



Seminar on Nordic Study Destinations: Where Data Meets Innovation in Statistics and Economics



CHAIR

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11:00
AM



SPEAKER



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PhD in Econometrics
Associate Professor,
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Gallery Room,
Dept. of Statistics, BRUR

Organized by: Begum Rokeya University Student Association of Statistics (BRUSAS)

A.M.M.
Shahiduzzaman
Quoreshi

Academician since 2013

Professor (due)

Currently: Senior Associate professor, Blekinge
Institute of Technology

2006-2013 (Equivalent Joint Secretary)

Senior Economist: National Institute of Economic
Research, Agency Under Ministry of Finance

Senior Analyst, Swedish Agency for Growth Policy
Analysis, Ministry of Enterprise, Transportation and
Energy

2001-2006 PhD Education

Umeå University & University of California,
Berkeley

Before 2001: Stockholm University, SEB, Asian
University of Bangladesh

Member of a Shahid family of 71 war

Average Tuition Fees for Programs in Nordic Universities (Non-EU/EEA)

Country	Monthly Cost (€)	Accommodation	Food & Other Essentials	Transportation
Denmark	€800 – €1,400	€400 – €700	€200 – €300	€40 – €60
Finland	€700 – €1,200	€300 – €600	€180 – €300	€40 – €50
Iceland	€900 – €1,600	€500 – €800	€250 – €400	€50 – €70
Norway	€1,000 – €1,700	€600 – €900	€250 – €400	€60 – €80
Sweden	€900 – €1,500	€500 – €800	€200 – €350	€50 – €70

Average Monthly Cost of Living for International Students in Nordic

Country	Monthly Cost (€)	Accommodation	Food & Other Essentials	Transportation
Denmark	€800 – €1,400	€400 – €700	€200 – €300	€40 – €60
Finland	€700 – €1,200	€300 – €600	€180 – €300	€40 – €50
Iceland	€900 – €1,600	€500 – €800	€250 – €400	€50 – €70
Norway	€1,000 – €1,700	€600 – €900	€250 – €400	€60 – €80
Sweden	€900 – €1,500	€500 – €800	€200 – €350	€50 – €70

Scholarship Availability for Non-EU/EEA Students in Nordic Countries

Country	Scholarship Options	Coverage
Denmark	Danish Government Scholarships	Partial/full tuition fees, sometimes living costs
Finland	Finland Scholarship	Tuition fee waivers and living cost stipends
Iceland	Limited scholarships	Partial funding only
Norway	Quota Scheme (limited seats)	Living costs covered, tuition fee waivers
Sweden	Swedish Institute Scholarships	Tuition fee waivers, monthly allowance

Central Admission Office

▶ 1. Denmark

- **Portal:** [Optagelse.dk](https://optagelse.dk)
- **Overview:** This centralized portal manages applications for all undergraduate programs in Danish universities. Students can apply to several universities at once, and each university may have its own supplementary requirements for engineering and specialized programs.
- **Key Points:** Submit documents early due to the March 15 deadline for international applicants. Some programs also require proof of English or Danish proficiency.

Central Admission Office

► 2. Finland

- **Portal:** [Studyinfo.fi](https://www.studyinfo.fi)
- **Overview:** Studyinfo.fi is the official Finnish site for applications to all universities, polytechnics, and other higher education institutions. It also provides information on program-specific requirements, including those for engineering and technical programs.
- **Key Points:** Applications for international degree programs typically open in January. Most engineering programs require English proficiency tests and may also require a mathematics or science background.

Central Admission Office

▶ 3. Iceland

- **Portal:** Individual University Websites (e.g., University of Iceland, Reykjavik University)
- **Overview:** Unlike other Nordic countries, Iceland does not have a centralized application system. Students apply directly through each university's website, and the requirements vary significantly by institution.
- **Key Points:** Each university sets its own application deadlines, often between February and April. Proof of English language proficiency is often required for non-Icelandic programs.

Central Admission Office

► 4. Norway

- **Portal:** Samordna Opptak ([The Norwegian Universities and Colleges Admission Service - English](#))
- **Overview:** This portal is the centralized admissions platform for undergraduate studies at most Norwegian universities. However, for graduate programs, students must apply directly through the university.
- **Key Points:** International applicants to undergraduate programs should check the portal in October for specific requirements, as deadlines and English proficiency needs vary by program.

Central Admission Office

- ▶ 5. Sweden
 - **Portal:** [Universityadmissions.se](https://www.universityadmissions.se)
 - **Overview:** Universityadmissions.se handles applications to most Swedish universities, including engineering and technology-focused programs. The portal offers comprehensive information on program requirements, application fees, and language requirements.
 - **Key Points:** Applications typically close in January, and most engineering programs require proficiency in English and a solid background in mathematics or science subjects.

AI and Data Science Education in Nordic Countries

Country	Programs Offered	Growth	Enrollment	Research Funding	Job Placement
Denmark	15 programs	20% growth since 2020	30% increase	€20 million (2023)	85% within 6 months
Finland	20+ programs	50% increase by 2030 goal	40% growth	€50 million (2023)	90% within 6 months
Iceland	Limited programs	Steady increase	Minor/elective focus	€2 million annually	75% within 1 year
Norway	25 programs	35% growth in 5 years	50% increase	€60 million (annually)	88% within 6 months
Sweden	30+ programs	40% growth	50% surge	€100 million (2023)	90% within 6 months

1. R&D Expenditure as a Percentage of GDP

- ▶ Sweden: 3.5% of GDP, one of the highest in Europe, driven by the technology, automotive, and biotech industries.
- ▶ Finland: 2.9% of GDP, with substantial government funding for innovation and strong investments in ICT and sustainable technology.
- ▶ Denmark: 3.1% of GDP, focused on renewable energy, pharmaceuticals, and biotechnology.
- ▶ Norway: 2.1% of GDP, with emphasis on environmental technology and oil and gas innovation.
- ▶ Iceland: 2.2% of GDP, with a strong focus on renewable energy and environmental technologies.

2. Global Innovation Index Rankings (2023)

- ▶ Sweden: Ranked 4th globally, known for high levels of scientific research, digital infrastructure, and collaboration between academia and industry.
- ▶ Finland: Ranked 8th, with a focus on ICT innovation, education, and sustainable technology.
- ▶ Denmark: Ranked 9th, excelling in technology output and strong innovation policies, particularly in green technology.
- ▶ Norway: Ranked 20th, with strong innovation in energy and ocean technology, focusing on sustainable practices.
- ▶ Iceland: Ranked 26th, investing in clean energy technology and digital innovation.

3. Patent Applications per Million Inhabitants (2023)

- ▶ Sweden: 405 patents per million, driven by R&D in tech and pharmaceuticals.
- ▶ Finland: 320 patents per million, with Nokia and other tech companies leading in telecommunications patents.
- ▶ Denmark: 360 patents per million, especially strong in renewable energy and biotech.
- ▶ Norway: 250 patents per million, with notable patents in the maritime and oil industries.
- ▶ Iceland: 150 patents per million, mainly in geothermal energy and digital solutions.

4. Workforce Involvement in Science and Technology Sectors

- ▶ Sweden: Approximately 40% of the workforce is involved in science, tech, or engineering fields.
- ▶ Finland: Around 35%, with a heavy concentration in ICT and tech startups.
- ▶ Denmark: 33%, especially in biotech and renewable energy industries.
- ▶ Norway: 28%, focusing on environmental technology, oil, and maritime technology.
- ▶ Iceland: 25%, with key sectors in renewable energy and technology services.

5. Startups and Innovation Hubs

- ▶ Sweden: Stockholm is a leading European tech hub, with over 1,200 startups in technology, AI, and fintech.
- ▶ Finland: Known for Espoo's tech hub and the Slush startup event, Finland has over 1,000 startups focusing on sustainable technology, AI, and gaming.
- ▶ Denmark: Copenhagen is a significant tech ecosystem with around 900 startups in green technology, life sciences, and software.
- ▶ Norway: Oslo has a growing tech scene, especially in cleantech and marine technology, with around 500 active tech startups.
- ▶ Iceland: Reykjavik is the main innovation hub, focusing on clean energy and tourism tech, with about 200 tech startups.

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Statistics and Economics In Data Science and AI

1. Building Reliable Models in Data Science

- ▶ **Statistics:** Strong statistical foundations are essential in data science for designing accurate models and assessing the reliability of predictions. Nordic companies, especially in sectors like finance, healthcare, and climate tech, need skilled professionals who can apply statistical analysis to extract insights from data, perform hypothesis testing, and validate models.
- ▶ **Economics:** Economic principles help data scientists understand market behavior and model complex systems. For example, economic modeling is used to forecast demand, optimize pricing, and assess policy impacts, all of which are central in fields like fintech and resource management, both strong in Nordic innovation.

2. Economic Forecasting and Policy Analysis in AI

- ▶ **Statistics:** Predictive analytics relies on statistical methods to develop accurate forecasts for economic trends, such as inflation, employment, and trade. Nordic countries leverage these skills to analyze economic policies and understand impacts on sectors like housing, labor, and social welfare.
- ▶ **Economics:** Knowledge of economic theory helps to interpret forecasts in terms of real-world market and policy contexts, a key skill in Nordic public sector and policy-making, where data-driven decisions are used for economic planning and welfare strategies.

3. Enhancing Machine Learning and AI Development

- ▶ **Statistics:** Statistical techniques, such as Bayesian inference, regression analysis, and hypothesis testing, are foundational in machine learning algorithms. In Nordic industries, especially in tech and manufacturing, understanding these methods helps data scientists to build models that learn effectively from limited data, which is valuable in specialized applications like precision manufacturing or healthcare AI.
- ▶ **Economics:** Economics brings insights into behavioral modeling, incentive structures, and market dynamics. In AI-driven sectors like e-commerce and fintech, understanding consumer behavior and pricing strategies enables more accurate predictions, benefiting Nordic companies as they develop customer-centric AI applications.

4. Sustainable Development and Climate Technology

- ▶ **Statistics:** Climate models and sustainable development studies rely heavily on statistical analysis to predict trends and model environmental changes. Nordic countries lead in green technology, with initiatives where statistics are used to model energy consumption, emission reductions, and resource management.
- ▶ **Economics:** Economists provide the framework to assess the economic viability of green technology solutions, helping in cost-benefit analysis and long-term planning. In Nordic countries, where sustainability is a major focus, this knowledge supports policies that incentivize renewable energy and climate innovation

5. Supporting Data-Driven Decision Making in Nordic Businesses

- ▶ **Statistics:** Businesses increasingly rely on data-driven insights for strategic decision-making, from marketing analytics to customer segmentation. Professionals with statistical expertise can analyze trends, optimize resource allocation, and quantify risk, making them highly valuable across Nordic industries like banking, retail, and telecom.
- ▶ **Economics:** Economics adds value by understanding market dynamics, consumer behavior, and pricing strategy, which are crucial in competitive and regulated Nordic markets. Economists in data science roles bring a strategic edge by helping organizations align data insights with broader economic and business goals.

Conclusion

- ▶ In the Nordic countries, where there's a strong push towards digitalization, sustainability, and data-driven decision-making, the combined knowledge of **Statistics** and **Economics** enhances the scope and effectiveness of Data Science and AI. These fields are pivotal for companies and governments aiming to apply data in practical, socially beneficial ways, making these skills highly sought after in Nordic Data Science and AI roles.

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Integrating Advanced Analytical Techniques in Statistical and Economic Models: Future Applications in Data Science and AI

1. Sentiment Analysis for Real-Time Economic Forecasting

- ▶ **Economic Models:** Sentiment analysis can be used to gauge public opinion on economic policies, consumer confidence, and market sentiment. By integrating these insights into economic models, especially for retail and stock markets, businesses and governments can make timely adjustments to policies or marketing strategies based on public sentiment.
- ▶ **Example:** In Nordic financial markets, sentiment analysis can predict stock performance by analyzing social media, news, and financial reports, which can be fed into econometric models to enhance predictive accuracy.

2. Text Analysis in Policy Impact Assessment

- ▶ **Statistical Models:** Text analysis enables large-scale processing of documents, reports, and public comments related to policy changes. By extracting keywords, trends, and sentiment from public records or social platforms, analysts can quantify the impact of new policies.
- ▶ **Example:** Nordic governments can use text analysis to assess the effectiveness of green policies by analyzing environmental reports and stakeholder feedback, integrating this data into statistical models to measure environmental and social outcomes.

3. Behavioral Analysis for Consumer Economics and Market Segmentation

- ▶ Economic Models: Behavioral economics can be combined with statistical models to better understand how consumers make choices, which is valuable for pricing strategies, product recommendations, and demand forecasting.
- ▶ Example: By integrating behavioral analysis, retailers in Nordic countries can model consumer reactions to various pricing strategies, promotions, and new product launches, improving customer segmentation and sales predictions.

4. Real-Time Sentiment and Behavior Tracking for Demand Forecasting

- ▶ **Statistical Models:** Sentiment and behavior analysis can provide insights into real-time changes in consumer demand, valuable for short-term sales forecasting and resource allocation. By including sentiment metrics from social media or customer feedback, demand forecasts can adjust dynamically based on consumer behavior.
- ▶ **Example:** Nordic e-commerce platforms can enhance their demand forecasting models by tracking sentiment shifts and behavioral trends, leading to better inventory management and targeted marketing.

5. Integrating Text Analysis in Labor Market Economics

- ▶ Economic Models: Text analysis of job listings, resumes, and market reports can provide data on labor market trends and skill demands. By analyzing these trends, economists can model shifts in job markets and forecast skill shortages or oversupply.
- ▶ Example: Nordic countries, with strong tech and green sectors, can use text analysis to identify emerging skill demands, helping educational institutions and policymakers shape programs to meet future labor needs.

6. Predictive Behavioral Analytics for Financial Risk Modeling

- ▶ **Statistical Models:** Behavioral analysis can improve risk assessments by identifying patterns in consumer spending, saving, and borrowing behaviors. By combining behavioral data with economic factors, predictive models can provide more accurate risk assessments.
- ▶ **Example:** Banks in the Nordics can use behavioral analysis to better predict loan default risk, enhancing credit scoring models with real-time data on consumer financial behavior.

7. Using Text and Sentiment Analysis for Brand and Market Positioning

- ▶ **Statistical and Economic Models:** Text and sentiment analysis of customer reviews, social media mentions, and competitor news can inform a brand's market positioning and pricing strategies. Incorporating these analyses allows companies to understand their competitive advantage and adjust prices or messaging accordingly.
- ▶ **Example:** Nordic consumer goods companies can analyze customer sentiment to adjust pricing, positioning, or product offerings, feeding these insights into pricing models to align with consumer preferences.

8. Behavioral Analysis for Resource Optimization in Sustainability Initiatives

- **Economic Models:** Behavioral patterns in resource consumption (like energy use) can help optimize resources in line with sustainability goals. Integrating behavioral data into economic models allows for better allocation of resources and aligns with sustainability targets.
- **Example:** Nordic utilities and cities can model energy demand and optimize resource distribution by understanding consumption behaviors, aiding the region's green initiatives.

Thanks for listening and engaging in the discussion

