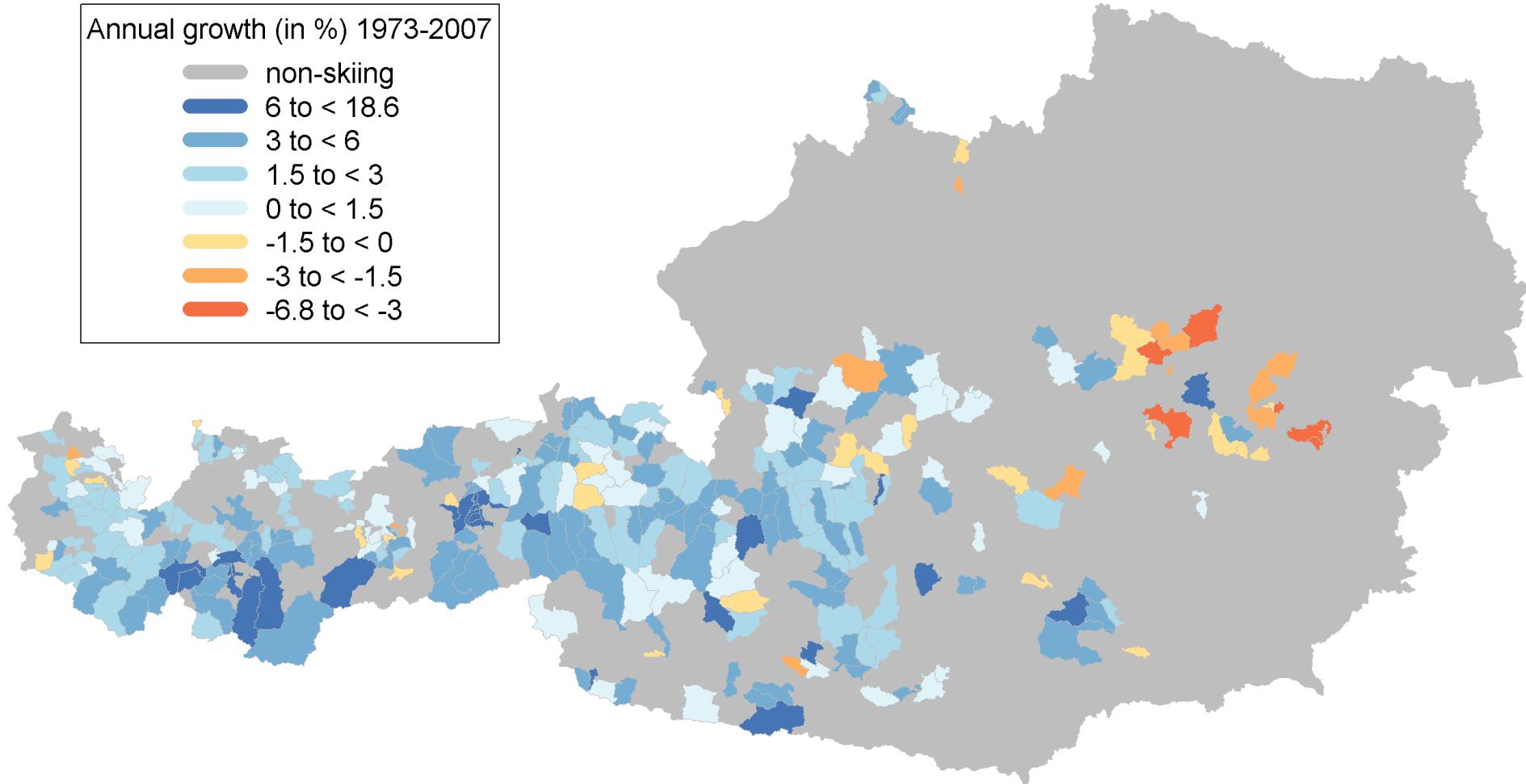
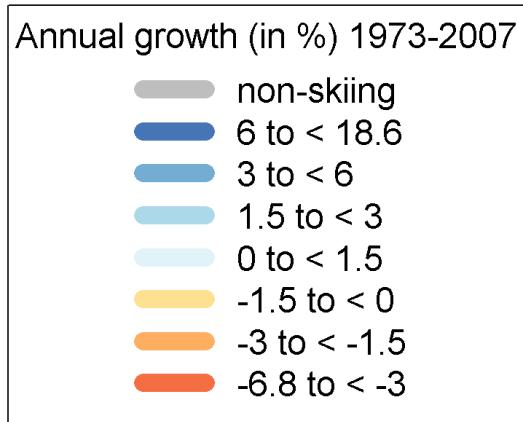


### Altitude range and size of ski areas



Note: 18 areas which only rely on drag lifts are not shown in this figure.

## Overnight Stays



## Days with snow depth >1cm (1973–2006)

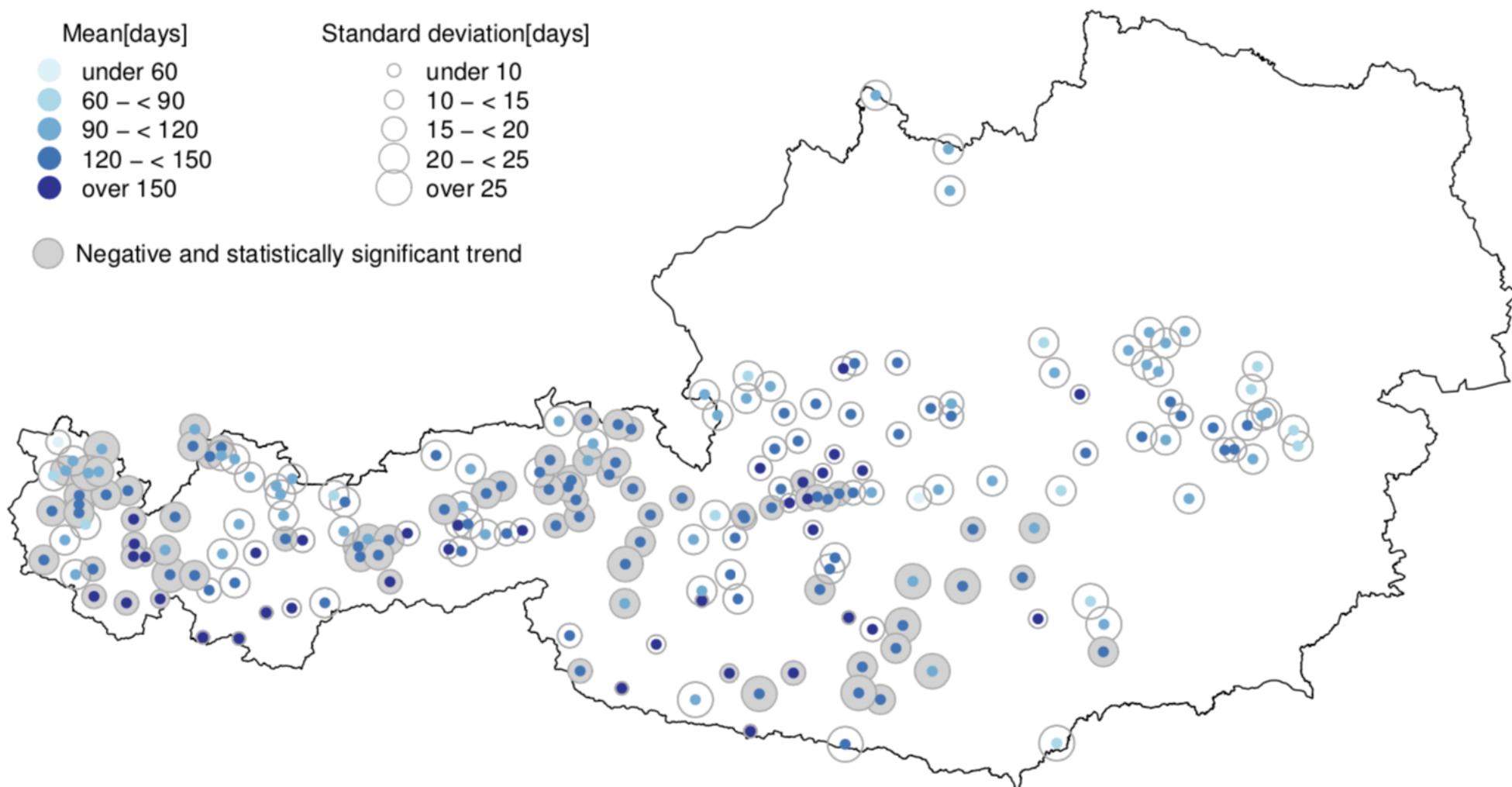
Mean[days]

- under 60
- 60 – < 90
- 90 – < 120
- 120 – < 150
- over 150

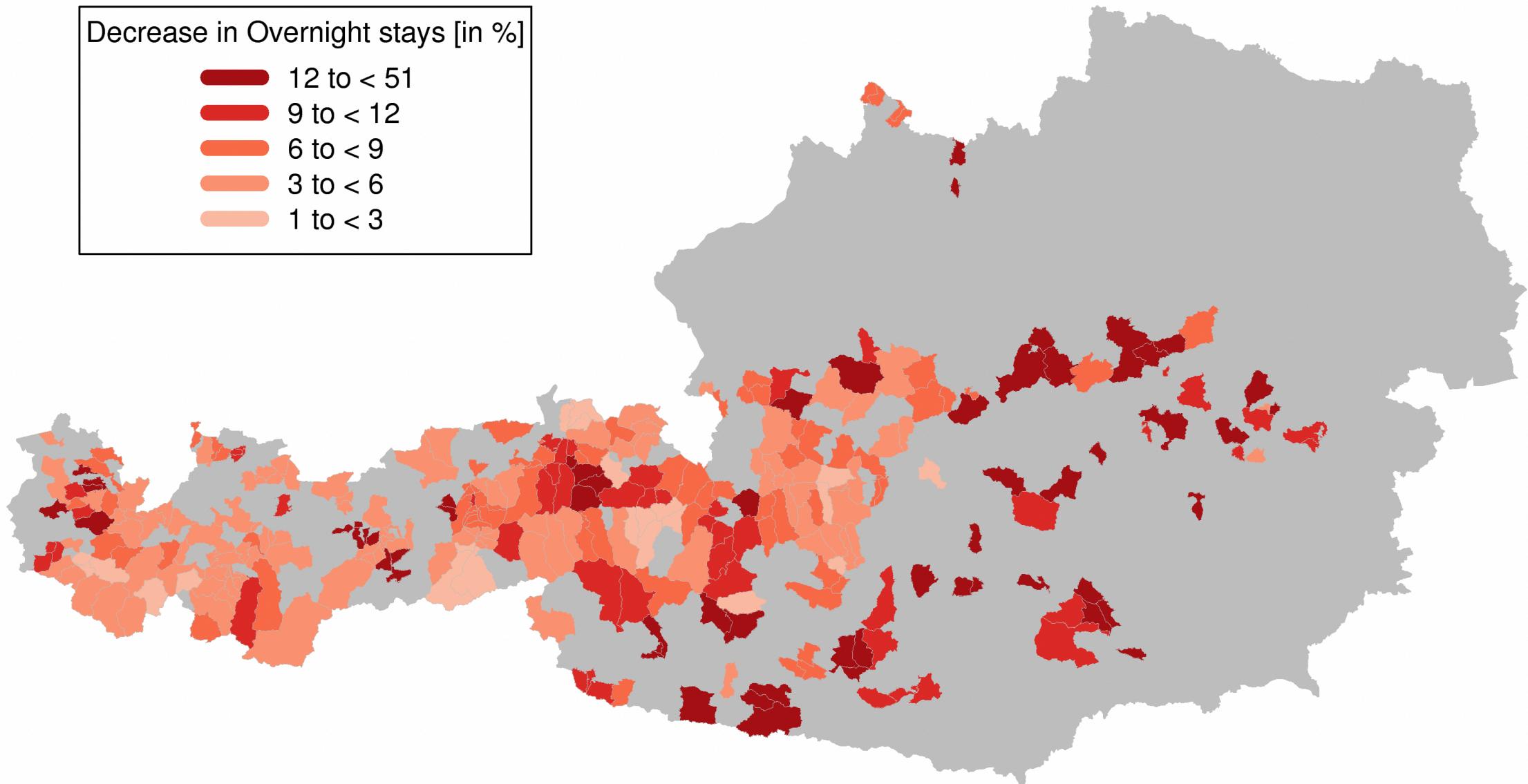
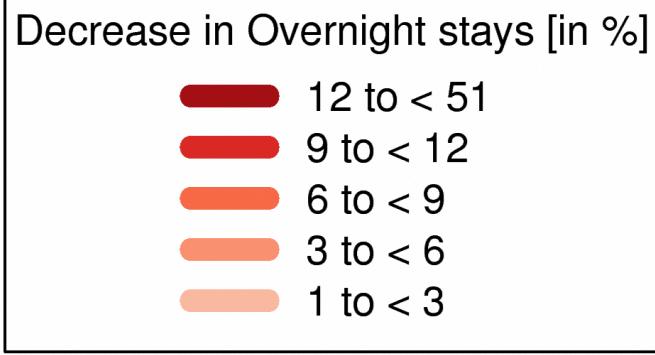
Standard deviation[days]

- under 10
- 10 – < 15
- 15 – < 20
- 20 – < 25
- over 25

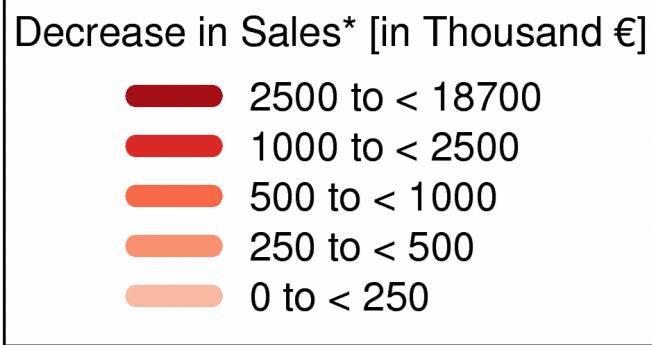
● Negative and statistically significant trend



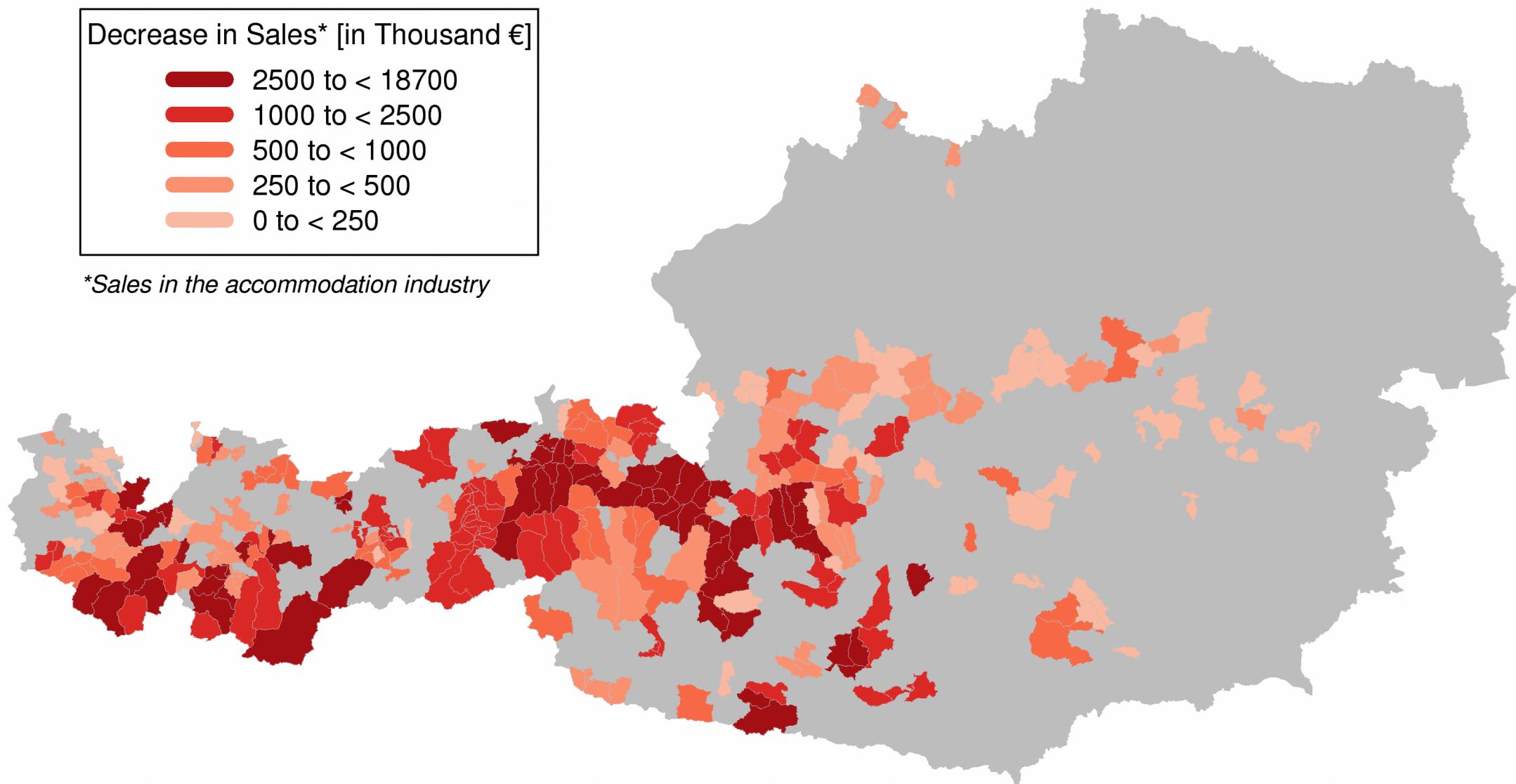
## 20-year weather risk (95%-VaR) for ski areas



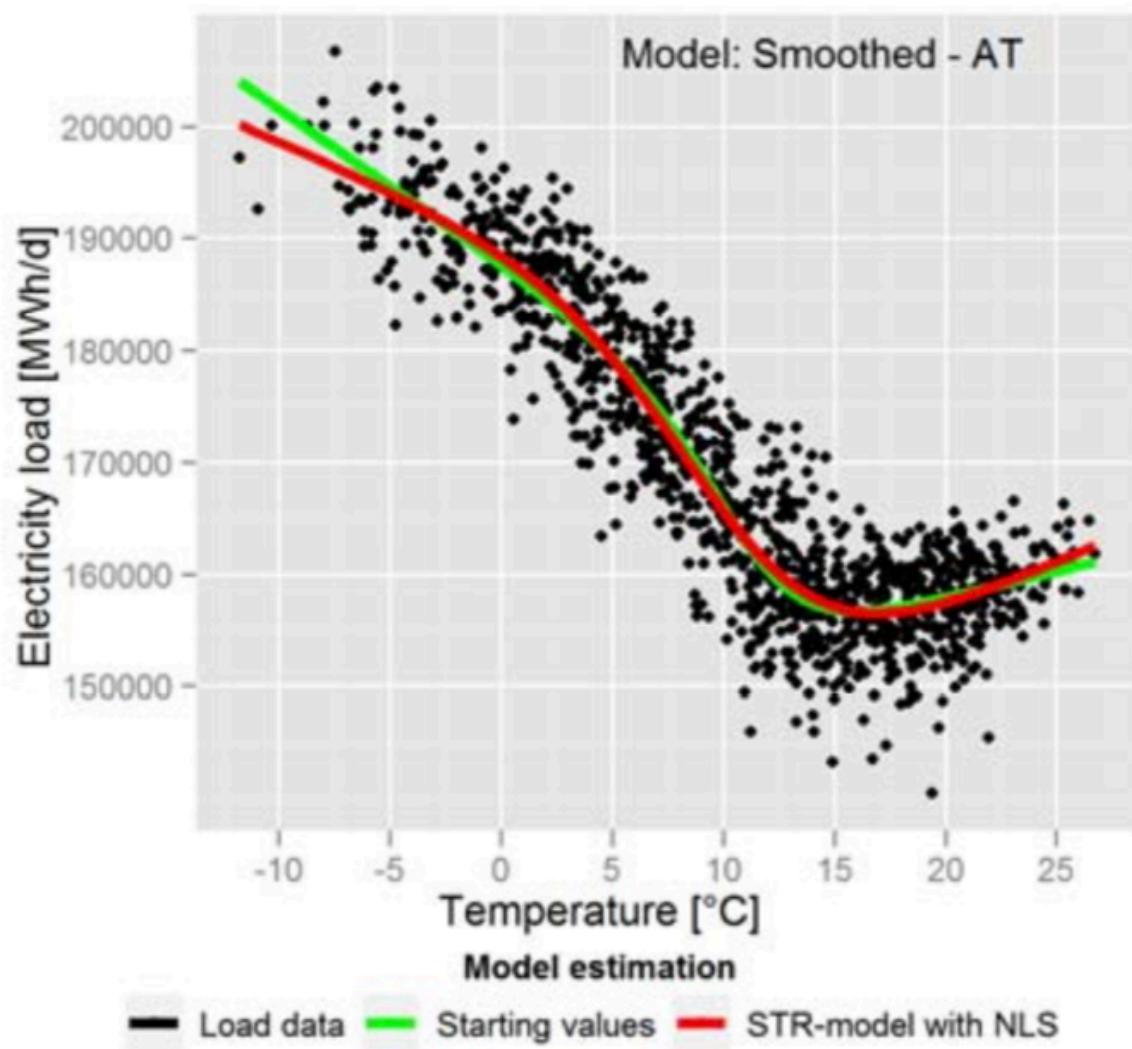
## 20-year weather risk (95%-VaR) for ski areas



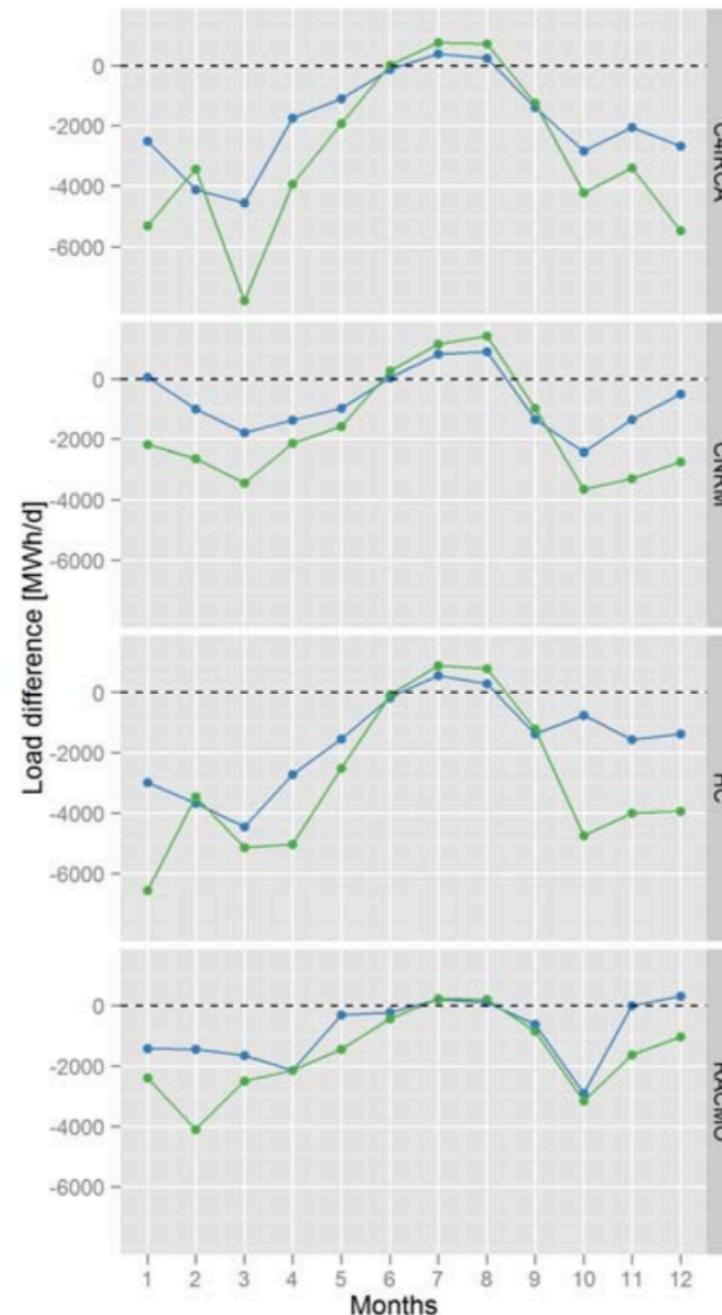
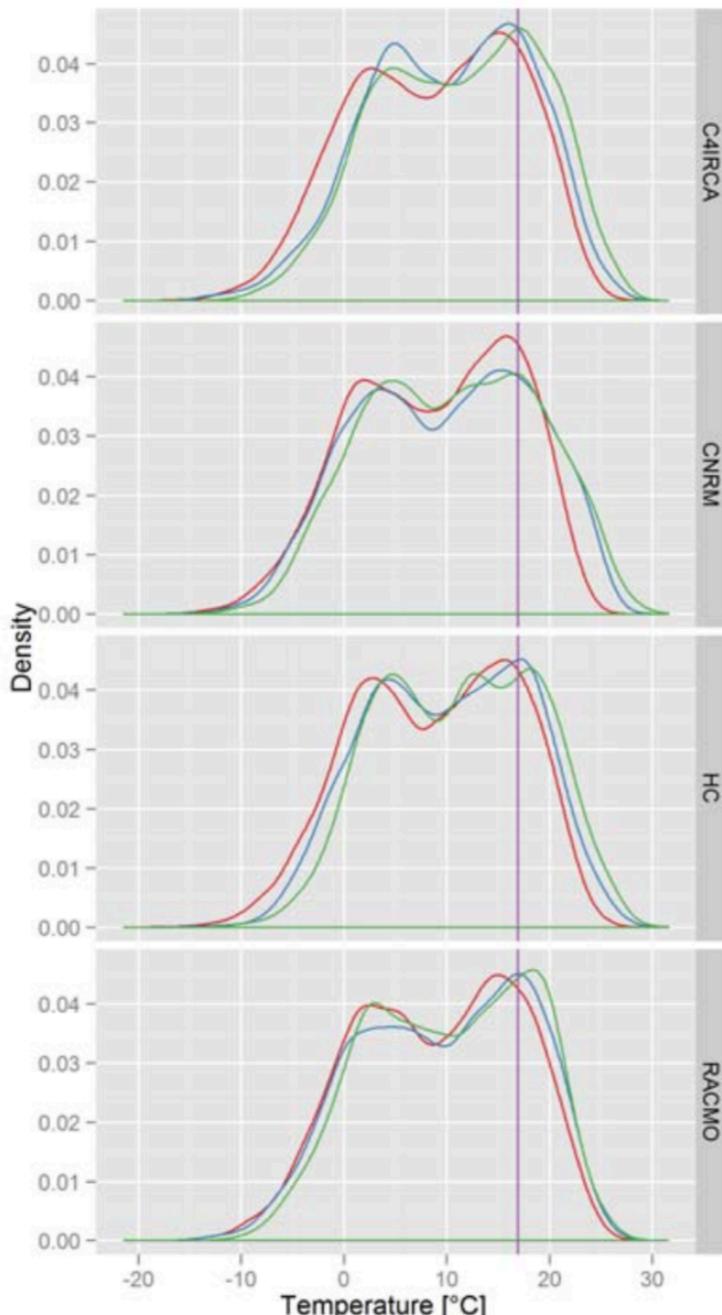
\*Sales in the accommodation industry

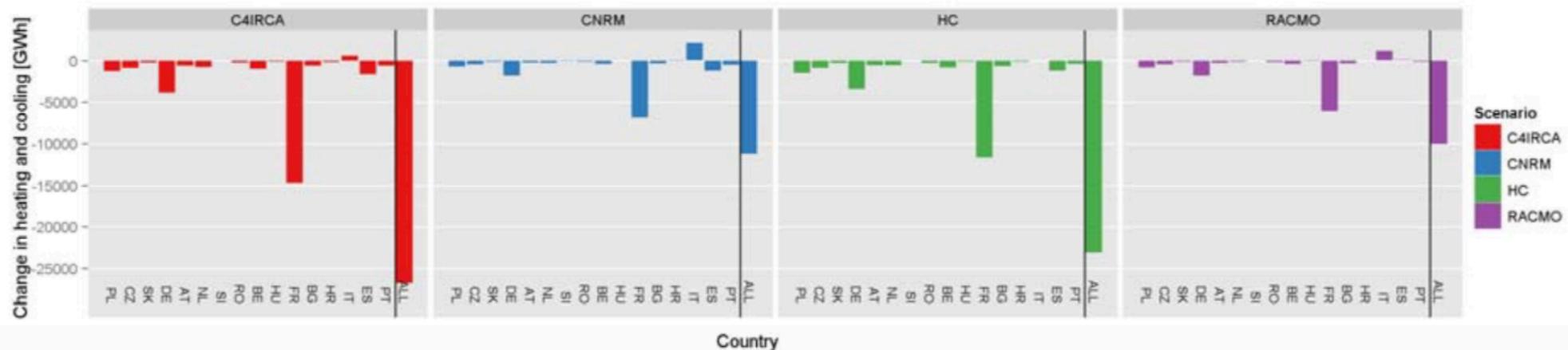
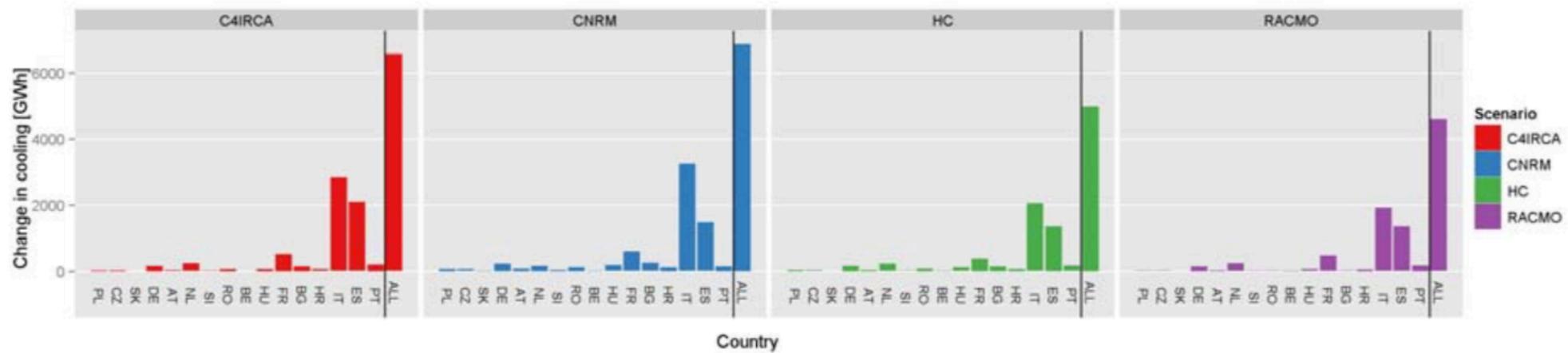
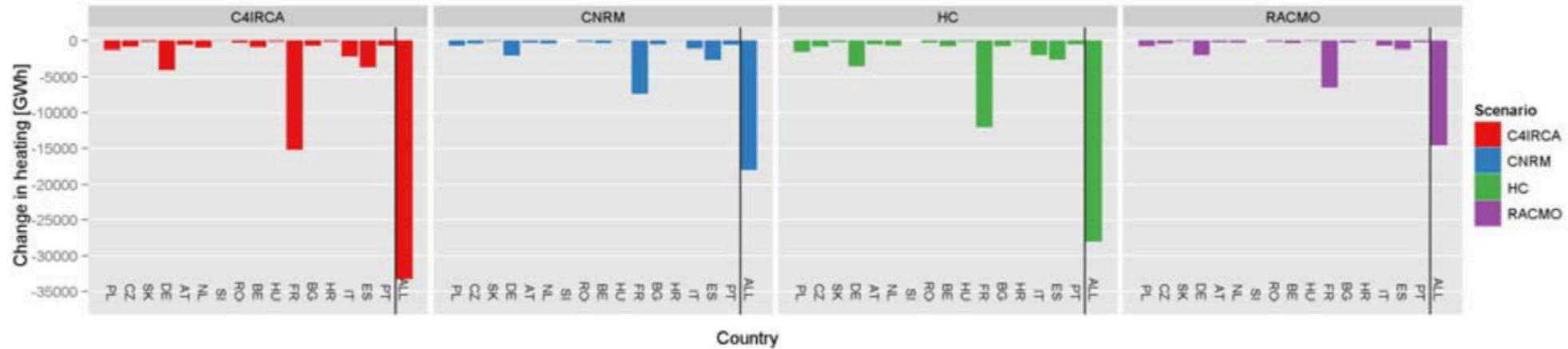


**Electricity**



C. Töglhofer, C. Habsburg-Lothringen, F. Prettenthaler, N. Rogler, M. Themessl, 2012:  
Impacts of Climate Change on Electricity Demand







The logo features the word "Your" in black, sans-serif font. The letter "R" is blue and has a thick, light gray circular swoosh graphic positioned behind it, partially overlapping the letters "u" and "R". To the right of "Your" is the word "Life" in a large, black, sans-serif font.

Your Life

Checken Sie jetzt Ihren persönlichen Climate-Lifestyle und vergleichen Sie ihn mit dem aller Österreicherinnen und Österreicher!

Benennen Sie dafür Ihr Profil:

Los!

UI: Shiny  
Chart:JS  
Backend / models: R

R / JS  
session\$sendCustomMessage()  
onInputChange().

jQuery, chart.js, Promises, future

[About WEDDA](#)[Industries](#)[Demo](#)[Contact](#)[MyWEDDA](#)

# WEDDA

Weather Driven Demand Analysis

Tailored weather risk analyses for your business



## Forecasting

10-day forecasts of your weather-dependent company figures updated daily



## Monitoring

Monthly or seasonal statistics, including weather-adjusted performance indicators



## Risk evaluation

Quantification of your company-specific weather and climate risks



The word "Performance" is displayed in a large, bold font. The letters "P", "e", "r", "f", "o", "R", "m", "a", "n", "c", "e" are all white except for the letter "R", which is blue. The letter "R" is unique as it has a thick, light gray circular outline around its top and left sides, while the other letters are simple white strokes.

Performance



GeO,QRge

5.000.000  
users across Europe.

<https://george-labs.com/>

# Insights Sharing



Reporting Engine

Markdown

Flex Dashboard

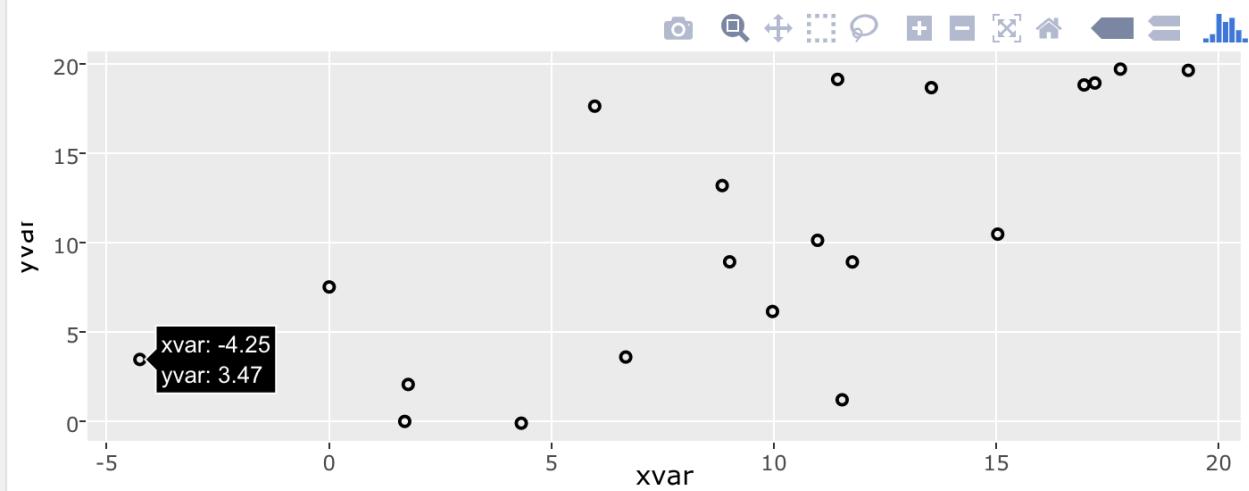
<https://rmarkdown.rstudio.com/flexdashboard/>

Notebooks

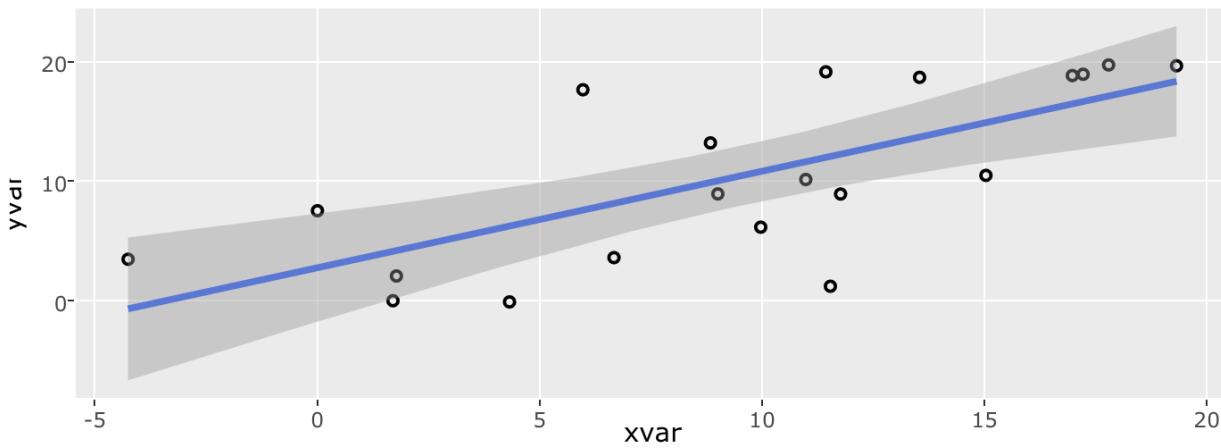
Knowledge repo

<https://github.com/airbnb/knowledge-repo>

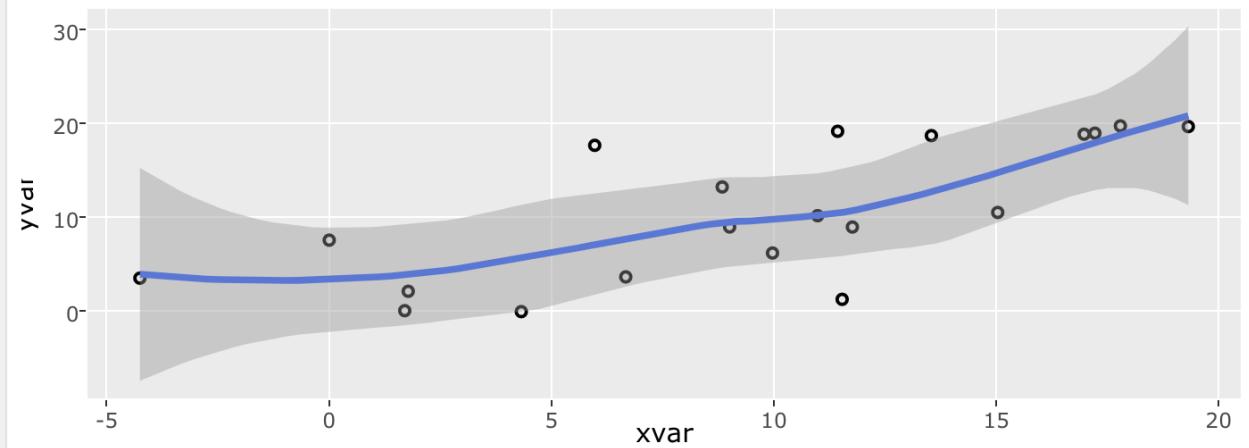
Scatter Chart with geom\_point



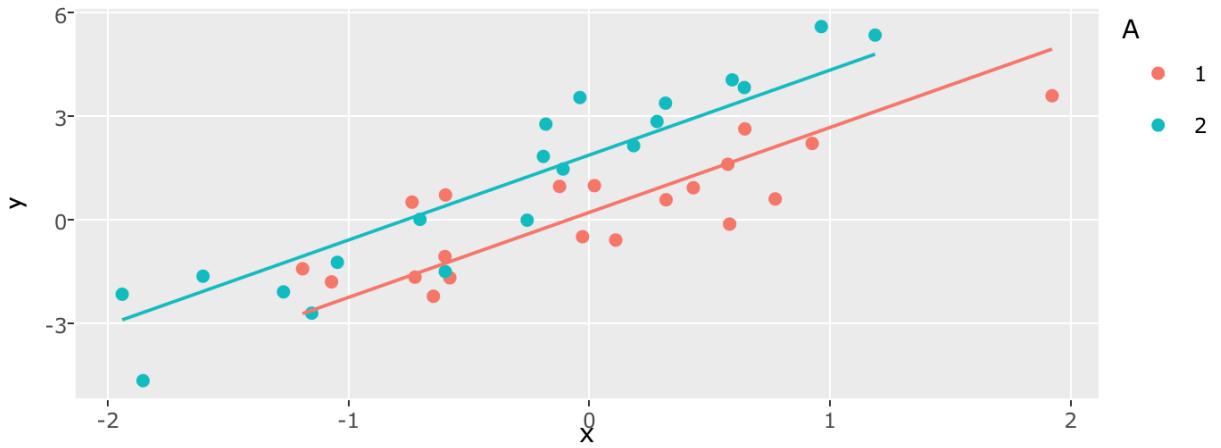
geom\_smooth Linear Regression



geom\_smooth with Loess Smoothed Fit



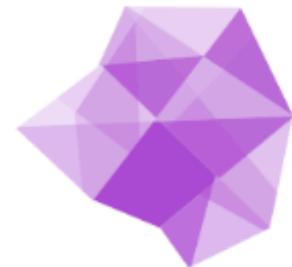
Constraining Slope with stat\_smooth



Card

Table

Cluster



## You can use Plotly too!

resident\_plotly\_advocate

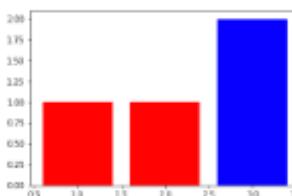
#plotly #example

*Using plotly inside a knowledge post is as simple as can be!*

+ Show More

Created on April 20, 2017 (last updated March 16, 2018)

👁 0 ❤ 0 💬 0



## My bright idea!

resident\_innovator

#proofs #novel

*In this post we prove that one plus one equals two. Various forms of evidence are provided.*

+ Show More

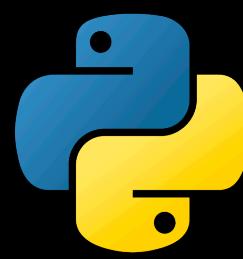
Created on January 01, 2017 (last updated March 16, 2018)

👁 0 ❤ 0 💬 0

## Numerical tags automatically get upgraded to strings!

<https://github.com/airbnb/knowledge-repo>

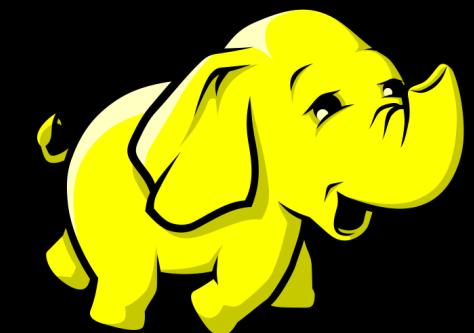
# Tech Behind



python™



ORACLE®



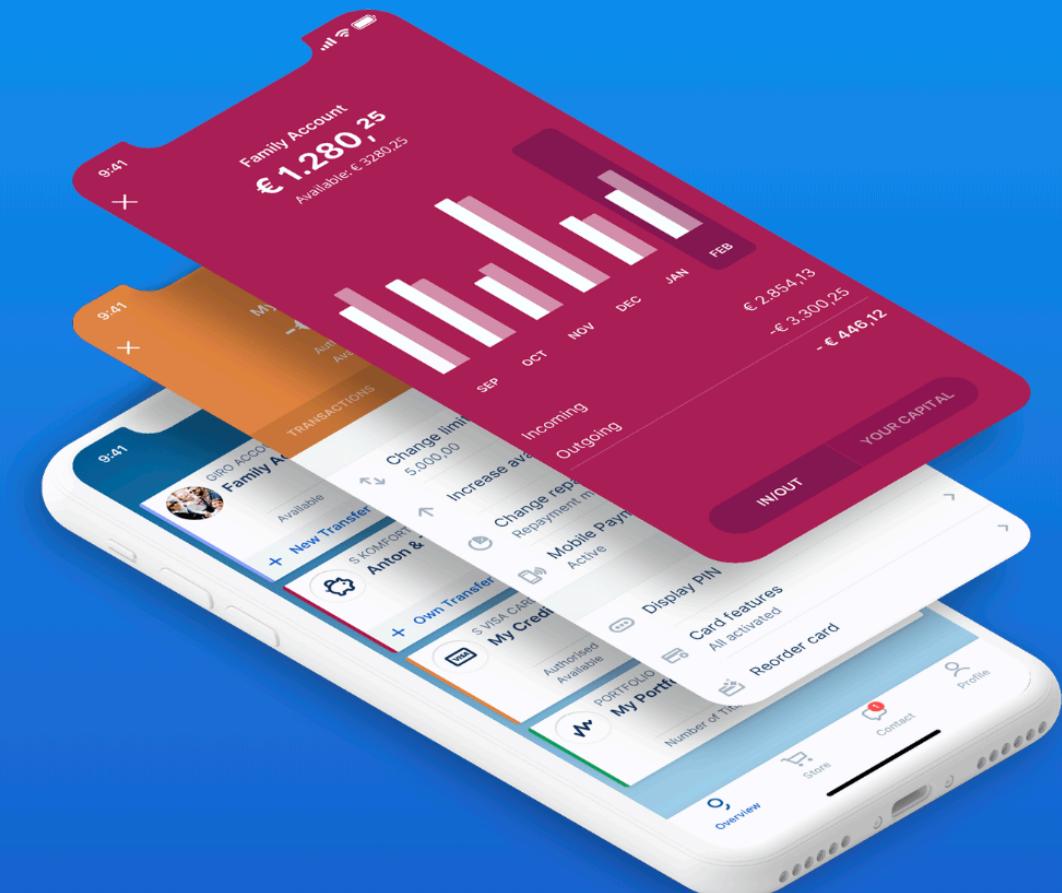
Power up

# Team up with George.

You've got the vision.  
We've got the platform.

Join the future of banking and start  
up with your own plugin in George.

[Become a Partner](#)



<https://george-labs.com/>

## PROBLEM



**Data privacy** restricts sharing of data and thus **hampers digital innovation**.



**Pseudonymization** offers **no safety**, while **Full Anonymization** falls short for big data.

## SOLUTION

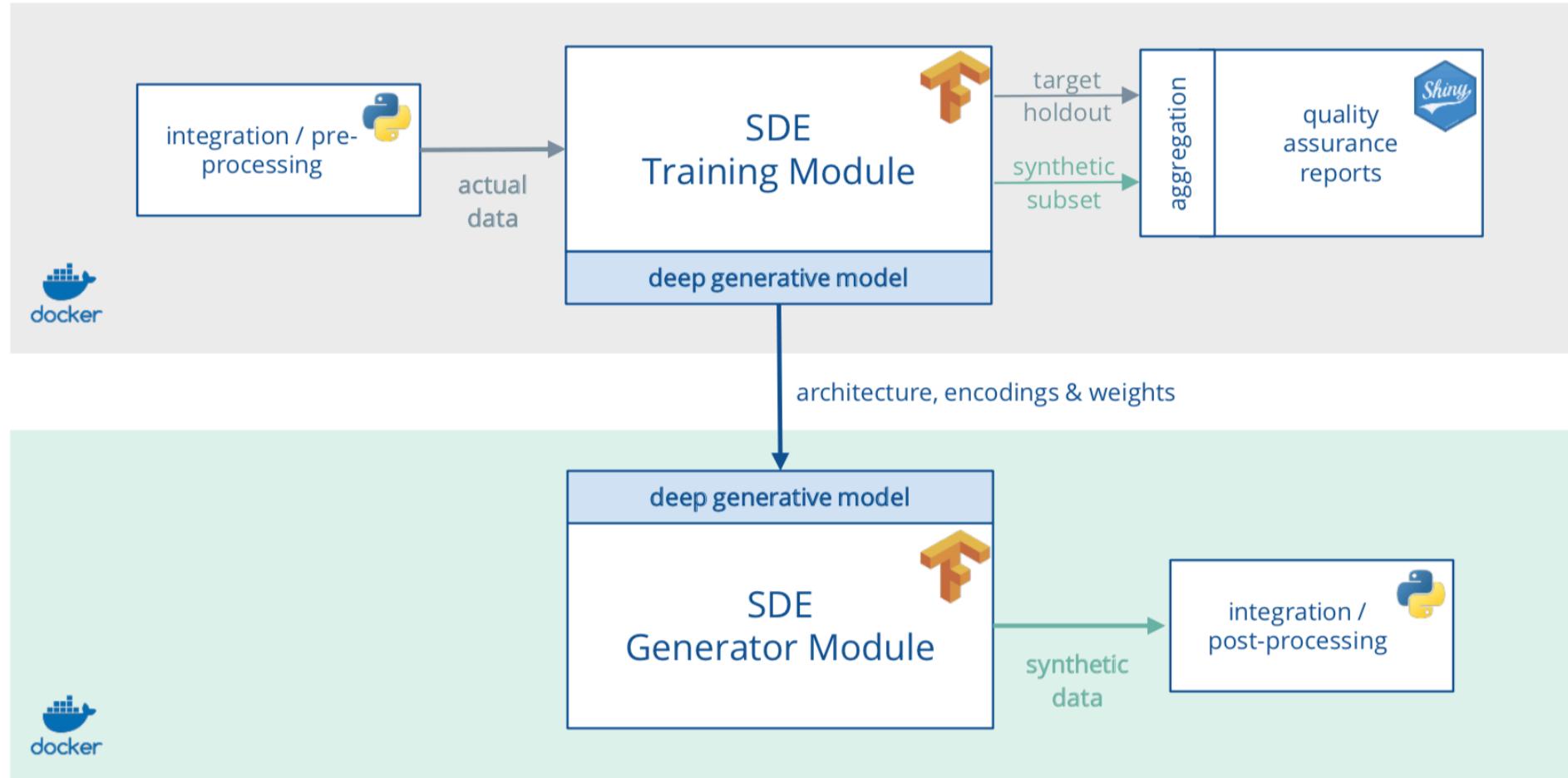


**Synthetic data is anonymous**.



**Generative AI** allows **highly accurate** synthetic data to be generated at scale.

# Tech Behind



- on-premise, secure
- GPU environment

2x Quadro P4000 (8GB)  
(training runs ~18h)



- anywhere
- anytime
- CLI / REST API

<https://github.com/ctoegi>

<https://at.linkedin.com/in/christoph-t%C3%B6glhofer-1870ab185>

# Thank you

