



AKTUARVEREINIGUNG  
ÖSTERREICH (AVÖ)

# Data Science Challenge

AVÖ in cooperation with UNIQA and SSA

**Start: 26<sup>th</sup> April 2021**

**End: 17<sup>th</sup> May 2021**

Final event with presentation of the winning projects: Calendar week 23 (exact date will be announced soon)

In a joint effort of UNIQA, the Actuarial Association of Austria and the Slovak Society of Actuaries, the Data Science Challenge 2021 was launched to promote the actuarial profession to students. Combining data from different sources and gaining new insights by creative and innovative visualizations or any other statistical procedure is sometimes called a data mash up. The goal of this challenge is to find a suitable dataset related to the financial or insurance industry and make a data mash up. Explain the background of the mash up and what one can see from your visualizations. Show us your programming skills in Python or R by doing your entire analysis in a Jupyter notebook and your ability to present your findings in a clear and structured way by explaining your analysis and results in a summary of maximum 3 pages. As a valuable source for data concerning the Austrian context, we recommend the website of the Austrian Financial Market Authority

- <https://www.fma.gv.at/en/insurance/queries/insurance-statistics/>

With respect to the Austrian market, insurance statistics from 2002 to 2019 can also be obtained from the GitHub repository

- <https://github.com/smalldatascience/Versicherungsstatistik>

Data sets related to the European insurance market can be found on the website of the European Insurance and Occupational Pensions Authority.

- [https://www.eiopa.europa.eu/tools-and-data/insurance-statistics\\_en#Premiums,claimsandexpenses](https://www.eiopa.europa.eu/tools-and-data/insurance-statistics_en#Premiums,claimsandexpenses)

If you can not come up with some interesting question, you could for example shed light on how various positions of the balance sheet behave over time and whether there are any market participants who exhibit anomalies. Also premiums, claims and expenses can be sources for interesting results at the European level with the help of some creative analyses.

## Participation

The competition is open to all interested persons of legal age which can participate individually or as a group. Groups may consist of a maximum of 3 people. All participants competing for the main prizes (1000 Euros, 600 Euros, 400 Euros) must be enrolled at a European university with a valid university email address at the time of submission and must not exceed the age of 30. All other participants who are either over 30 and/or do not have a valid mail address of an European university are welcome to take part in the challenge but out of competition for the cash prizes.



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## Requirements for the submissions

- The analysis must be performed and submitted in R or Python using a Jupyter notebook.
- The sources of all external elements used in the analysis (data, logos, graphics, ...) must be specified.
- The Jupyter notebook must run as is on any computer.
- Every part of the analysis must be reproducible.
- The 3-page summary must be submitted in pdf format.
- The upload of the summary and the notebook must be done together with the specification of an email address on <https://www.uniqua4ward.com/en/challenge.html>
- All submitted documents must be written in English.
- Participants must use a publicly available dataset, not necessarily those mentioned above.
- All persons submitting a joint analysis may not submit individual solutions.
- The submitted analysis must contain the name, the nationality, the phone number and the university mail address of all involved persons.
- A main contact person must be specified in case of a joint submission.

## Evaluation

The analyses will be evaluated by a jury based on three different criteria which are weighted equally:

- **1/3:** Innovation/Creativity (If the analysis brings up some creative and innovative ways of thinking about the dataset)
- **1/3:** Data visualization (Quality of the graphical presentation of the results)
- **1/3:** Comprehensibility (Is the research question clearly formulated and can the analysis be understood easily)

The jury consists of 5 members, whereby each party involved in the organization of this challenge (UNIQA, AVÖ, SSA) nominated one or two members to the jury. One member of the jury will be appointed as the chairman of the jury. In the event of a tie, the chairman's scores will be used to determine the ranking. From all submissions that meet the requirements to compete for the main prizes, the jury will select the three projects that have the highest score according to the above criteria and invite the winners to a final event. At this event the first 3 places will be announced, and the winners will have the great opportunity to present their analyses. Among all submissions that do not meet the required criteria in terms of age and/or university mail address, the jury will also select the best project and honor it with a special prize.

## Prizes

The following prizes will be awarded to the first 3 places among all participants who meet all the requirements as specified above:

**1<sup>st</sup> place** 1000 EUR  
**2<sup>nd</sup> place** 600 EUR  
**3<sup>rd</sup> place** 400 EUR

The winning project, among all submissions that are not eligible to participate in the cash competition, will be rewarded with a goodie bag and the option for a two-year free AVÖ membership. The option can only be used by natural persons who are not yet members of AVÖ and who either have a university degree with a mathematical foundation and are engaged in financial or actuarial mathematics or who are or have been performing a qualified actuarial activity.



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### **Obligations of the participants, disclaimer and additional rules**

- By participating, participants warrant that they are the author of the analysis and do not infringe the intellectual property rights of any other person or entity. In particular, authors must own the rights to all illustrations, images, and elements that they use in their submission.
- By submitting their analysis, entrants consent to the use of their name in the announcement of the award winners without further restriction.
- Claims for compensations of the participants are excluded.
- If for any reason the competition cannot be carried out as planned, the organizer reserves the right to cancel the competition at its own discretion.
- Submissions that do not comply with all rules will be disqualified at the discretion of the jury.
- The term organizers refer to UNIQA, the Actuarial Association of Austria and the Slovak Society of Actuaries.
- By uploading a submission, participants agree that their provided email address may be used by the organizers for announcements of further challenges.
- By participating, participants grant the organizers free of charge a perpetual, exclusive, non-transferable license to publish, display, reproduce, use, share, edit, reproduce and create derivative works of their analysis in any media, in whole or in part, for any purpose.
- By participating in the Challenge, participants agree to provide, upon request, documents that allow the organizers to verify the age and authenticity of the university email address.