

Thor Aspelund

BIOGRAPHICAL SKETCH July 2020

POSITION TITLE:

Professor of Biostatistics - University of Iceland
Statistician - Icelandic Heart Association

EDUCATION

University of Iceland	BS	1994	Mathematics
University of Iowa, IA, Iowa City USA	MS	1998	Statistics
University of Iowa, IA, Iowa City USA	PhD	2002	Statistics

Employment

2015-present Professor School of Health Sciences, University of Iceland, Reykjavik Iceland. Research: Applied biostatistics and epidemiology. Teaching: Statistics for undergraduate and graduate students in the life- and health sciences.

2002-present Statistician at the Icelandic Heart Association, Kopavogur, Iceland. In charge of all statistical related matters concerning the AGES-Reykjavik study and other studies of the Icelandic Heart Association. The Age, Gene/Environment Susceptibility (AGES Reykjavik) Study was initiated to examine genetic susceptibility and gene/environment interaction as these contribute to phenotypes common in old age, a collaborative study between the National Institute on Aging, NIH (USA) and the Icelandic Heart Association

Other Experience and Professional Memberships

1993	Marine Research Institute, Reykjavik Iceland. Internship in the analytical unit.
1994–1996	Instructor in mathematics. Commercial College of Iceland, Reykjavik Iceland.
1996-1998	Teacher and Research Assistant, Department of Statistics and Actuarial Science. University of Iowa, Iowa City, Iowa USA.
1999–2000	Research Assistant in the Statistical Consulting Center of the Department of Statistics and Actuarial Science. University of Iowa, Iowa City, Iowa USA. Statistical consultant to faculty and graduate students at the university.
2001	Los Alamos National Laboratory, Los Alamos, New Mexico USA. Internship in the Statistical Sciences unit (3 months).
2006	Adjunct Professor. Faculty of Science, University of Iceland, Reykjavik Iceland.
2007-2010	Associate Professor. Faculty of Science, University of Iceland, Reykjavik Iceland. Teaching: Statistics for undergraduate and graduate students in the life- and health sciences.
2011-2015	Associate Professor. School of Health Sciences, University of Iceland, Reykjavik Iceland. Research: Applied biostatistics and epidemiology. Teaching: Statistics for undergraduate and graduate students in the life- and health sciences.

Personal Statement

As a professor in biostatistics at the University of Iceland, I have been involved in working with and supervising many masters and doctoral students since 2011. I teach courses in clinical prediction modeling, survival analysis, and random effects models.

I lead the modeling team at the University of Iceland to predict the development of COVID-19 in Iceland covid.hi.is

I am currently involved as a statistician in The SAGA cohort – a unique nationwide study on the impact of trauma on women 's health. The target population are all women, 18 years or older, residing in Iceland in February 2018.

I am in the research team behind the COVID-19 National Resilience Cohort, a scientific study conducted by the University of Iceland, the Directorate of Health and the Chief Epidemiologist, with the aim of increasing knowledge about the epidemic's effects on the well-being and lifestyle of Icelanders.

I have been a statistician with the Icelandic Heart Association (IHA) since 2002 when recruitment began for the Age Gene/Environment Susceptibility Reykjavik (AGES-Reykjavik). The AGES-Reykjavik Study was initiated to examine genetic susceptibility and gene/environment interaction as these contribute to phenotypes common in old age, a collaborative study between the National Institute on Aging, NIH (USA) and the Icelandic Heart Association. The AGES-Reykjavik study is a founding member of the Cohorts for Heart and Aging Research in Genomic Epidemiology (CHARGE) Consortium. It was formed in Feb 2008 to facilitate GWAS meta-analyses of a wide range of phenotypes among large population-based prospective cohort studies.

It has been a great experience and privilege to be involved in the statistical work and data management in these studies from the start. I have been involved in risk modeling such as coronary and cardiovascular risk prediction for Iceland, similar to the Framingham CVD risk; risk of atrial fibrillation with the CHARGE Consortium; and risk of fracture in Iceland with FRAX Fracture Risk Assessment Tool. I have also been involved in Mendelian randomization studies of vitamin D and valvular calcification.

I am one of the founders of Risk Medical Solutions in Iceland. We have developed and published a risk assessment tool to personalize the screening interval for retinopathy for persons with diabetes. (Br J Ophthalmol. 2016 May;100(5):683-7 PMID: 26377413 and Diabetologia. 2014 Jul;57(7):1332-8. PMID:24763851).

Honors

- 1998 Henry L. Rietz Award for the outstanding newly qualified Ph.D. student. Department of Statistics and Actuarial Science, University of Iowa, Iowa City, Iowa.
- 2000 Recipient of Hugh Vollrath Ross Scholarship for summer 2000 at The University of Iowa, Iowa City, Iowa. This scholarship recognizes outstanding graduate students who are preparing for comprehensive examinations and dissertation research.
- 2019 Honored at the University of Iceland for contribution to science
https://www.hi.is/frettir/fjogur_fa_verdlaun_fyrir_lofsverdan_arangur_i_starfi

Publications

Peer reviewed research papers over 300

h-index 86, i10-index 213

Orcid ID <https://orcid.org/0000-0002-7998-5433>

<http://scholar.google.is/citations?user=8k8OgJIAAAAJ>

Highly Cited Researcher 2018 (cross field) top 1% by citations for field and year in Web of Science

Contribution to science

1. I have worked in research with the team at the Icelandic Heart Association under the direction of Professor V Gudnason. We have addressed cardiovascular risk in the Icelandic population using both fatal cardiovascular disease and coronary heart disease as endpoints. An important finding is that the HR for conventional risk factors associated with CVD is of the same magnitude as in other European populations, making findings in the Icelandic population likely transferable to other white populations. These results have been translated into a web based tool available for both the public and the medical profession to address CVD risk http://risk.hjarta.is/risk_calculator/v2/.

In addition the group in collaboration with others has addressed the causes for the decline in CVD mortality in Iceland over the last decades applying the IMPACT model. We showed that nearly three fourths was explained by changes in lifestyle factors, including drop in cholesterol. By examining individual data on statin use and cholesterol level in the same individuals from the Reykjavik Study as well as the Refine Reykjavik study (for which I am the PI) we could demonstrate that the drop in population cholesterol was not attributable to the increase in statin use as commonly believed.

- a. Aspelund T, Sigurdsson G, Thorgeirsson G, Gudnason V. Estimation of ten-year risk of fatal cardiovascular disease and coronary heart disease in Iceland with results comparable to the SCORE project. *Eur J Cardiovasc Prev Rehab* 2007;14(6):761-8. PMID:18043296
 - b. Aspelund T, Gudnason V, Magnusdottir BT, Andersen K, Sigurdsson G, Thorsson B, Steingrimsdottir L, Critchley J, Bennett K, O'Flaherty M, Capewell S. Analysing the large decline in coronary heart disease mortality in the Icelandic population aged 25-74 between the years 1981 and 2006. *PLoS One*. 2010 Nov 12;5(11):e13957. PMID:21103050
 - c. Thorsson B, Steingrimsdottir L, Halldorsdottir S, Andersen K, Sigurdsson G, Aspelund T, Gudnason V. [Changes in total cholesterol levels in Western societies are not related to statin, but rather dietary factors: the example of the Icelandic population.](#) *Eur Heart J*. 2013 Jun;34(24):1778-82. PMID:23209261
2. We have addressed fracture risk in the Icelandic population and the results have been put in to FRAX fracture risk assessment tool <https://www.sheffield.ac.uk/FRAX/tool.aspx?country=56>
 - a. Siggeirsdottir K, Aspelund T, Sigurdsson G, Mogensen B, Chang M, Jonsdottir B, Eiriksdottir G, Launer LJ, Harris TB, Jonsson BY, Gudnason V. Inaccuracy in self-report of fractures may underestimate association with health outcomes when compared with medical record based fracture registry. *Eur J Epidemiol*. 2007;22(9):631-9. PMID:17653601
 - b. Siggeirsdottir K, Aspelund T, Jonsson BY, Mogensen B, Gudmundsson EF, Gudnason V, Sigurdsson G. Epidemiology of fractures in Iceland and secular trends in major osteoporotic fractures 1989-2008. *Osteoporos Int*. 2014;25(1):211-9. PMID: 23818208
 - c. Johannesdottir F, Aspelund T, Reeve J, Poole KE, Sigurdsson S, Harris TB, Gudnason VG, Sigurdsson G. Similarities and differences between sexes in regional loss of cortical and trabecular bone in the mid-femoral neck: The AGES-Reykjavik Longitudinal Study. *J Bone Miner Res*. 2013;28(10):2165-76. PMID:236 09070
 3. I have been involved Mendelian randomization studies for the causal effect of Vitamin D on mortality and the causal effects of lipids on valvular calcification and aortic stenosis.
 - a. Aspelund T, Gröbler MR, Smith AV, Gudmundsson EF, Keppel M, Cotch MF, Harris TB, Jorde R, Grimnes G, Joakimsen R, Schirmer H, Wilsgaard T, Mathiesen EB, Njølstad I, Løchen ML, März W,

Kleber ME, Tomaschitz A, Grove-Laugesen D, Rejnmark L, Swart KMA, Brouwer IA, Lips P, van Schoor NM, Sempos CT, Durazo-Arvizu RA, Škrabáková Z, Dowling KG, Cashman KD, Kiely M, Pilz S, Gudnason V, Eiriksdottir G. [Effect of Genetically Low 25-Hydroxyvitamin D on Mortality Risk: Mendelian Randomization Analysis in 3 Large European Cohorts](#). *Nutrients*. 2019 Jan 2;11(1). pii: E74. doi: 10.3390/nu11010074. PMID: 30609725

- b. Thanassoulis G, Campbell CY, Owens DS, Smith JG, Smith AV, Peloso GM, Kerr KF, Pechlivanis S, Budoff MJ, Harris TB, Malhotra R, O'Brien KD, Kamstrup PR, Nordestgaard BG, Tybjaerg-Hansen A, Allison MA, Aspelund T, Criqui MH, Heckbert SR, Hwang SJ, Liu Y, Sjogren M, van der Pals J, Kalsch H, Mühleisen TW, Nöthen MM, Cupples LA, Caslake M, Di Angelantonio E, Danesh J, Rotter JI, Sigurdsson S, Wong Q, Erbel R, Kathiresan S, Melander O, Gudnason V, O'Donnell CJ, Post WS; CHARGE Extracoronary Calcium Working Group. [Genetic associations with valvular calcification and aortic stenosis](#). *N Engl J Med*. 2013 Feb 7;368(6):503-12. doi: 10.1056/NEJMoa1109034. PMID: 23388002
- c. Vimalaswaran KS, Berry DJ, Lu C, Tikkanen E, Pilz S, Hiraki LT, Cooper JD, Dastani Z, Li R, Houston DK, Wood AR, Michaëlsson K, Vandenput L, Zgaga L, Yerges-Armstrong LM, McCarthy MI, Dupuis J, Kaakinen M, Kleber ME, Jameson K, Arden N, Raitakari O, Viikari J, Lohman KK, Ferrucci L, Melhus H, Ingelsson E, Byberg L, Lind L, Lorentzon M, Salomaa V, Campbell H, Dunlop M, Mitchell BD, Herzig KH, Pouta A, Hartikainen AL; Genetic Investigation of Anthropometric Traits-GIANT Consortium, Streeten EA, Theodoratou E, Jula A, Wareham NJ, Ohlsson C, Frayling TM, Kritchevsky SB, Spector TD, Richards JB, Lehtimäki T, Ouweland WH, Kraft P, Cooper C, März W, Power C, Loos RJ, Wang TJ, Järvelin MR, Whittaker JC, Hingorani AD, Hyppönen E. [Causal relationship between obesity and vitamin D status: bi-directional Mendelian randomization analysis of multiple cohorts](#). *PLoS Med*. 2013;10(2):e1001383. doi: 10.1371/journal.pmed.1001383. Epub 2013 Feb 5. PMID: 23393431

4. I lead the statistical aspect in developing a validated decision support system for management and follow-up of patients with diabetes or diabetic retinopathy at <https://retinarisk.com/>.
 - a. Individualised risk assessment for diabetic retinopathy and optimisation of screening intervals: a scientific approach to reducing healthcare costs. Lund SH, Aspelund T, Kirby P, Russell G, Einarsson S, Pálsson O, Stefánsson E. *Br J Ophthalmol*. 2016 May;100(5):683-7. doi: 10.1136/bjophthalmol-2015-307341. Epub 2015 Sep 16. PMID: 26377413
 - b. Individual risk assessment and information technology to optimise screening frequency for diabetic retinopathy. Aspelund T, Thórnórisdóttir O, Olafsdóttir E, Gudmundsdóttir A, Einarisdóttir AB, Mehlsen J, Einarsson S, Pálsson O, Einarsson G, Bek T, Stefánsson E. *Diabetologia*. 2011 Oct;54(10):2525-32. doi: 10.1007/s00125-011-2257-7. Epub 2011 Jul 27. PMID: 21792613

PhD Thesis

Non-linear Association-Marginal Models for Multivariate Categorical Data with Application to Ordinal Receiver Operating Characteristic Analysis.

2002 The Department of Statistics, University of Iowa, Iowa City, IA USA.

Thesis supervisor: Professor Joseph B. Lang.