



JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

The Finnish UAS: Towards enhancing regional and national collaboration

September 15, 17:00-18.30

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Abstract

The Finnish Universities of Applied Sciences (UAS) were established in the 1990s when the former vocational colleges were developed to form the other pillar of the higher education system on the side of the traditional science universities. The presentation takes an overview on **how the UAS have developed** through several **phases** towards enhancing regional and national collaboration. Whereas in the 1990s much emphasis was put on upgrading and developing curriculum and pedagogy, there has been a shift toward emphasizing research and development as well as education of adult professionals.



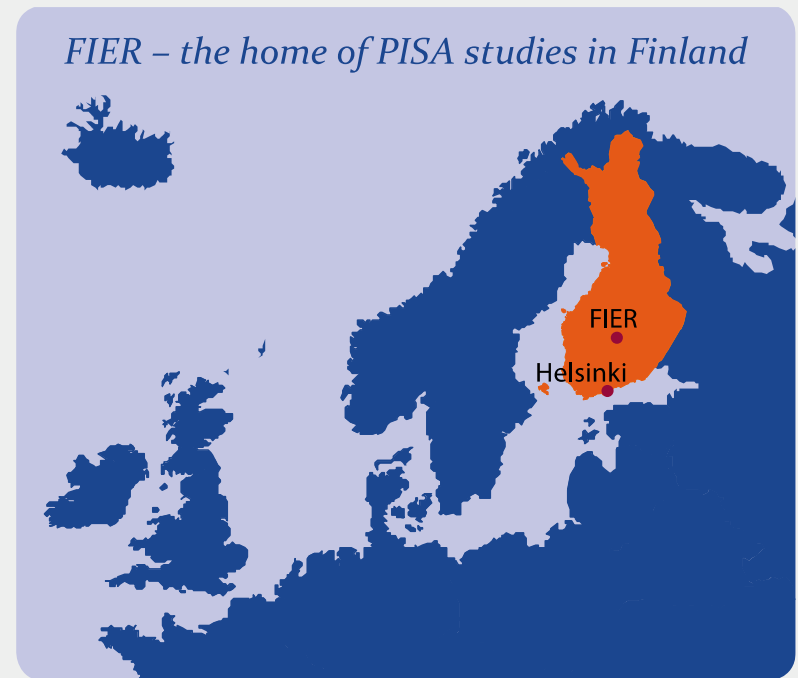
Contents

- Societal context: Finland as a Nordic country
- The roots of vocational education and higher education in Finland
- Establishment of the universities of applied sciences UAS
- Developmental phases of the UAS
- The regional and national collaboration of the UAS

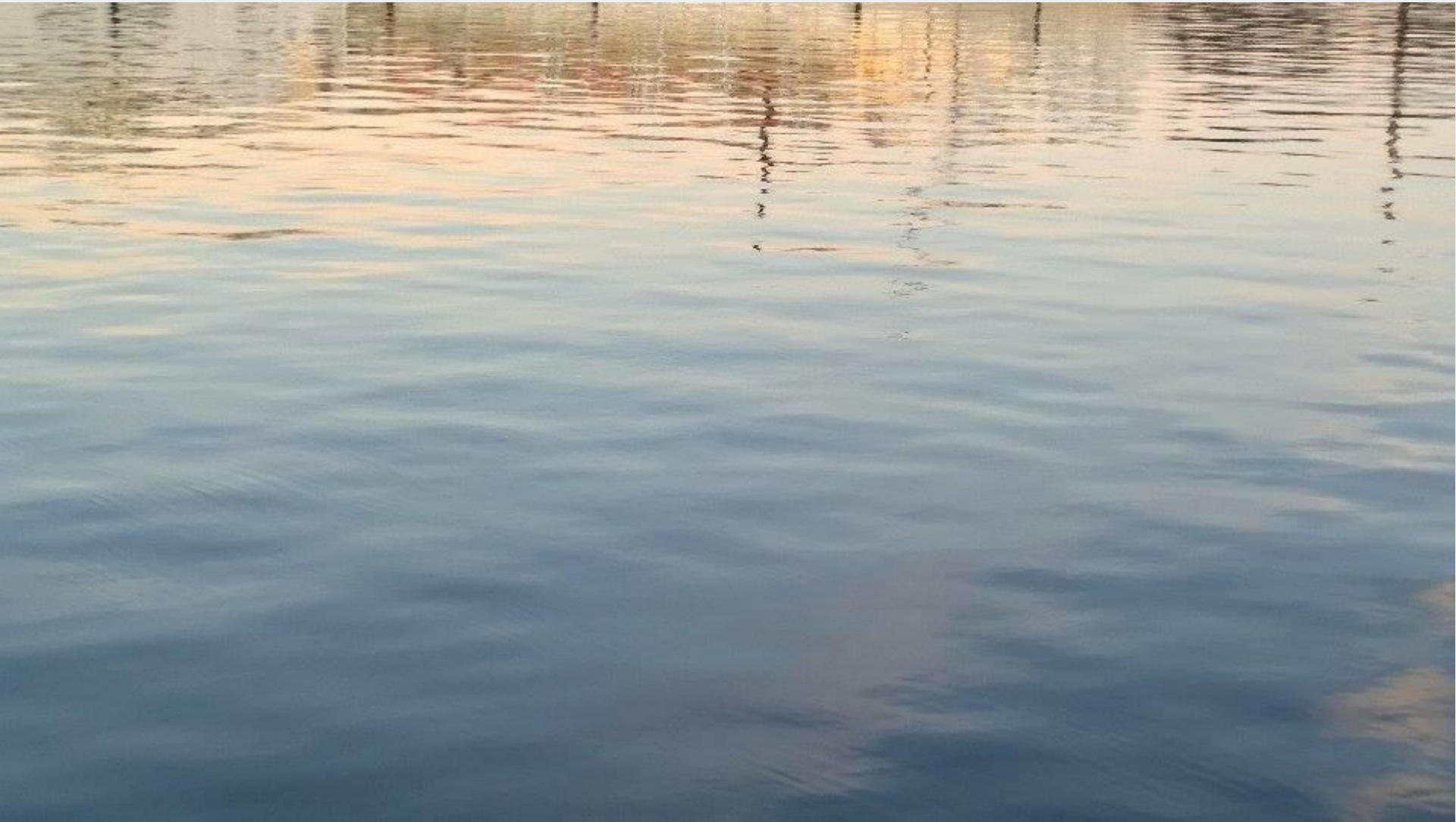


Finnish Institute for Educational Research, FIER

- ❑ A national centre for educational research, established in 1968
- ❑ A multidisciplinary research institute based at the University of Jyväskylä
- ❑ **Mission:** to develop education through scientific research
- ❑ **Research areas:**
 - ❑ Educational systems and society
 - ❑ Education and the world of work
 - ❑ Learning, teaching and learning environments
- ❑ **Recently:** Eco-social sustainability and education research group
- ❑ **See:** <https://ktl.jyu.fi/en>



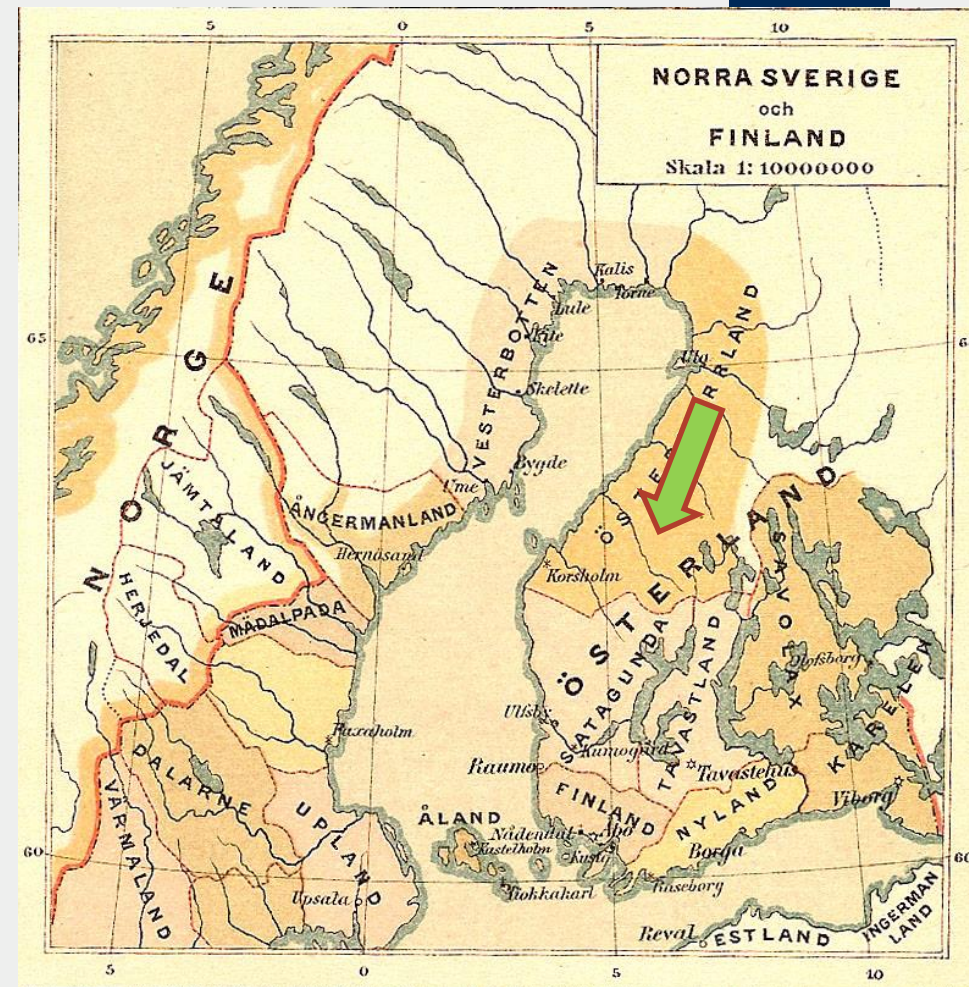
What do Nordic countries have in common?



Baltic sea: Geography and history



- Kalmarunionen 1397-1523
- King of Sweden, Gustav Vasa
1523- >Swedish independence
- Denmark-Norway 1524
- Sweden-Norway 1814-1905
- Finland part of Sweden
until 1808: (Götaland, Svealand,
Norrland and Österland).
and part of Russia 1809-1917,
Until independence gained in 1917
- World war II



Map from 1880

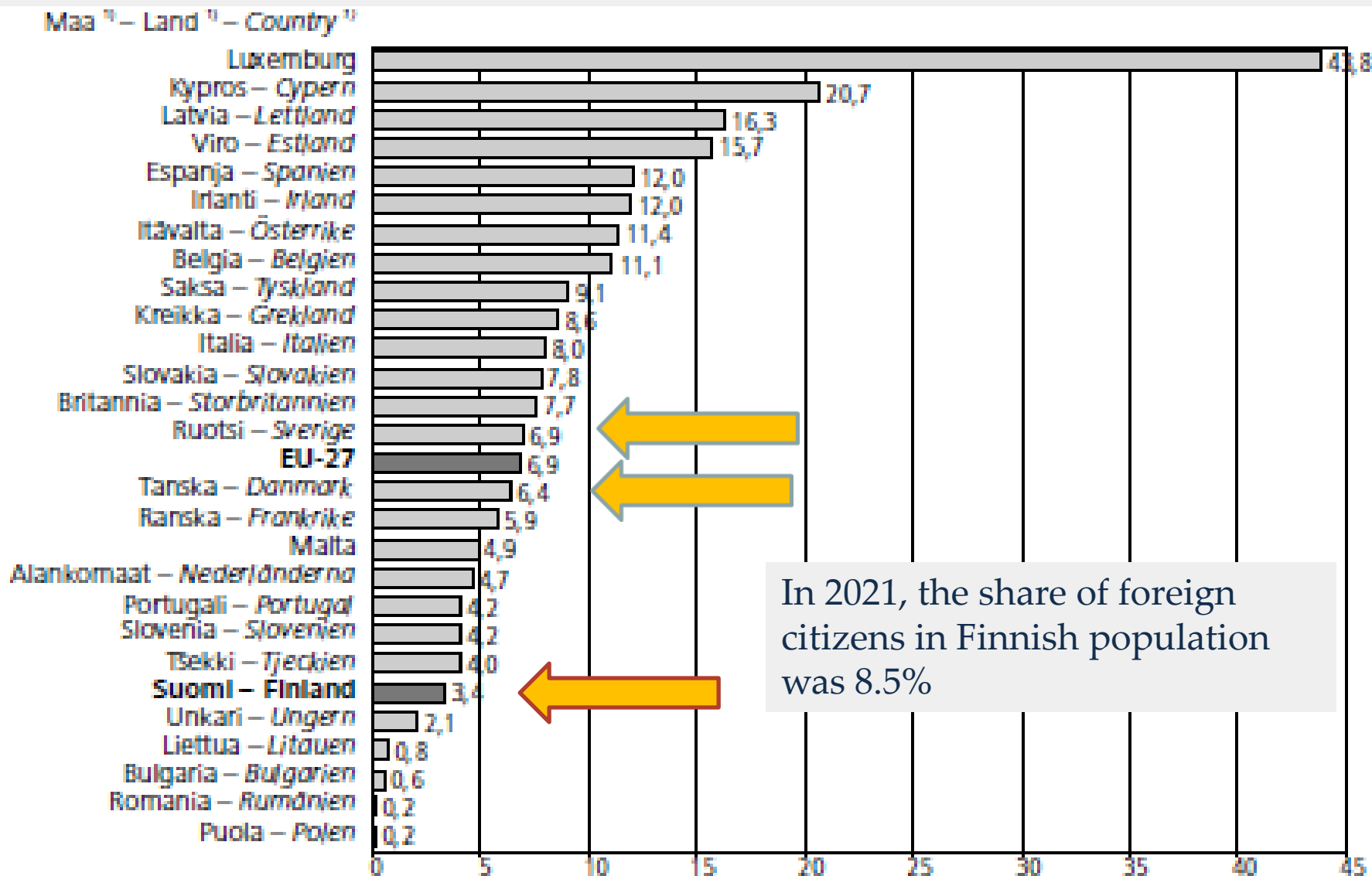
adopted from:https://fi.wikipedia.org/wiki/Ruotsin_historialliset_p%C3%A4%C3%A4alueet



Side-step: Nordic dimension in the Finnish culture

- Share of swedish-speakers in Finnish population has decreased from **13%** (*in 1900*) to **->6%** (*in 2013*)
- Until recently the size of Swedish-speaking minority (5,4% in 2014) has been as big as other minorities in sum, **-> around 300 000**
- Emigration to Sweden: in 1960s and 1970s in particular; **-> 440 000** Finns or children of Finns in Sweden (in 2008), if grandparents counted 675 000

Share of foreign citizens in EU-27 countries (%) in 2011





Development of the education system step by step

- the first Finnish university, University of Helsinki, former the Academy of Turku, started in the 1640 (see Välimaa, 2019)
- the Finnish elementary education was initiated in the 1860s
- the matriculation examination of general upper secondary schools in the 1850s



Guilds, masters, apprentices in the 19th century

- The workforce was given the freedom to choose their living and workplaces as a result of new legislation passed in 1879
-> urbanisation

Establishment of first vocational schools e.g.

- Schooling for **seafaring** started in 1813,
- Schooling for **health care and midwifery** in 1816,
- The first **business** college was established in 1839,
- The first **agricultural** college in 1839,
- The first **technical** real colleges in 1847,
- and the first **forestry** college in 1861 (Laukia, 2013)
-> Higher education of the time



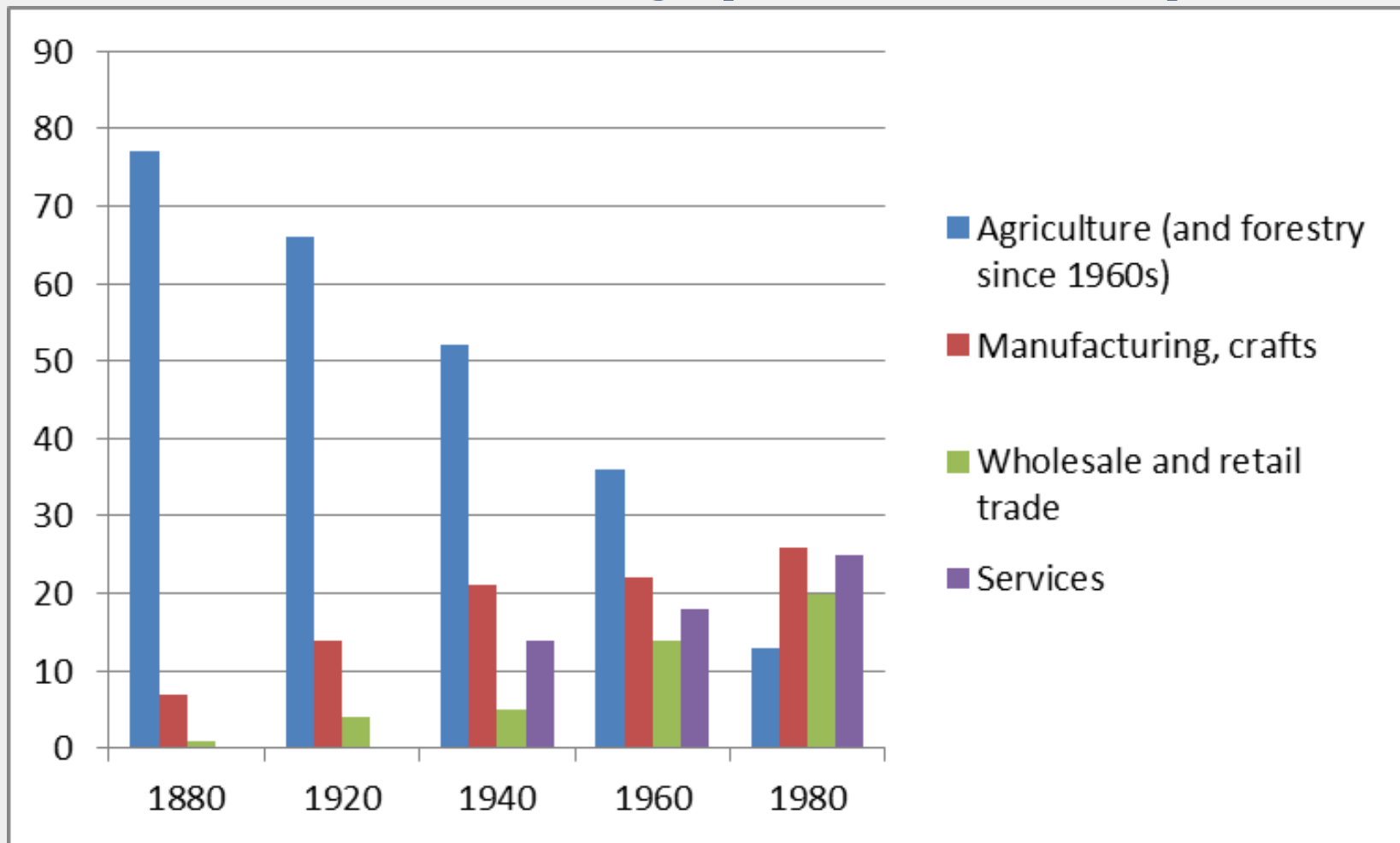
Shift from agricultural towards industrial society enhanced after the World War II



Fields of agricultural college, Mustiala. Picture by I.K. Inha in 1899.



From agricultural to industrial society, and service society (Laukia, 2013)



16.9.2022



VET and urbanisation

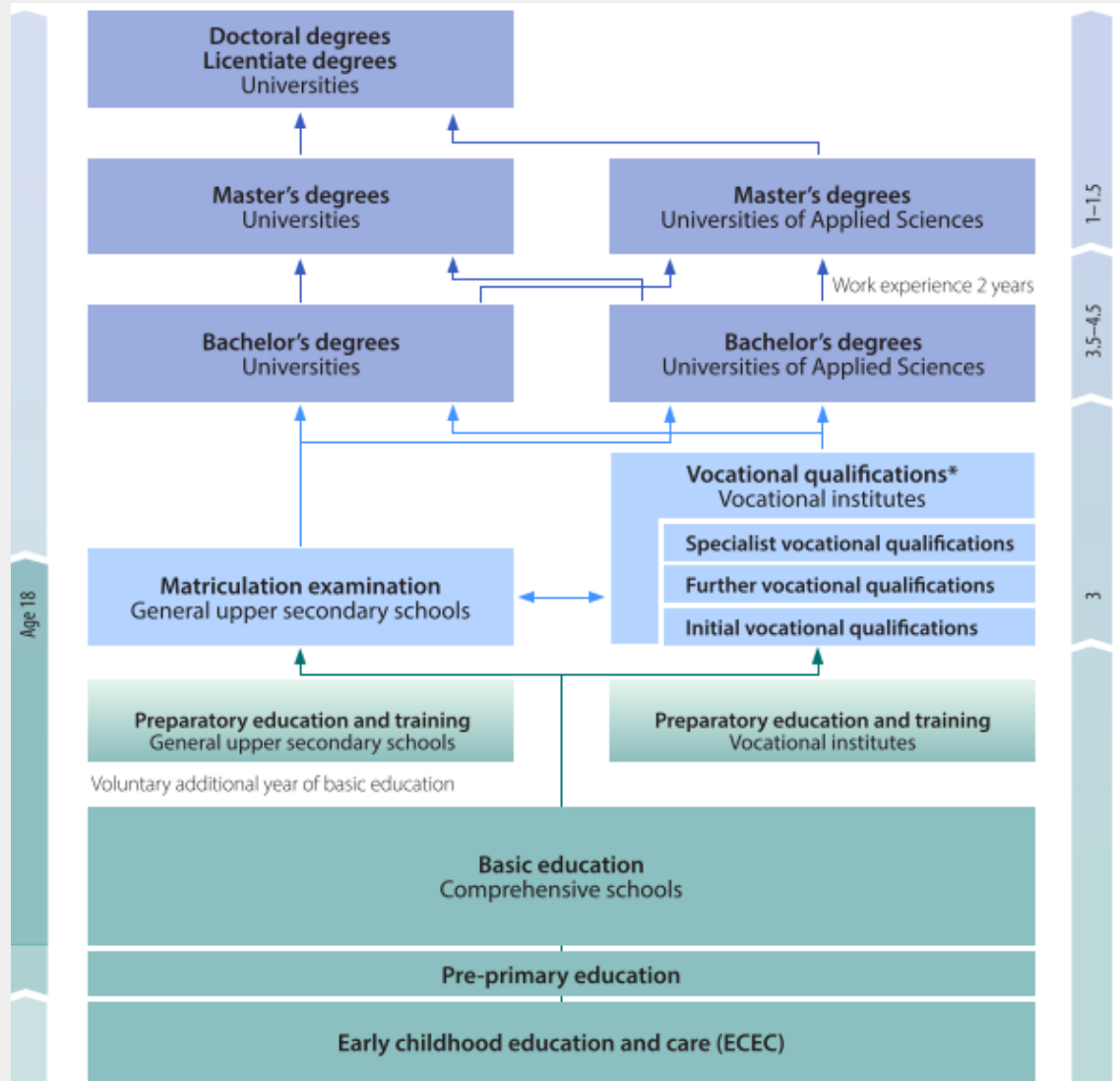
- Law in 1958: all municipalities of more than 20,000 inhabitants to have a vocational school and smaller municipalities to reserve study places for their youngsters at these schools
- Enhancement of school-based VET, to meet the needs of urbanisation, population growth and new emerging occupational fields (->shifts in production, emerging welfare state)
- Upper secondary and post-secondary vocational education and training were differentiated in the 1990s:
- Until 1995, students were offered three levels of vocational qualifications: school-level (2–3 years), college-level (2–4.5 years), and higher vocational qualifications (3–4.5 years).



Establishment of the UAS

- Reform of the structure of the vocational qualifications was implemented in 1995, and reform of the curricula of IVET in 1998–2001 (Numminen, 2000). These reforms brought about the following changes:
- dismantling the basic programme structure of IVET, decreased number of qualifications
- harmonising the duration of all initial vocational study programmes to 120 credits (study weeks), i.e. 3 years in the late 1990s
- Consecutive structure for qualifications established in the 1990s
- The polytechnics were developed in the 1990s and replaced higher VET

Finnish education system





The establishment of the universities of applied sciences (UAS)

- Legislation on experimental UAS institutions in 1991
- The UAS were developed based on existing vocational higher education colleges
- First permanent UAS institution commenced work in August 1996 providing Bachelor's programmes
- Master's programmes established in 2005 (YAMK)
- See also video about Finnish UAS at:
<https://www.youtube.com/watch?v=e4w1X8PY-NM>



Ammattikorkeakoulut (AMK), in English?

Polytechnics were established as a permanent form of higher professional education by 2000, and polytechnics was the initial official translation recommended by the Ministry of Education but some of them started to use the English translation

Universities of applied sciences (UAS) soon thereafter even though the rectors of traditional science universities resisted this as late as 2006.



The objectives of the UAS reform

1. To raise the standard of education: UAS degrees as parts of HE degree system, with vocational and practical emphasis
2. To react to changing needs for expertise and skills: new degrees to fill existing gaps and increased individual choice
3. To make vocational education more attractive: educational careers for students with good general education (matriculation examination) and interest in HE
4. To improve the international compatibility of vocational education (by introducing higher vocational education) (Pfeffer et al. 2000)



The objectives of the reform (continued)

5. To make the vocational education system more functional: larger, more efficient units with stronger material and human resources, multidisciplinary consortia
6. To decentralise the administration of vocational education: more authority to units in planning education
7. To reinforce the regional impact of vocational education: training and R& D collaboration with regional industries

(Pfeffer et al. 2020)



Developmental phases of the UAS

- Experimental UAS 1991-1996
- Induction and regulation 1997-2003:
The UAS Act (Act 2003) defined the mission of the institutions including the carrying out of applied research and development, and the supporting of regional development.
- Full member of the Higher education system 2004-2013:
- Toward more unified higher education sector 2014-2016: enhanced regional collaboration between education providers
- (Rauhala et al. 2022, Rantanen & Toikko, 2012)



Higher education at present

How many UAS and traditional universities are there in Finland?

- 24 UAS: listed here <https://www.arene.fi/ammattikorkeakoulut/>
- One UAS may operate at several campuses
- 13 universities referred to in the University Act and the National Defence University: listed here <https://unifi.fi/en/about-us/members/>

Universities of applied sciences (UAS)



- Etelä-Pohjanmaa: Seinäjoen ammattikorkeakoulu (SeAMK)
- Kainuu: Kajaanin ammattikorkeakoulu (KAMK)
- Kanta-Häme: Hämeen ammattikorkeakoulu (HAMK)
- Keski-Pohjanmaa: Centria ammattikorkeakoulu (Centria)
- Keski-Suomi: Jyväskylän ammattikorkeakoulu (JAMK)
- Kymenlaakso & Etelä-Savo: Kaakkois-Suomen ammattikorkeakoulu (Xamk)
- Lappi: Lapin ammattikorkeakoulu (Lapin AMK)
- Pirkanmaa: Tampereen ammattikorkeakoulu (TAMK)
- Pohjanmaa:
 - Vaasan ammattikorkeakoulu, (VAMK)
 - Yrkeshögskolan Novia (Novia)
- Pohjois-Karjala: Karelia-ammattikorkeakoulu (Karelia)
- Pohjois-Pohjanmaa: Oulun Ammattikorkeakoulu (Oamk)
- Pohjois-Savo: Savonia-ammattikorkeakoulu (Savonia)
- Päijät-Häme & Etelä-Karjala: LAB-ammattikorkeakoulu (LAB)
- Satakunta: Satakunnan ammattikorkeakoulu (SAMK)
- Uusimaa
 - Diakonia-ammattikorkeakoulu (Diak)
 - Haaga-Helia ammattikorkeakoulu (Haaga-Helia)
 - Humanistinen ammattikorkeakoulu (Humak)
 - Laurea-ammattikorkeakoulu (Laurea)
 - Metropolia Ammattikorkeakoulu (Metropolia)
 - Yrkeshögskolan Arcada (Arcada)
- Varsinais-Suomi: Turun ammattikorkeakoulu (Turun amk)
- Högskolan på Åland

Reference: Ministry of Education and Culture
FIER (pictures, graphics), Esa Kannisto



The campuses of each UAS



- Kokkola
- Pietarsaari
- Ylivieska



- Helsinki
- Oulu
- Pieksämäki
- Pori
- Turku



Haaga-Helia

- Helsinki (Pasila, Malmi, Haaga)
- Heinola (Vierumäki)
- Porvoo



HUMANISTINEN
AMMATTIKORKEAKOULU

- Helsinki
- Jyväskylä
- Kauniainen
- Kuopio
- Nurmijärvi
- Turku



- Hämeenlinna (Pääkampus, Evo)
- Hattula (Lepaa)
- Forssa
- Riihimäki
- Valkeakoski
- Tammela (Mustiala)



- Jyväskylä
- Saarijärvi (Tarvaala)



- Kotka
- Kouvola
- Savonlinna
- Mikkeli



AMMATTIKORKEAKOULU
University of Applied Sciences

- Espoo (Otanniemi, Leppävaara)
- Vantaa (Tikkurila)
- Hyvinkää
- Lohja
- Porvoo



- Lahti
- Lappeenranta



- Kemi
- Rovaniemi
- Tornio



Metropolia

- Helsinki (Arabia, Myllypuro)
- Espoo (Karamalmi)
- Vantaa (Myyrmäki)



- Pori
- Kankaanpää
- Rauma
- Huittinen



- Oulu
- Oulainen



- Joensuu



- Iisalmi
- Kuopio
- Varkaus



- Tampere
- Virrat



- Turku
- Salo



- Vaasa



SEINÄJÖKEN AMMATTIKORKEAKOULU
SEINÄJOKI UNIVERSITY OF APPLIED SCIENCES

- Seinäjoki



- Vaasa
- Turku
- Raasepori
- Pietarsaari



- Helsinki

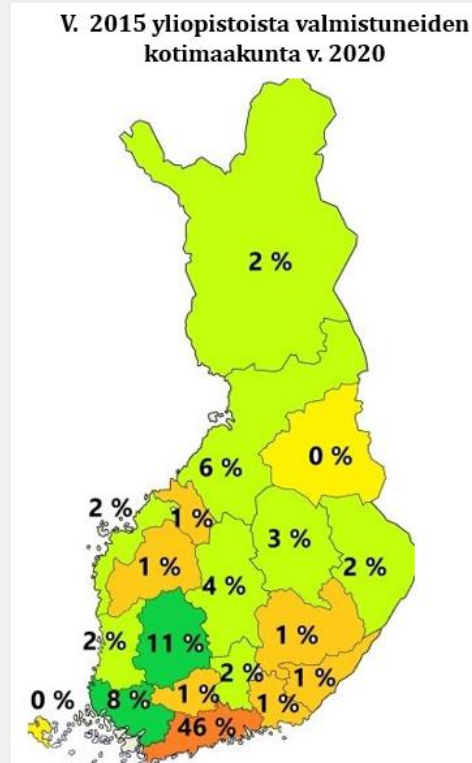


KAMK • University
of Applied Sciences

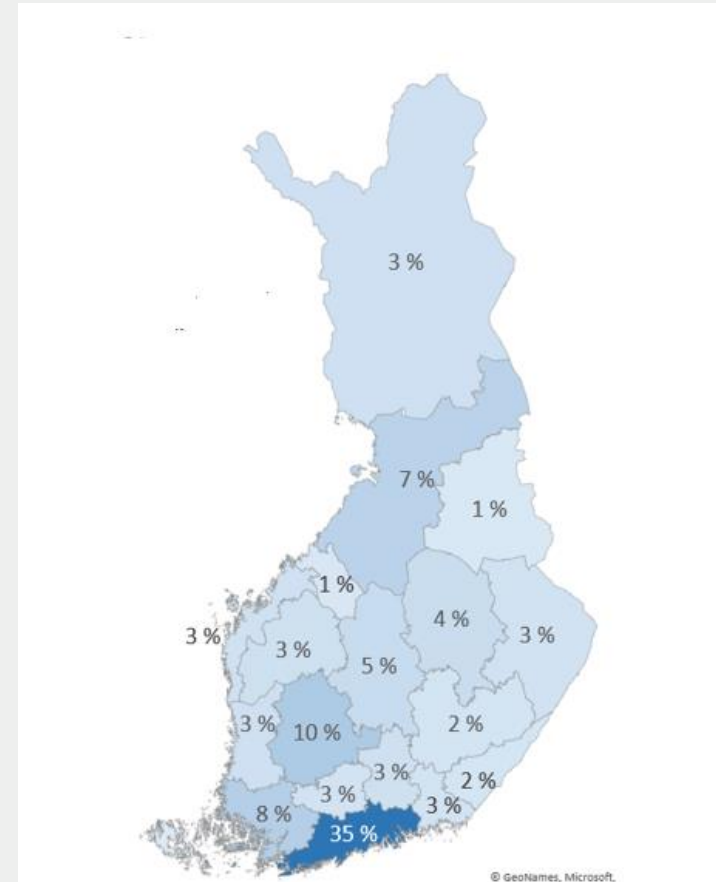
- Kajaani

Where are UAS and traditional science university graduates employed?

Traditional science universities

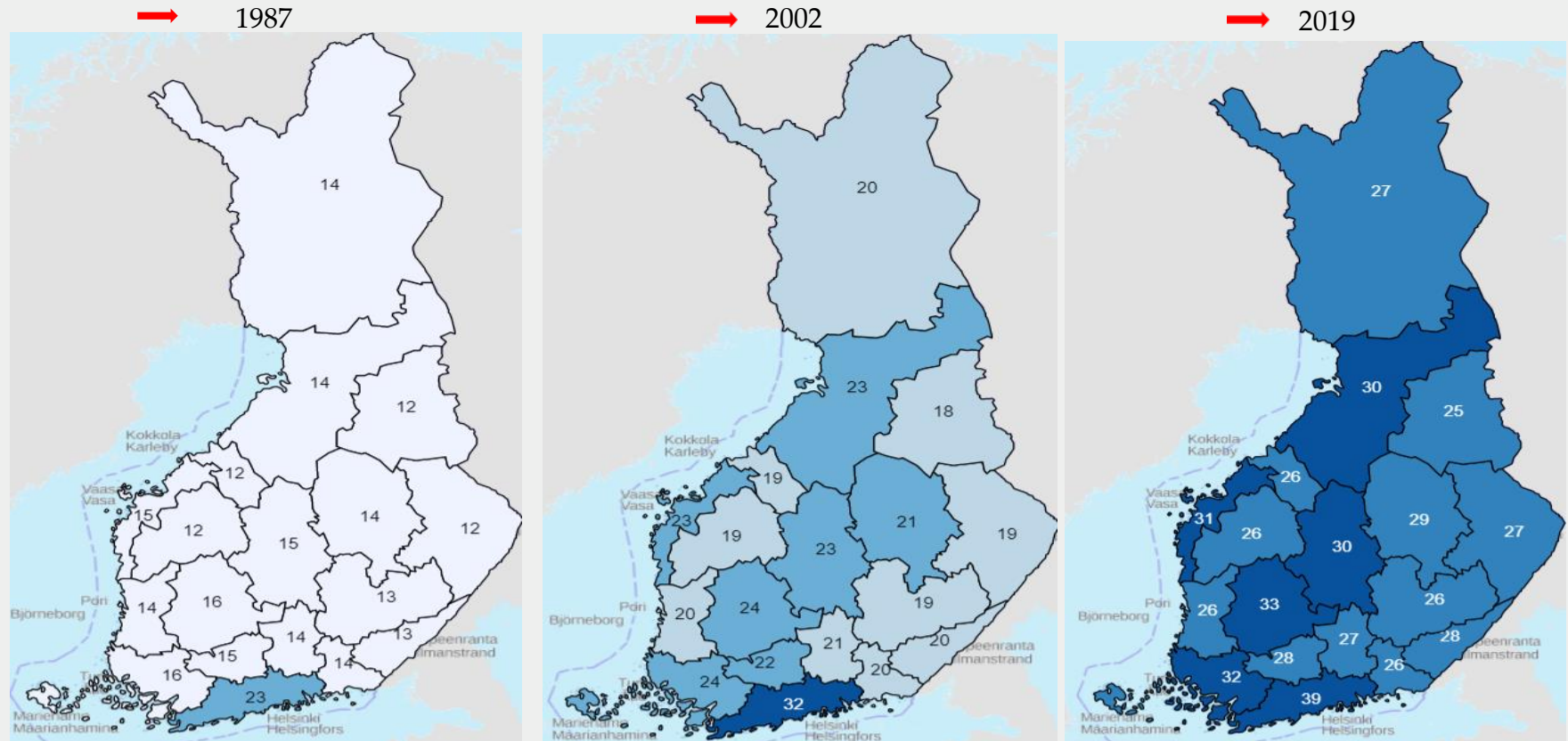


**The UAS
graduates from
2015 where
dispersed
accross the
country based
on their
hometown in
2020 ->**



Reference: Financial accounts reports from 2021,
Statistics Finland, Ministry of education and culture, National Board of
Education /Vipunen (Esa Kannisto)

The share of higher education graduates among post-15 population, administrative, regions %

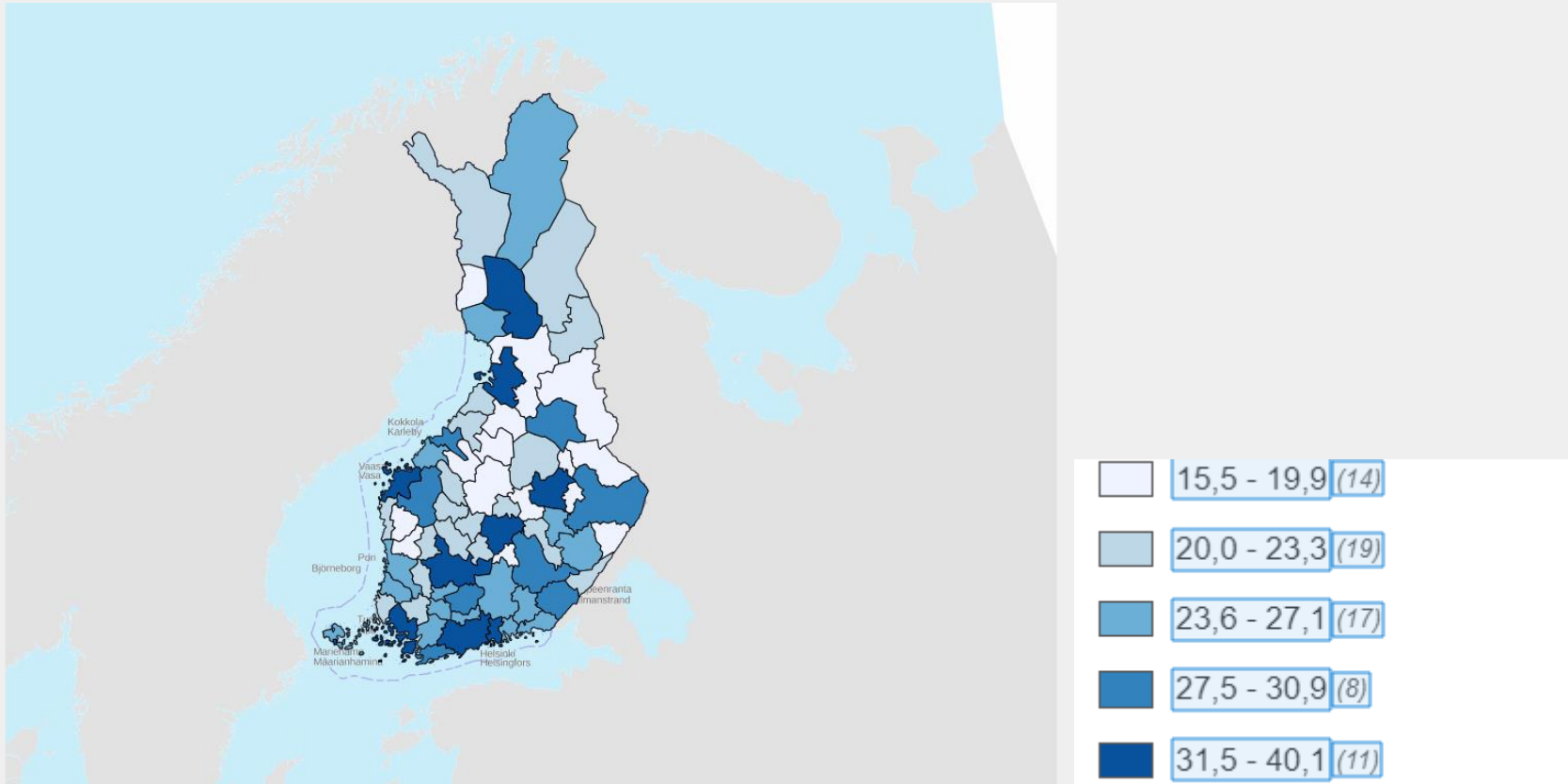


The level of education in the population increased.

Reference: <https://kartta.paikkatietoikkuna.fi/>

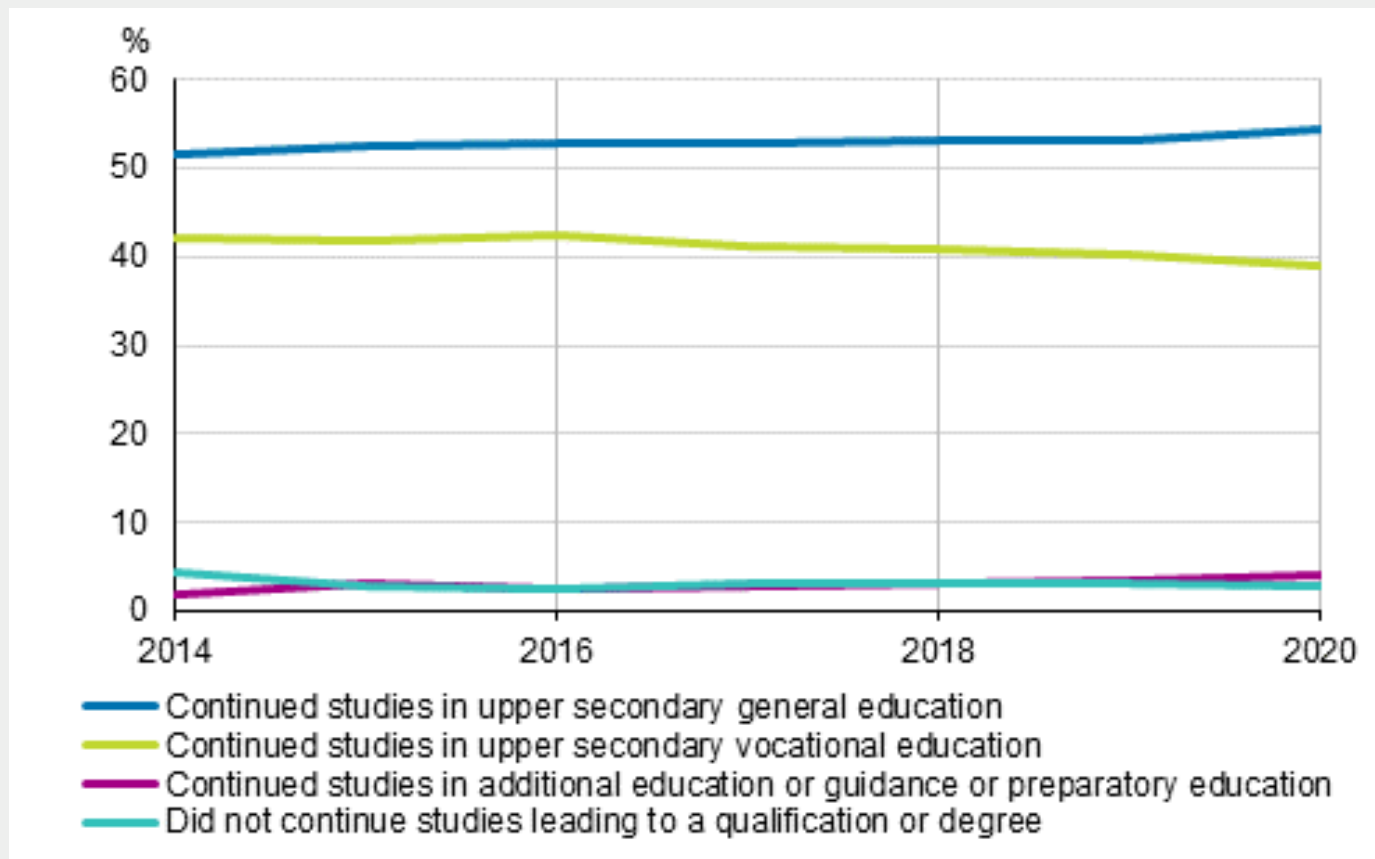


The share of higher education graduates among post-15 population, districts %



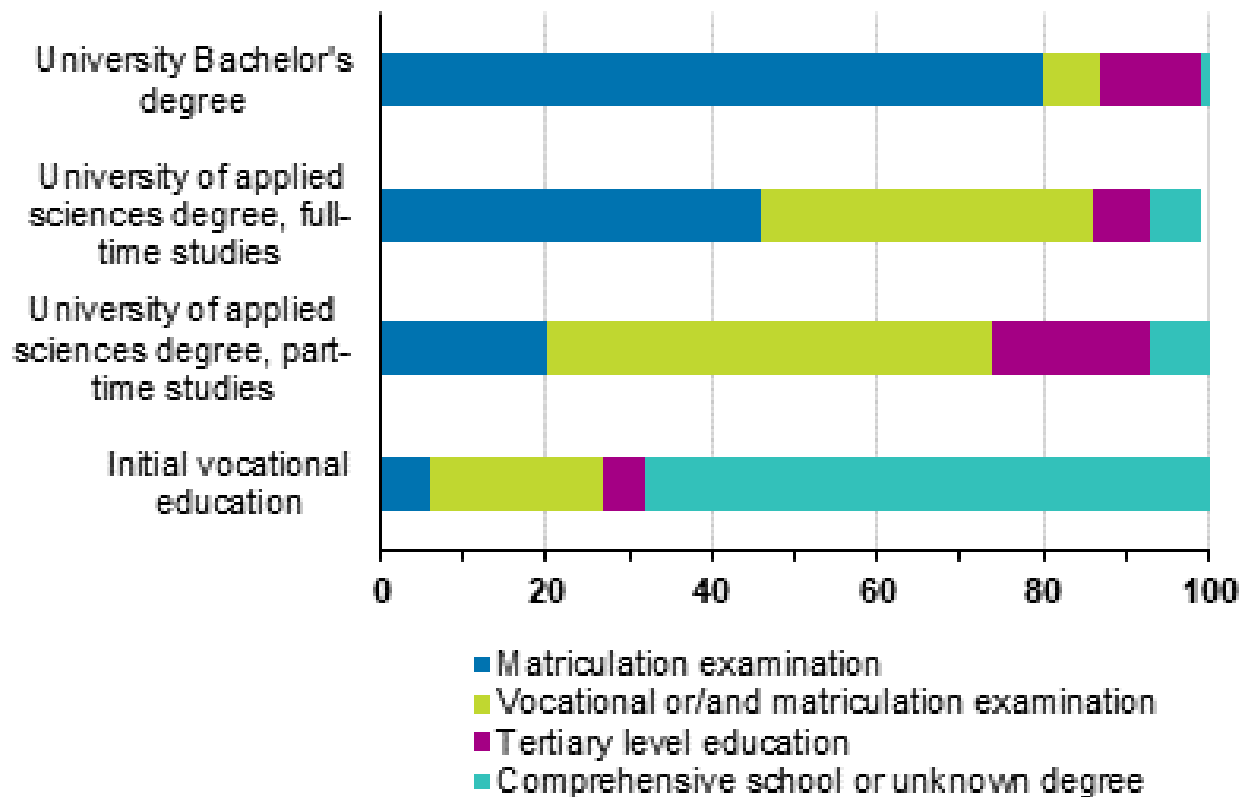


Where do students go after compulsory education in Finland?



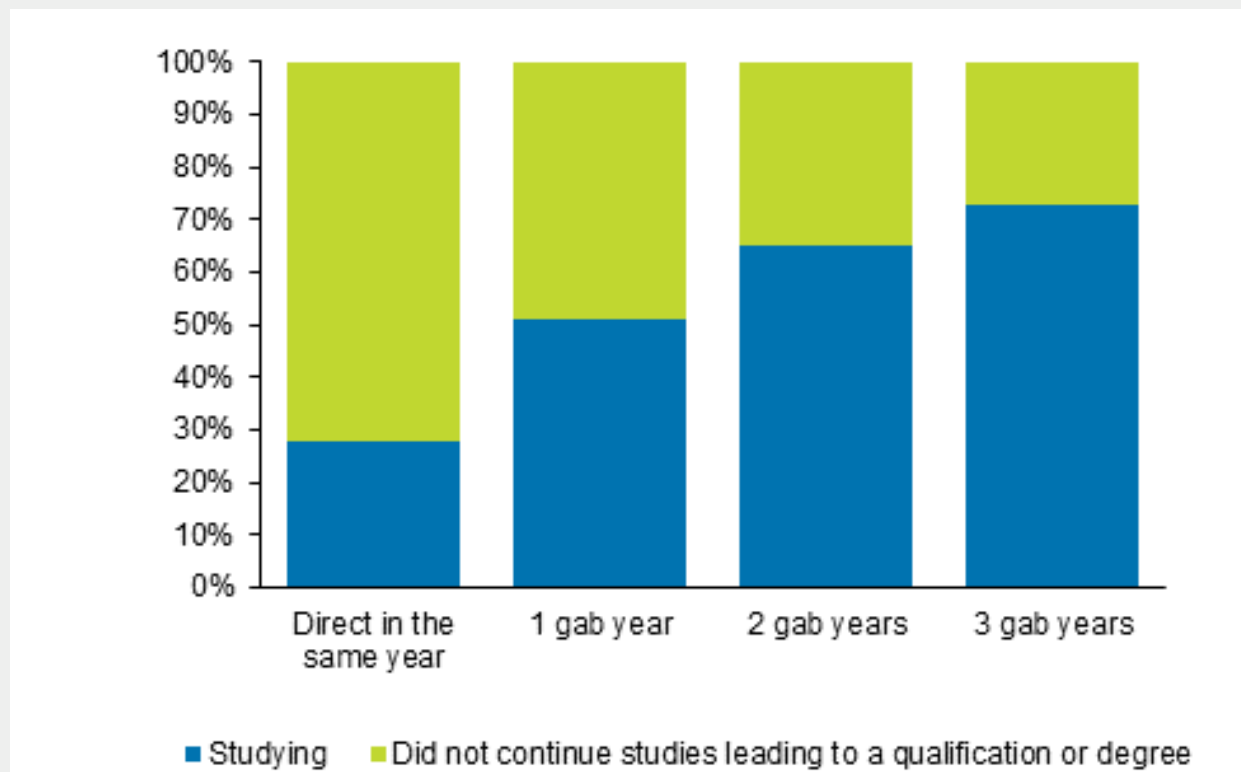


New students by education and prior degree or qualification in 2020, % -> what is the educational background of students starting at universities, UAS, IVET



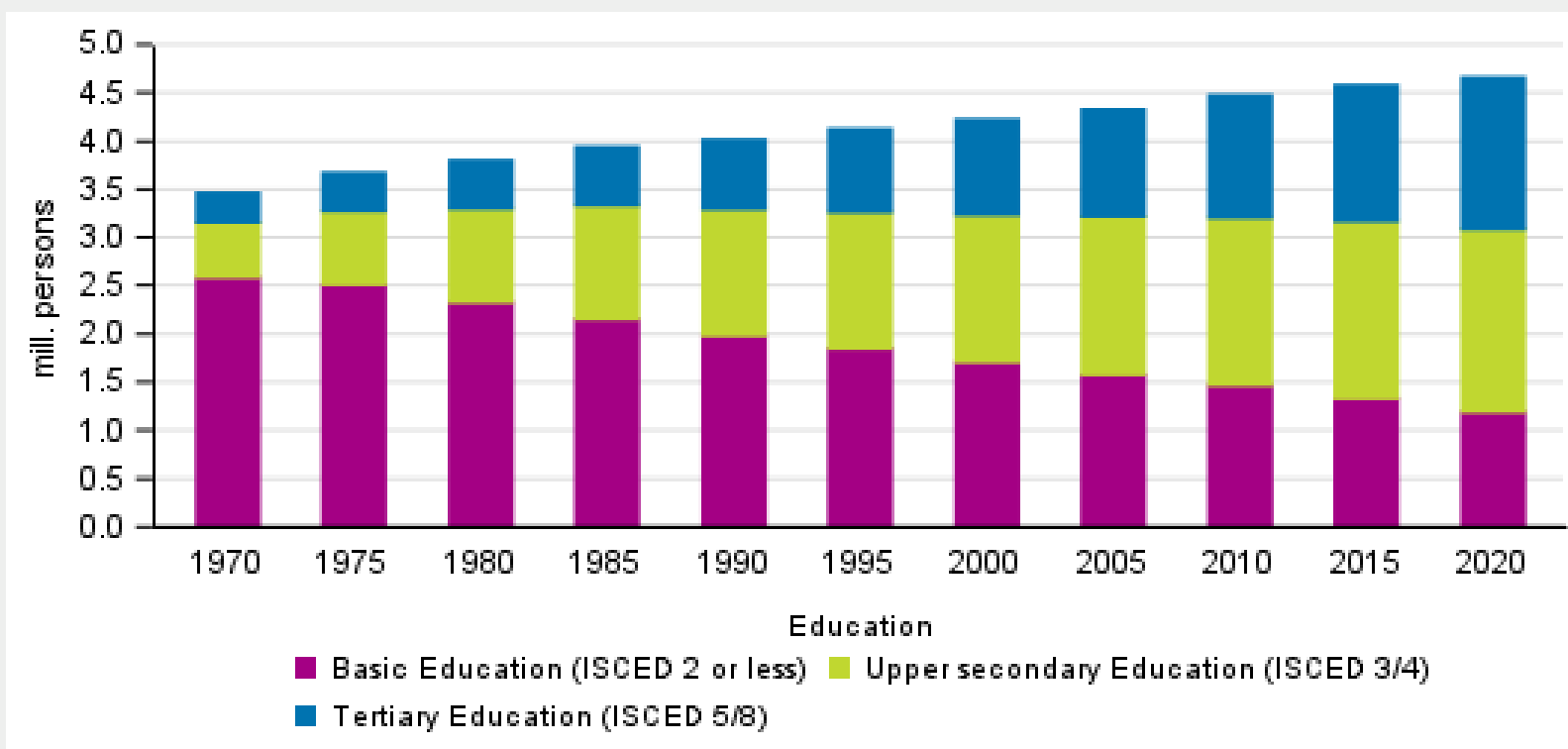


Queue to universities, and HE: Entrance to education by passers of matriculation examination on 2017, %





Share of population with educational qualifications has multiplied in 50 years

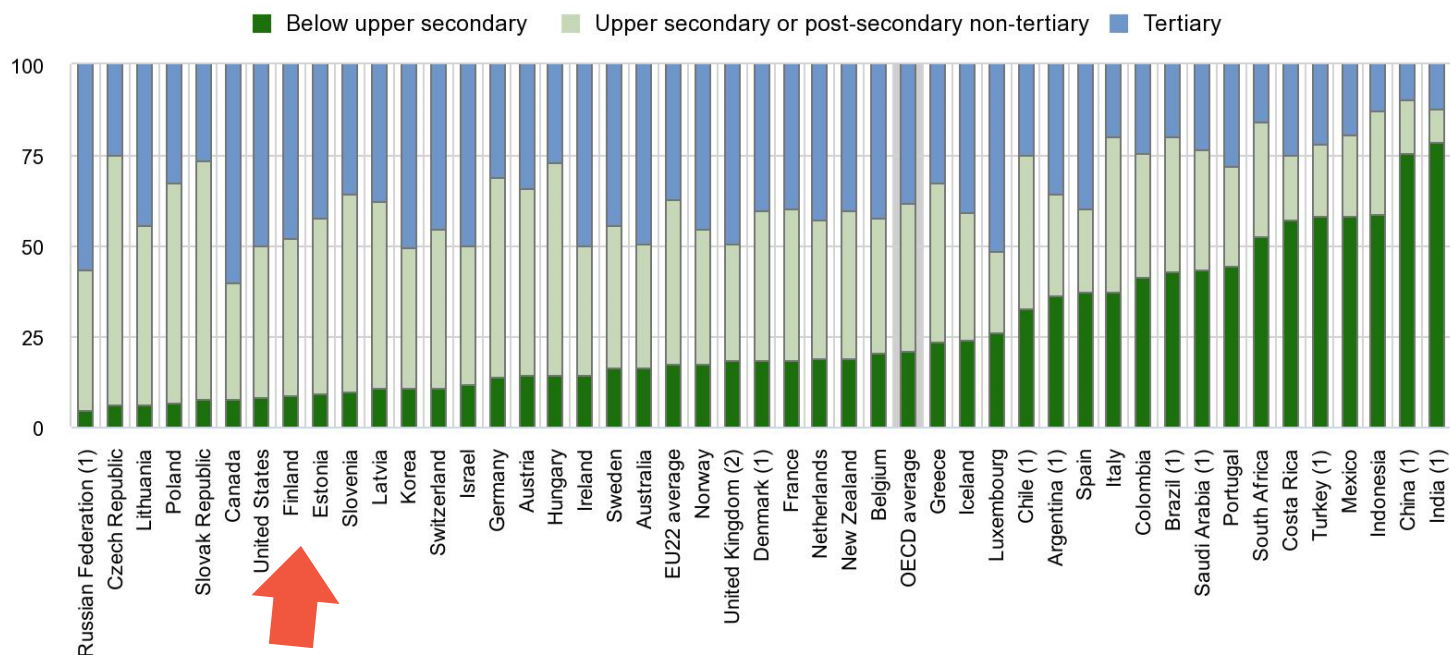




Education at a Glance 2021: OECD Indicators

Figure A1.3. Educational attainment of 25-64 year-olds (2020)

In per cent





Students in the UAS

- Applicants home region
- Entrants' educational background
- Transition to the world of work
- Number of students vis á vis traditional university education
- Bachelors, Masters
- Vipunen



UAS recruitment regions; applicants home region, 2022

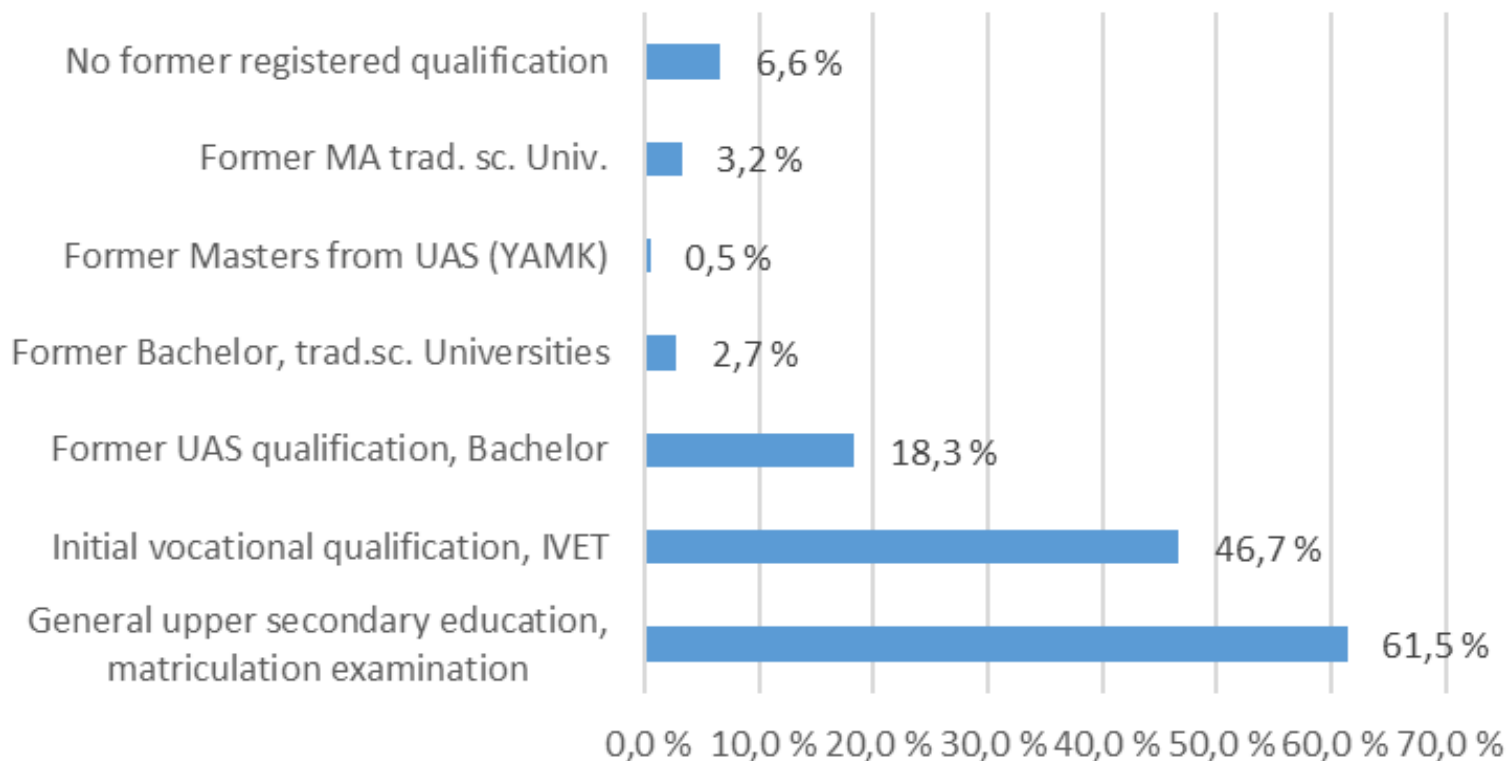
All applicants % r

	Uusimaa	South Savo Region	Pohjois-Savo	North Karelia	Central Finland	South Ostrobothnia	Ostrobothnia
Uusimaa	→ 57,0 %	0,7 %	1,3 %	0,7 %	1,9 %	1,0 %	1,0 %
Varsinais-Suomi	23,8 %	0,8 %	1,5 %	0,7 %	2,6 %	2,0 %	1,8 %
Satakunta Region	13,3 %	0,3 %	1,1 %	0,5 %	2,2 %	2,3 %	1,0 %
Häme Region	28,8 %	0,7 %	1,3 %	0,6 %	2,8 %	1,3 %	0,5 %
Pirkanmaa	16,0 %	1,1 %	2,2 %	1,0 %	4,7 %	4,0 %	1,3 %
Päijät-Häme	32,0 %	1,7 %	1,9 %	1,1 %	3,8 %	1,5 %	0,6 %
Kymenlaakso	25,1 %	2,7 %	1,9 %	0,9 %	2,7 %	1,0 %	0,5 %
South Karelia	20,6 %	2,9 %	2,2 %	1,9 %	3,1 %	1,1 %	0,4 %
South Savo Region	24,3 %	→ 11,9 %	6,6 %	2,2 %	8,7 %	1,7 %	0,6 %
Pohjois-Savo	9,1 %	3,0 %	→ 23,9 %	3,6 %	5,9 %	1,3 %	0,5 %
North Karelia	10,4 %	2,5 %	8,5 %	→ 24,5 %	3,4 %	0,9 %	0,3 %
Central Finland	11,2 %	2,3 %	4,5 %	1,7 %	→ 18,8 %	3,2 %	0,9 %
South Ostrobothnia	5,8 %	0,2 %	1,0 %	0,3 %	3,4 %	→ 25,5 %	4,0 %
Ostrobothnia	10,7 %	0,1 %	0,8 %	0,3 %	1,2 %	5,3 %	16,3 %
Central Ostrobothnia	6,3 %	0,2 %	1,0 %	0,3 %	1,7 %	2,5 %	2,0 %
North Ostrobothnia	9,3 %	0,4 %	3,3 %	1,1 %	3,0 %	3,0 %	1,2 %
Kainuu Region	8,9 %	0,6 %	5,2 %	1,3 %	2,1 %	0,9 %	0,4 %
Lapland	17,6 %	0,7 %	2,8 %	1,3 %	3,0 %	1,6 %	0,7 %
Missing data	7,4 %	1.5 % – 2.0 %	7,4 %		54,4 %	4,4 %	1.5 % – 2.0 %
Total	30,1 %	1,6 %	3,8 %	2,1 %	4,4 %	2,4 %	2,0 %



Entrants former qualification

UAS entrants former education, 2020

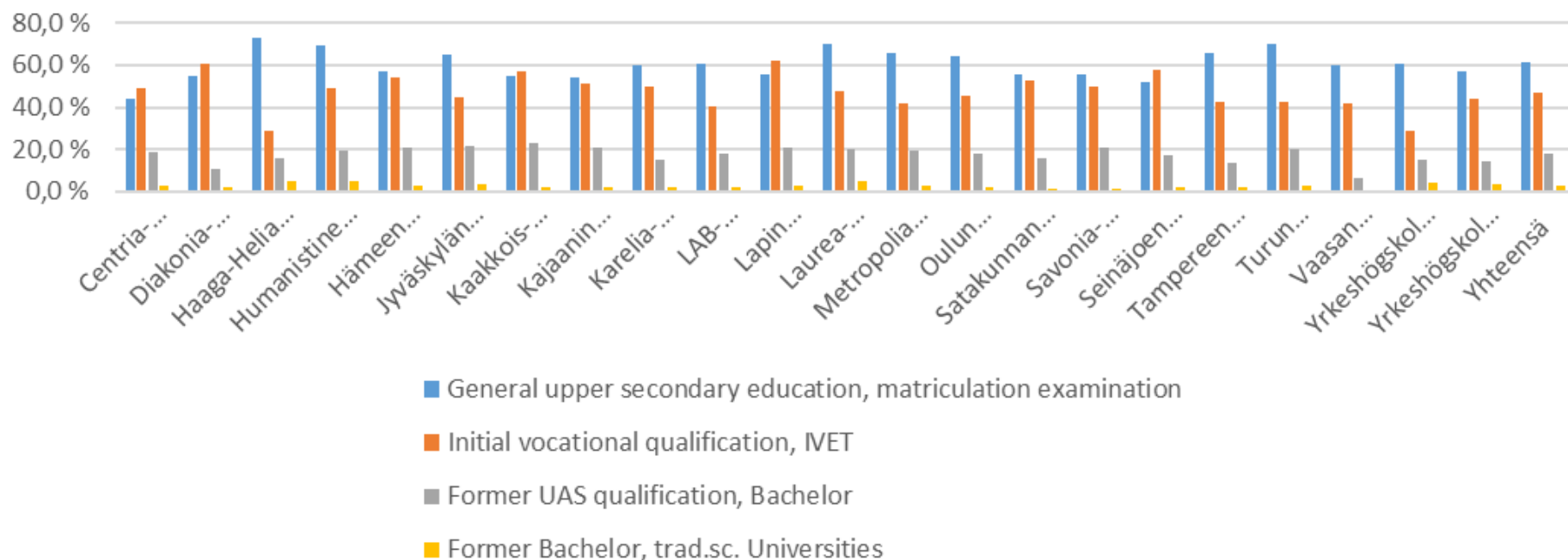


Education Statistics Finland, Vipunen.fi



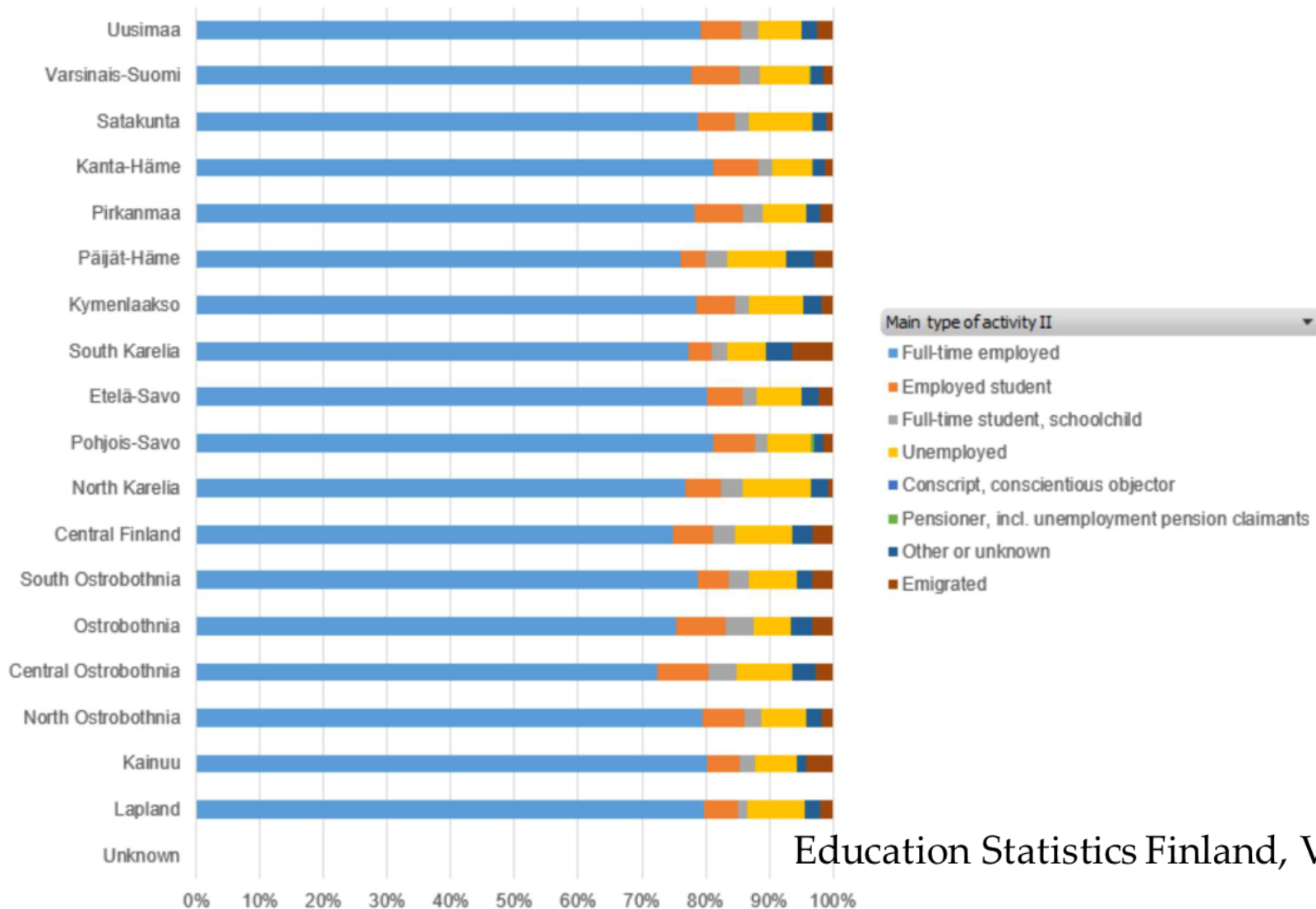
Entrants and UAS

UAS entrants' former education





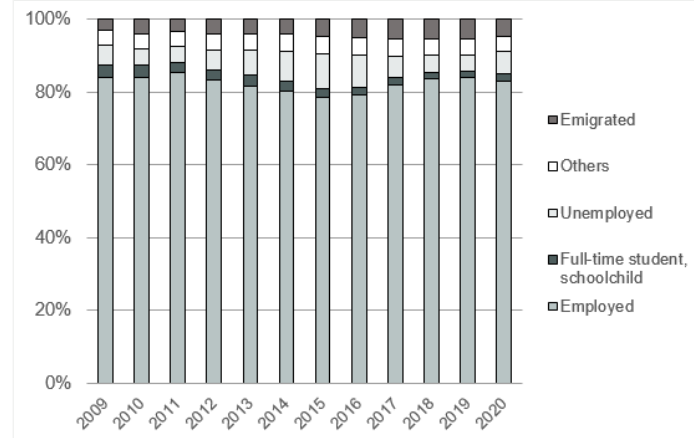
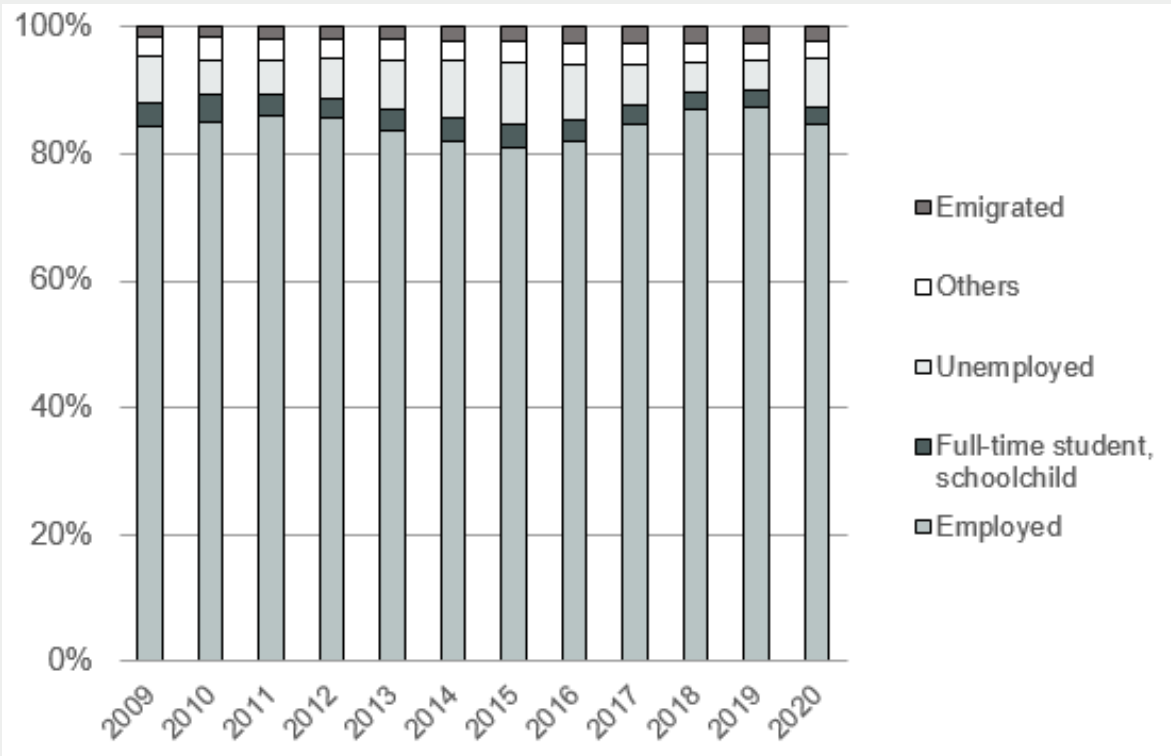
UAS education graduates' entry into employment



Education Statistics Finland, Vipunen.fi



Entry into employment by the UAS graduates a year after graduation

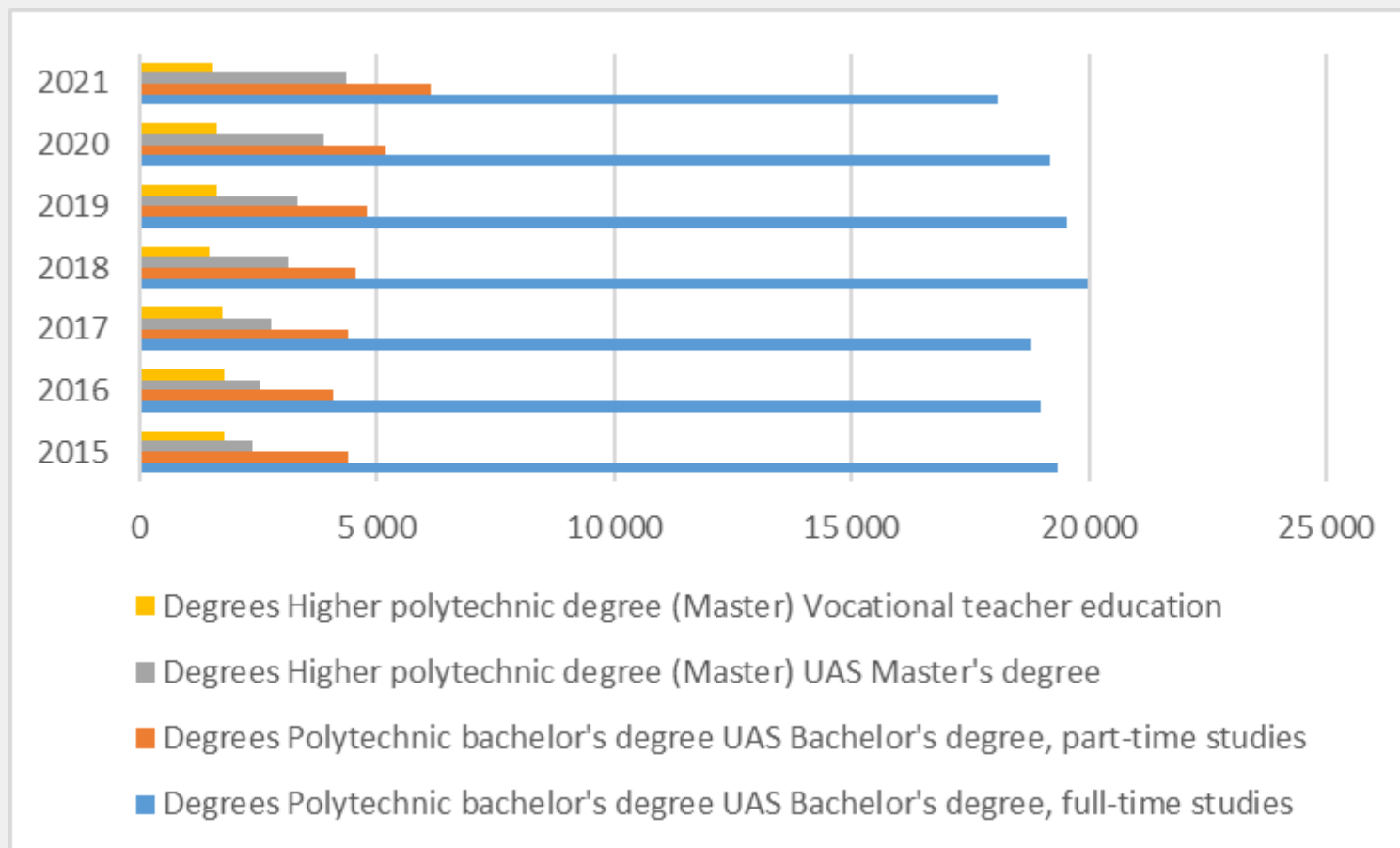


Universities

Universities of applied sciences

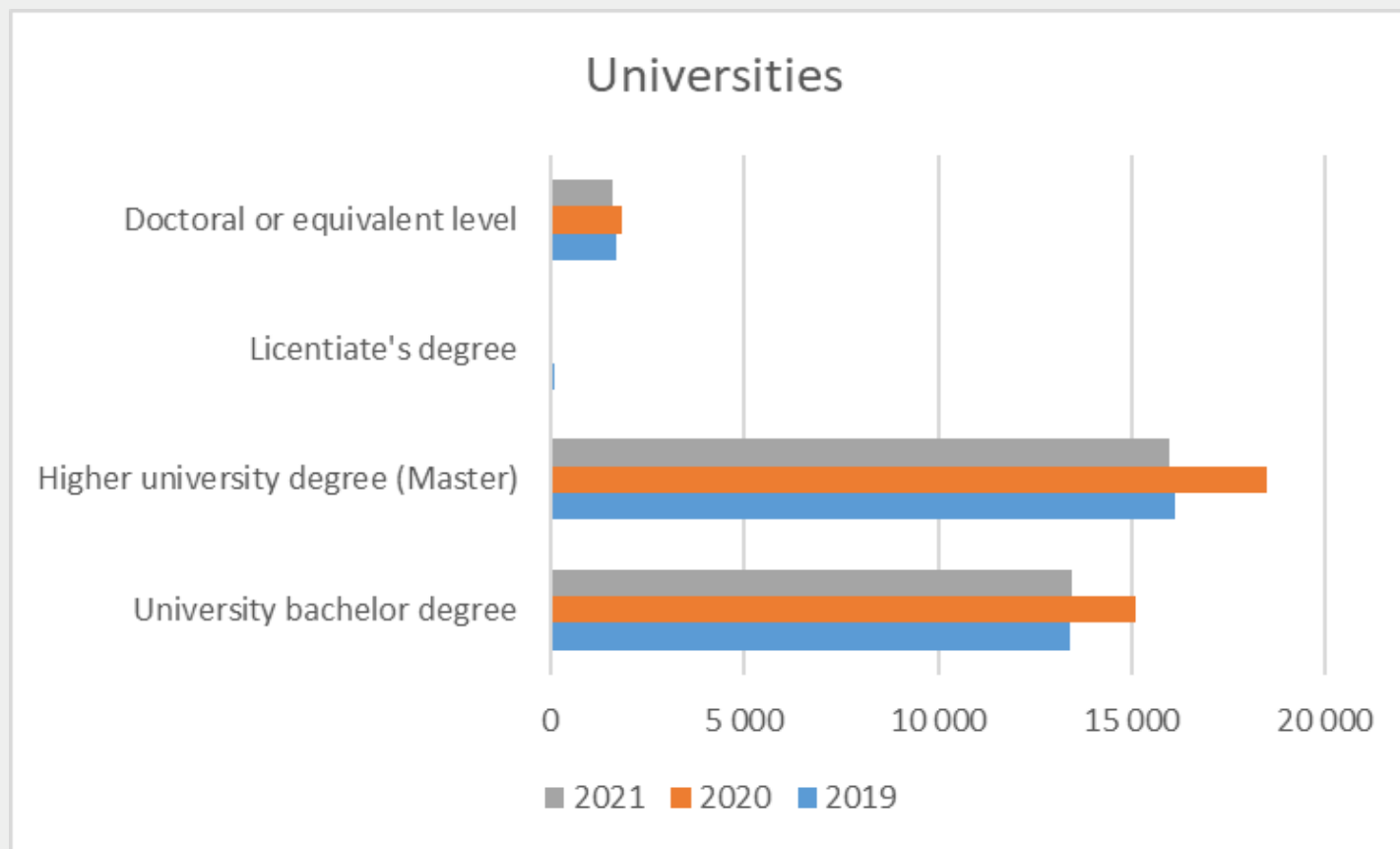


Degrees attained per year, UAS





Degrees attained per year, Universities





Teacher education at UAS

- available in 5 UAS's teacher education colleges (Ammatillinen opettajakorkeakoulu): Hämeen ammattikorkeakoulu (HAMK), Haaga-Helia ammattikorkeakoulu, Jyväskylän ammattikorkeakoulu (Jamk), Oulun ammattikorkeakoulu (Oamk,, Tampereen ammattikorkeakoulu (TAMK)
- entrance criteria: "In most cases the eligibility to apply for teacher education studies can be obtained with:
 - a Bachelor's degree
 - a minimum of three years of professional work experience

In the field of Social Services and Health: a UAS Bachelor's degree and 5 years of work experience corresponding to the content of the degree OR a Master's degree and 3 years of professional work experience. Applicants who seek qualification as general subject teachers are required to have a relevant Master's degree.



How is vocational teacher education organised?

See e.g. JAMK Professional Teacher Education Studies:
<https://www.jamk.fi/en/Apply-to-Jamk/international-teacher-education-for-the-digital-era>

“Our Professional Teacher Education programme consists of 60 credits (corresponding to one year of full-time study) and includes:

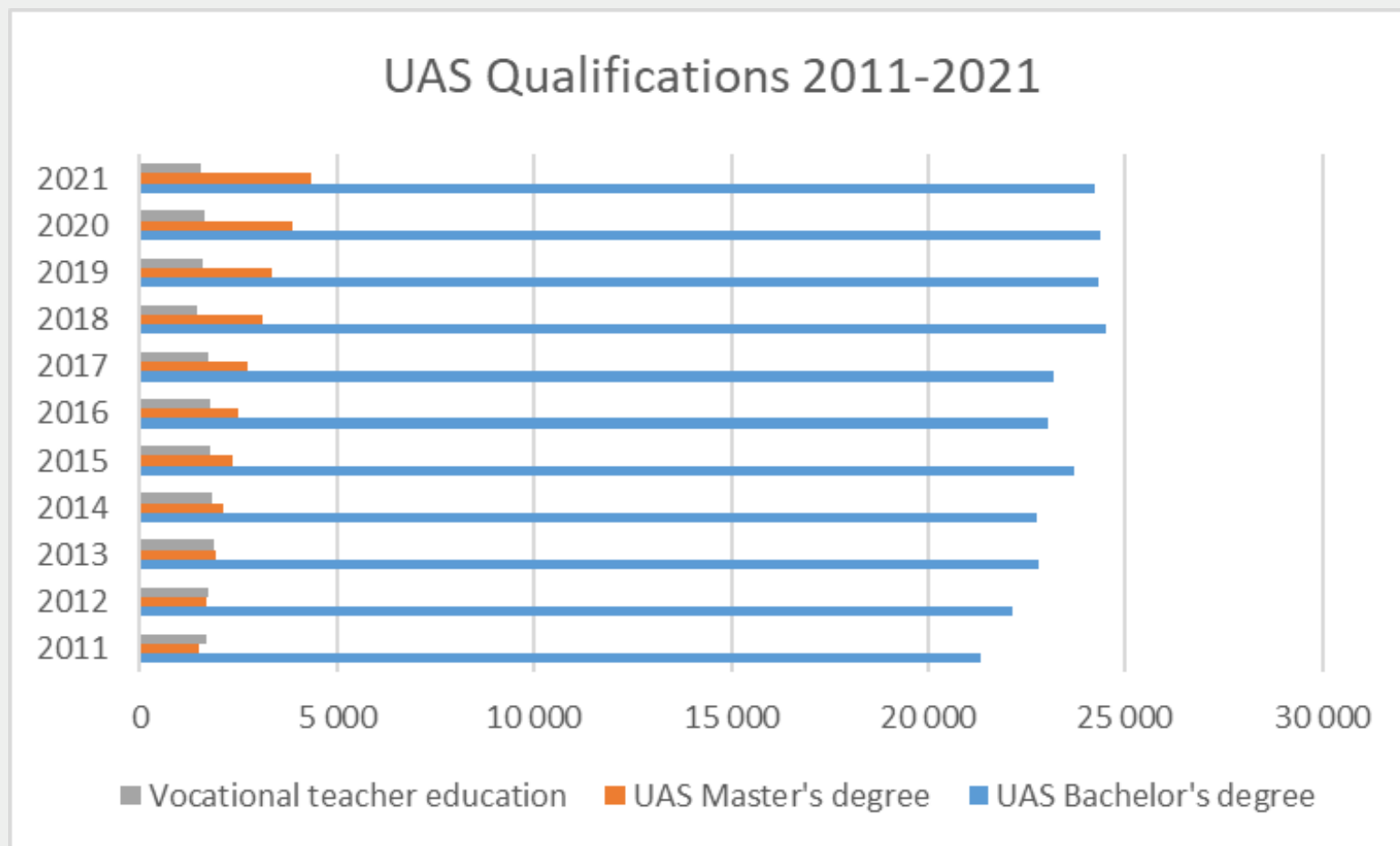
- basic studies in educational sciences
- vocational pedagogy studies
- teaching practice
- other studies

The curriculum of the programme is based on interconnected competence areas: facilitating learning, creating future and developing the teacher identity. Studies include practical training, participation in all learning sessions, self-directed learning, and working in a peer learning group of 4-5 students.”

Equal to EQF level 7:<https://julkaisut.haaga-helia.fi/ammattilliseksi-opettajaksi/>



Qualifications form UAS 2011-2021



The context of UAS: Shift toward a landscape of ecosystems



Ecosystems of learning and other ecosystems





Co-evolution of organizational arrangements and shift toward digital learning ecosystems

Time	Industrial revolutions	Organisational relations and means of communication, storage of information
Until early 19th century	1st industrial revolution: Expansion of steam engine, railways, replacement of handicraft production begun	Emergence of pre-Weberian bureucratic organisation: traditional mail and bookkeeping, organization of census and tax collection
Turn of the 20th century	2nd Industrial Revolution: Using of electricity expands transportation changes due to automobiles, chemical industries develop	Bureaucratic organization expands and develops: Departments are connected via telegraphs and phones; typewriters and increased dissemination of printed information

Adapted from Virolainen et al. 2022



Co-evolution of organizational arrangements and shift toward

Time	Industrial revolutions	Organisational relations and means of communication, storage of information
Turn of the 21st century	3rd industrial revolution: Consumerism, ICT development, popularized computers, microchips	Learning organizations and Networks between organizations: Shift away from printed material toward portable devices, internet and webpages for sharing information
Early 21st century	Industry 4.0: Machine learning, Artificial intelligence, cloud services	Business and innovation ecosystems, Digital learning ecosystems: Cloud storage, video-conferencing: enhanced communication accross distance

Adapted from Virolainen et al. 2022



Toward increased collaboration between regional actors

- The ideas of the **Triple Helix** (Etzkowitz & Leydesdorff, 1995, 2000; Etzkowitz, 2017) and learning regions (Florida, 1995) gained sway in theorizing regional development as contexts for learning organizations in the 1990s.
- HE institutions were expected to take a leading role in supporting the transformation of industries and national economies, and were to step from what was referred to as **Mode1 to Mode 2 learning**, that is, to shift from traditional discipline-oriented and hierarchically organized knowledge production, with its essential focus on knowledge production rather than application, toward multidisciplinary, socially accountable practices enabling economy-boosting innovation (Gibbons et al., 1994).
- In **Mode 3**, regional actors should aim to actively build creative environments for knowledge production and application, while taking advantage of both Modes 1 and 2 in terms of organizational forms of knowledge creation, production and application (Carayannis et al., 2016)
- The **N-Tuple of Helices**: HE, local businesses and communities, public administration and city residents, as well as for investors and the media to foster local development (McAdam & Debackere, 2017; Muhyi et al., 2017). -See Virolainen et al. 2022



Landscape of ecosystems and experience of (adult) education teachers (Regan & Delaney, 2011)

- Teacher becomes more and more human resource developer professional operating 'The learning management system':
- Supports planning, design, delivery and manages learning resources,
- Provides access to 'Just-in-time-learning', i.e. context-sensitive learning material available online through short omni-media modules, available when needed (micro-modules)
- Provision involves: talent management, succession and job mobility systems, career models, learning needs identification, individual learning plans, program design, individual and group learning process facilitation, knowledge sharing, instructions, utilizing bottomless ocean of material available through internet
- Demand for reforming curriculum: these characteristics intervene also youth education



Enhanced regional and national collaboration

- Reasons: diminishing age cohorts, efficiency, digitalization ->
- Outcomes: EduFutura in Central Finland
<https://edufutura.fi/en/>
- National network for digital learning and course provision between UAS
<https://campusonline.fi/en/>
- Regional collaboration between HE institutions, mergers: Lapland, Tampere, Lahti region, UEF



Research collaboration between teacher education colleges in the Finnish UAS enhanced

- Focus on research programme about vocational and professional learning. (Opettaja-lehti, 2022)
- [Link to journal Opettaja https://www.opettaja.fi/tyossa/kumppanukset-taidon-oppimista-pitaa-tutkia/](https://www.opettaja.fi/tyossa/kumppanukset-taidon-oppimista-pitaa-tutkia/)
- Examples of R&D:
<https://www.jamk.fi/en/research-and-development>
<https://www.haaga-helia.fi/en/research-and-development>
<https://www.tuni.fi/en/services-and-collaboration/our-services-for-companies-and-communities>
- See also <https://www.arene.fi/>

The Rectors' Conference of Finnish Universities of Applied Sciences Arene

Collaboration between Higher VET, research and enterprises is (the) international trend



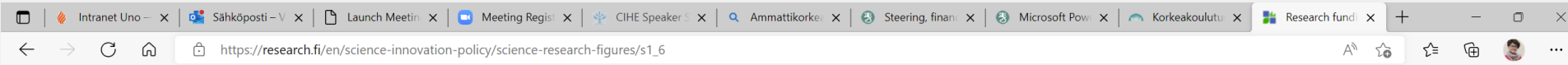
InnoVet research programme in German, BIBB (Federal Institute for Vocational Education and Training):

<https://www.bibb.de/de/93954.php>

https://www.inno-vet.de/innovet/de/home/home_node.html

Research funding in Finland

https://research.fi/en/science-innovation-policy/science-research-figures/s1_6



Figures on science and research

Research funding of higher education i...

Research funding of higher education institutions and government research institutes

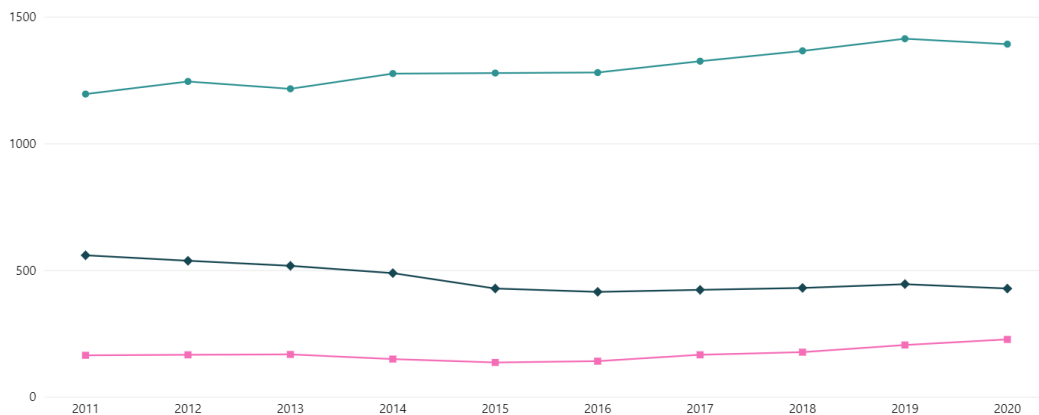
[Keyboard user help](#)

[RDI roadmap follow up indicator](#)

Funding source type: All
Funding source: All
Main discipline: All
Discipline: All
Statistical year: 2011 2020
Sector: All
Organisation: All

Research funding (millions of euros)

Sector: Research institutes Universities Universities of applied sciences



Microsoft Power BI

The image shows the research funding (millions of euros) of Finnish higher education institutions and government research institutes. Research funding is divided into two main types: governmental budget funding and supplementary funding (Funding source type menu).

[i ADDITIONAL INFORMATION](#)

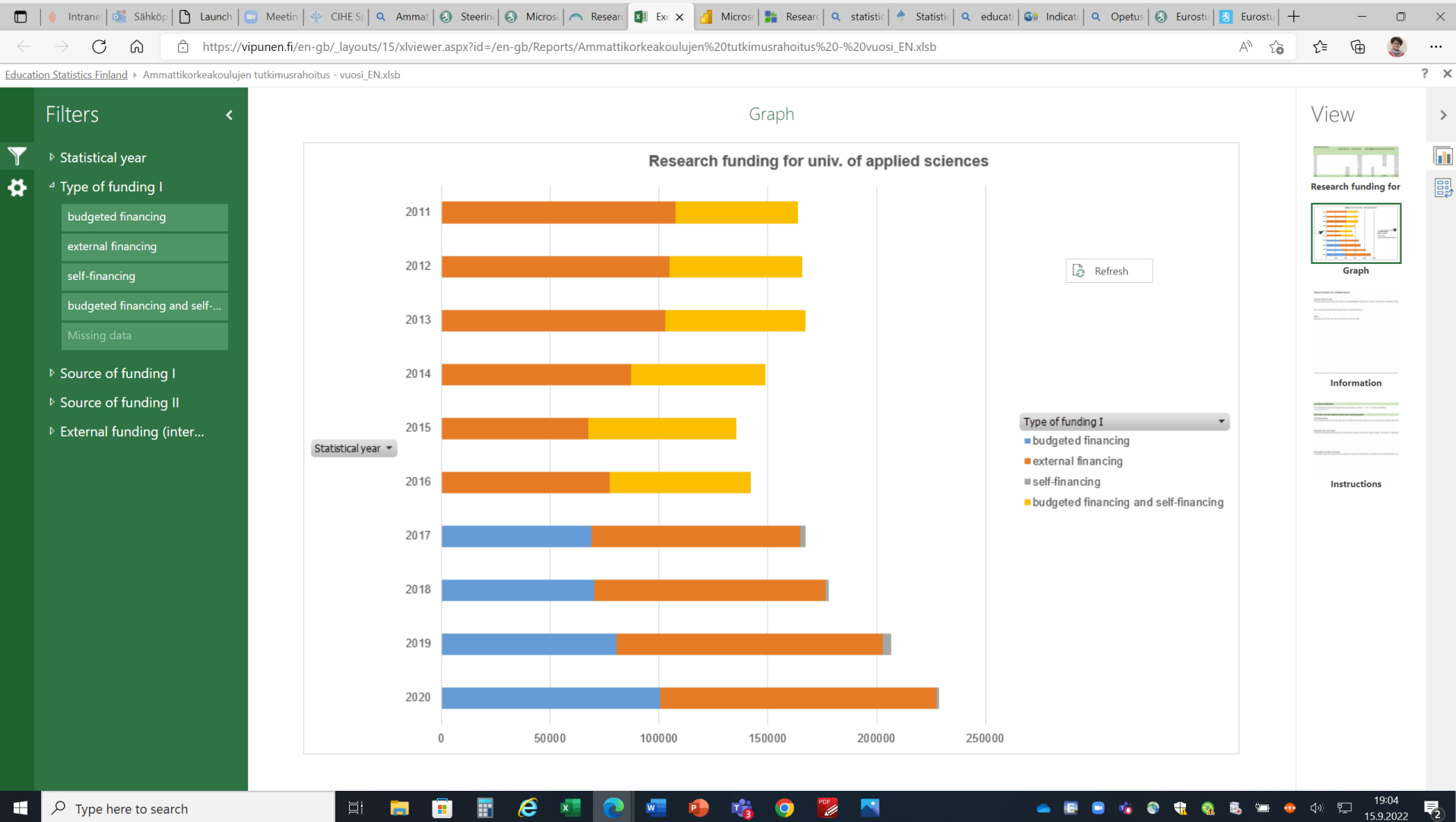
Source:

[GIVE FEEDBACK!](#)



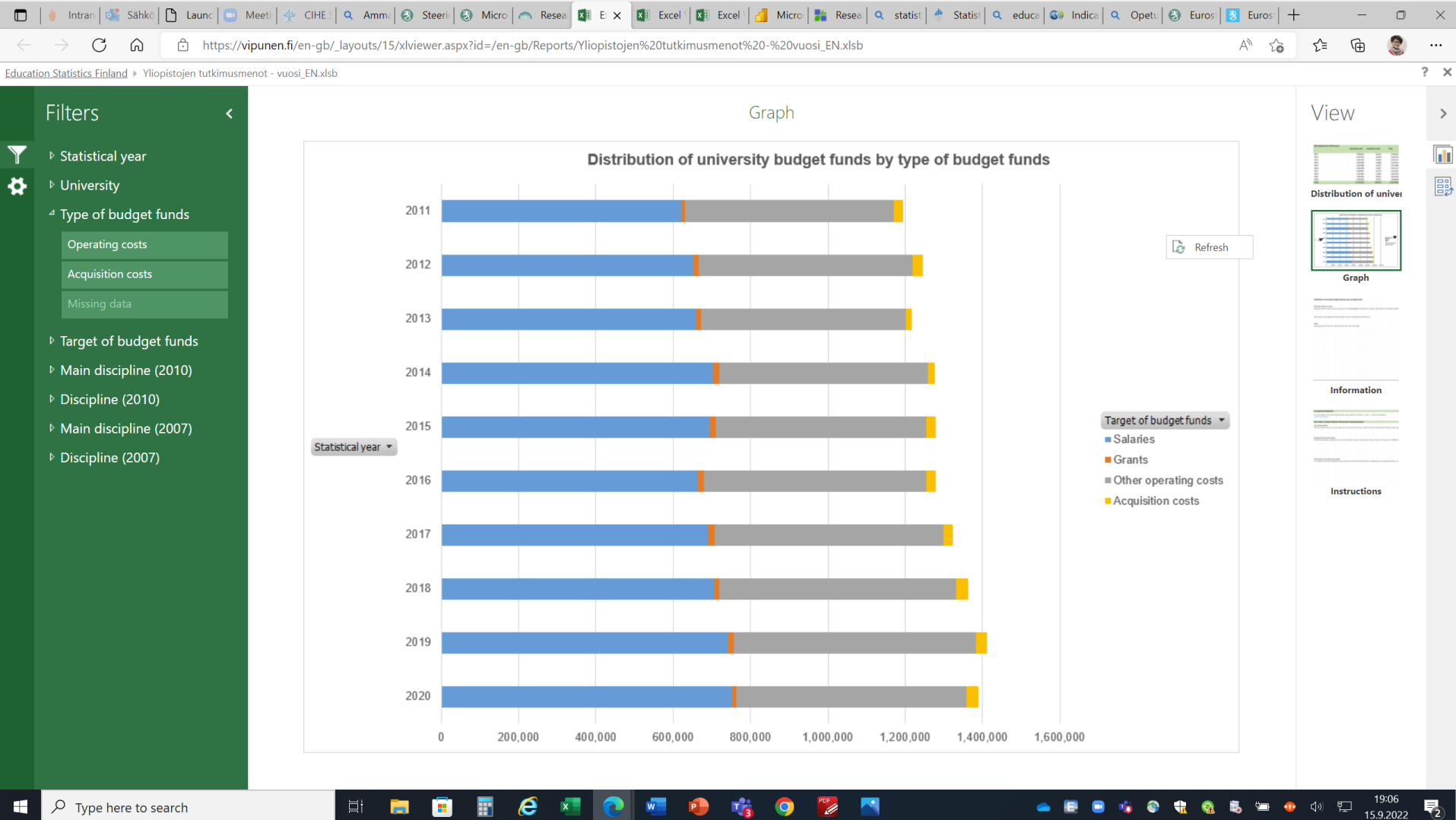
Research funding for UAS,

Education statistics Finland, Vipunen.fi



Research funding, Trad.Sc. Univ.,

Education statistics Finland Vipunen.fi





References and literature

- Laukia, J. (2013). Tavoitteena sivistynyt kansalainen ja työntekijä. Ammattikoulu Suomessa 1899-1987. University of Helsinki. Dissertation. <http://urn.fi/URN:ISBN:978-952-10-9411-8>
- Pfeffer, T., Unger, M., Hölttä, S., Malkki, P., Boffo, S., & Finocchietti, G. (2000). Latecomers in vocational higher education: Austria, Finland, Italy. Higher Education Policy, 2.
- Rauhala, P., Kantola, M., Friman, M., Mäki, K., & Kotila, H. (2022). Ammattikorkeakoulupedagogiikan lyhyt historia. In K. Mäki & L. Vanhanen-Nuutinen (Eds.) Korkeakoulupedagogiikka – Ajat, paikat ja tulkinnat. Haaga-Helia.
- Rantanen, T., & Toikko, T. (2012). The three phases of the research and development activities in the Finnish universities of applied sciences. In S. Ahola and D. Hoffman (eds.) Higher education research in Finland: Emerging structures and contemporary issues (pp. 383-405). https://www.theseus.fi/bitstream/handle/10024/504890/Rantanen_Toikko.pdf?sequence=2
- Regan, E., & Delaney, C. (2011). Brave new workplace: The impact of technology on location and job structures. M. Malloch, L. Cairns, K. Evans & B. N. Connor (Eds.) The SAGE Handbook of Workplace Learning, 431-442.



References and literature continued

Stenström, M.-L., & Virolainen, M. (2018). The development of Finnish vocational education and training from 1850 to 1945. In S. Michelsen, & M.-L. Stenström (Eds.), *Vocational Education in the Nordic Countries : The Historical Evolution* (pp. 24-45). Routledge. Routledge Research in International and Comparative Education. Open Access

Stenström, M.-L., & Virolainen, M. (2018). The modern evolution of vocational education and training in Finland (1945–2015). In S. Michelsen, & M.-L. Stenström (Eds.), *Vocational Education in the Nordic Countries : The Historical Evolution* (pp. 102-123). Routledge. Routledge Research in International and Comparative Education. Open Access

Virolainen, M. H., Heikkinen, H. L., Laitinen-Väänänen, S., & Rautopuro, J. (2022). The Transformation of Learning : From Learning Organizations to a Landscape of Ecosystems. In M. Malloch, L. Cairns, K. Evans, & B. O'Connor (Eds.), *The SAGE Handbook of Learning and Work* (pp. 126-144). Sage Publications. <https://doi.org/10.4135/9781529757217.n9>

Välimaa, J. (2019). A history of Finnish higher education from the middle ages to the 21st century (Vol. 52). Springer Nature.



Thank you for your attention!

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