

PhD Project Description

School/Department:	Department of Biostatistics, Erasmus MC
Supervisor information:	<p>Prof. dr. Dimitris Rizopoulos, d.rizopoulos@erasmusmc.nl Dr. Joost van Rosmalen, j.vanrosmalen@erasmusmc.nl</p> <p>See www.drizopoulos.com and https://www.scopus.com/authid/detail.uri?authorId=26041070200 for a personal website and an overview of publications. The most relevant publications on this topic are:</p> <ul style="list-style-type: none"> - Nasserinejad K, van Rosmalen J, de Kort W, Rizopoulos D, Lesaffre E. Prediction of hemoglobin in blood donors using a latent class mixed-effects transition model. <i>Stat Med</i>. 2016 Feb 20;35(4):581–94. - Nasserinejad K, van Rosmalen J, van den Hurk K, Baart M, Hoekstra T, Rizopoulos D, et al. Prevalence and determinants of declining versus stable hemoglobin levels in whole blood donors. <i>Transfusion</i>. 2015 Aug;55(8):1955–63. - Nasserinejad K, de Kort W, Baart M, Komárek A, van Rosmalen J, Lesaffre E. Predicting hemoglobin levels in whole blood donors using transition models and mixed effects models. <i>BMC Med Res Methodol</i>. 2013 May 2;13:62.
Project Title:	Longitudinal modeling of blood donation data
Abstract:	<p>Blood donors experience a temporary decline in their hemoglobin values after each donation due to the loss of iron. Frequent blood donation may put donors at risk of developing iron deficiency. Therefore blood banks monitor donors' iron status by measuring the hemoglobin value before each donation. Donors whose hemoglobin value is too low are temporarily deferred from donation. The longitudinal data collected by blood banks is a valuable data source to help understand the hemoglobin recovery process after donation and to better tailor donation policies and thereby reduce the number of deferrals.</p> <p>Our research group has previously developed longitudinal models for hemoglobin based on data from Dutch donors, in collaboration with researchers from the Dutch blood bank Sanquin. These models are based on mixed models, transition models and growth mixture models to account for specific features of the data, such as within-donor correlations, state dependence and donor heterogeneity. A Bayesian statistical approach is used to incorporate relevant prior knowledge on the recovery process.</p> <p>In this new project we will further develop these statistical models and apply them to large international data sets. We will also assess the value of biomarkers for better predicting future hemoglobin value and deferral, and develop models to estimate the relationship between blood donation and long-term health outcomes. The Dutch blood bank (Sanquin) will be a main partner and source of data for this project. In addition, we're collaborating with researchers from other countries (Australia, Belgium, Denmark, South Africa, UK) in an international modeling network.</p> <p>Keywords: blood donation, mixed models, longitudinal data, Bayesian statistics, biostatistics</p>
Requirements of candidate:	<ul style="list-style-type: none"> • We're looking for an enthusiastic student with a background (master's degree) in biostatistics or statistics who is interested in developing and applying new biostatistical methodology. Knowledge of methods for repeated measurements/longitudinal data and Bayesian statistics is a prerequisite. A good command of the English language (especially writing) is also necessary. • We offer a good working environment with a friendly atmosphere and constructive scientific supervision in the Department of Biostatistics of Erasmus MC, Rotterdam, the Netherlands. The department is well known for its expertise on methods for analyzing longitudinal data. • The scholarship will, at least, cover subsistence allowance and an international airplane ticket. We're able to provide help with the scientific part of your scholarship proposal. • English language requirement: IELTS 7.0 (<i>min 6.0 for all subs</i>), TOEFL 100 (<i>min 20 for all subs</i>)

Application requirements & Deadlines:

<https://www.eur.nl/en/about-eur/erasmus-university-china-centre/csc-scholarship>

Erasmus MC, ranked world

* No.32 for Clinical Medicine US News 2020:

<https://www.usnews.com/education/best-global-universities/clinical-medicine?page=3>

* No. 30 Nature Index for Biomedical Sciences 2019:

<https://www.natureindex.com/supplements/nature-index-2019-biomedical-sciences/tables/healthcare>