

## Statistical Support to the Faculty of Natural Sciences from the Applied Statistics Laboratory (aStatLab, MATH AU)

February 2023

The Applied Statistics Laboratory (aStatLab, at MATH, AU) maintains a system for statistical assistance for research groups at the Faculty of Natural Sciences (NAT, AU). The statistical support is composed of the following activities:

1. A system of **statistical consultation** (simple, daily questions)
2. **Short ad hoc internal projects** (simple, well-defined questions requiring that a statistician from the aStaLab performs some specific analyses, short-duration max. two weeks of workload)
3. **Statistical support for PhD and Master** at NAT (follow-up of statistical analyses related to PhD and, exceptionally, Master theses).

These activities do not involve costs for the clients, but the aStaLab reserves the right to limit the total workload of the activities.

The statistical consultations will take place in the first semester of 2023 on the following dates:

- Monday, the 20<sup>th</sup> of February
- Monday, the 27<sup>th</sup> of February
- Monday, the 6<sup>th</sup> of March
- Monday, the 20<sup>th</sup> of March
- Wednesday, the 12<sup>th</sup> of April
- Wednesday, the 19<sup>th</sup> of April
- Wednesday, the 10<sup>th</sup> of May
- Wednesday, the 24<sup>th</sup> of May
- Wednesday the 7<sup>th</sup> of June.

An appointment for each consultation should be made two work days before the consultation by writing an e-mail to Rodrigo Labouriau ([rodrigo.labouriau@math.au.dk](mailto:rodrigo.labouriau@math.au.dk)).

The consultations take place at the aStatLab (building 1535, room 1535-407). The aStatLab supplies coffee and tea during the consultations.

Rodrigo Labouriau,  
Applied Statistics Laboratory at the Department of Mathematics, Aarhus University.

For more details, see below.

## **Some details:**

### ***1) System of statistical consultation:***

This activity consists of maintaining a system of statistical consultation to assist scientists, postdoctoral fellows, PhD students and Master students in solving simple statistical issues that normally appear in their daily research activities.

*Implementation:* The aStatLab will establish two consultation days per month, both in Aarhus at the Department of Mathematics, on pre-fixed dates. There will be no consultations in July and only one consultation day in August. If necessary, the frequency of consultations might be adjusted in periods of large demand. An appointment for each consultation should be made two work days before the consultation day by writing an e-mail to the leader or a designated person of the aStatLab; the appointment will be made provided that there is a time slot available in the requested consultation day; otherwise, the consultation should be booked in another consultation day. Exceptionally, urgent matters might be treated outside of the consultation day, depending on the availability of personnel from the aStatLab.

*Details:* A consultation here is understood as a personal interview (1 to 2 hours), possibly complemented by a short follow-up (e.g., written or telephonic). In many cases, the client performs the calculations, but often the statistician assists the client in actually doing the analysis or performing the key calculations of the analyses. It should not be expected that a consultation (including a follow-up) involves more than one workday of the statistician; if the activity requires more than one workday, then it should be treated as an ad-hoc mini-project or support to a project (see the items 2). Typical topics often observed in previous consultations were: identification of statistical or mathematical techniques required for answering specific research questions arrived from experiments, assistance in the way to performing concrete statistical analyses, counselling on strategies to plan experiments, second opinion or remedy solutions for rejected manuscripts with statistical issues and interpretation of non-standard or complex statistical models. A consultation can also be used to initiate an ad-hoc mini-project or to clarify some theoretical statistical questions.

### ***2) Support to short ad hoc projects:***

This activity consists of maintaining a system of statistical support to scientists, postdoctoral fellows, PhD students and Master students to solve statistical issues that appear in their research activities, which involves a workload of the order of magnitude of at most one-week workload. In this activity, a statistician from aStatLab will perform the statistical work in collaboration with the client(s) from NAT.

*Implementation:* When the necessity of a short ad hoc project (SP) is detected, then there must be arranged a meeting involving the leader of aStatLab (or a designated person from aStatLab) and the client(s) (at least one person at senior level should be involved). During this meeting, the following points should be cleared: 1) the scope of the required work (preferably with well-defined specific tasks) and the statistical issues involved; 2) a realistic prediction of the amount of workload necessary to execute the SP; 3) a realistic schedule for executing the work. An informal meeting minute will be written and circulated by e-mail to everyone involved. The aStatLab will link one statistician (or a group of statisticians) to the SP.

*Details:* Although a short ad hoc project is often originated from consultations, we propose to keep these two activities separated. Typically, the analyses performed in SP will be crosschecked at the aStatLab; in some cases, a short memo registering the work will be produced. It is presupposed that the preparation and edition of the data necessary for performing the analyses related to the SP is not the responsibility of the aStatLab. The aStatLab can only handle a limited number of short ad hoc projects simultaneously; moreover, although the total workload should not exceed one week, this does not mean that the activities of the SP should be concentrated in a single week; the schedule should be arranged. This agreement does not exclude the possibility that a researcher of the aStatLab becomes a co-author of publications or patents that might result from the statistical analysis and discussions involved in an SP. Only a limited number of SP can be established in 2022.

### ***3) Statistical support for PhD and Master at NAT related to their thesis:***

This activity comprises a follow-up of some individual PhD and Master programs at NAT. PhD and Master students can benefit from the statistical support covered by this agreement in several ways, namely: planning experiments, counselling regarding the statistical methods to be employed or studied, assistance in performing the statistical analysis etc. These different activities cannot always be covered in a coordinated way via short consultations or short ad hoc projects; therefore, it is proposed to create some follow-up activities. We stress that one of the aims of this activity is to ensure that the student understands the choice of tools made in the course of the statistical analyses performed. Clearly, this activity should be confined to a few cases and should be agreed upon and coordinated with the supervisor(s) of the PhD or Master's student.

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