



Presented at the FIG Working Week 2023,  
28 May - 1 June 2023 in Orlando, Florida, USA

# FIG WORKING WEEK 2023

28 May - 1 June 2023 Orlando Florida USA

Protecting  
Our World,  
Conquering  
New Frontiers

Analyzing the motivation and  
expectations of the next generation  
of Geodesy students in German-  
speaking countries  
**KonGeoS**



Organized By



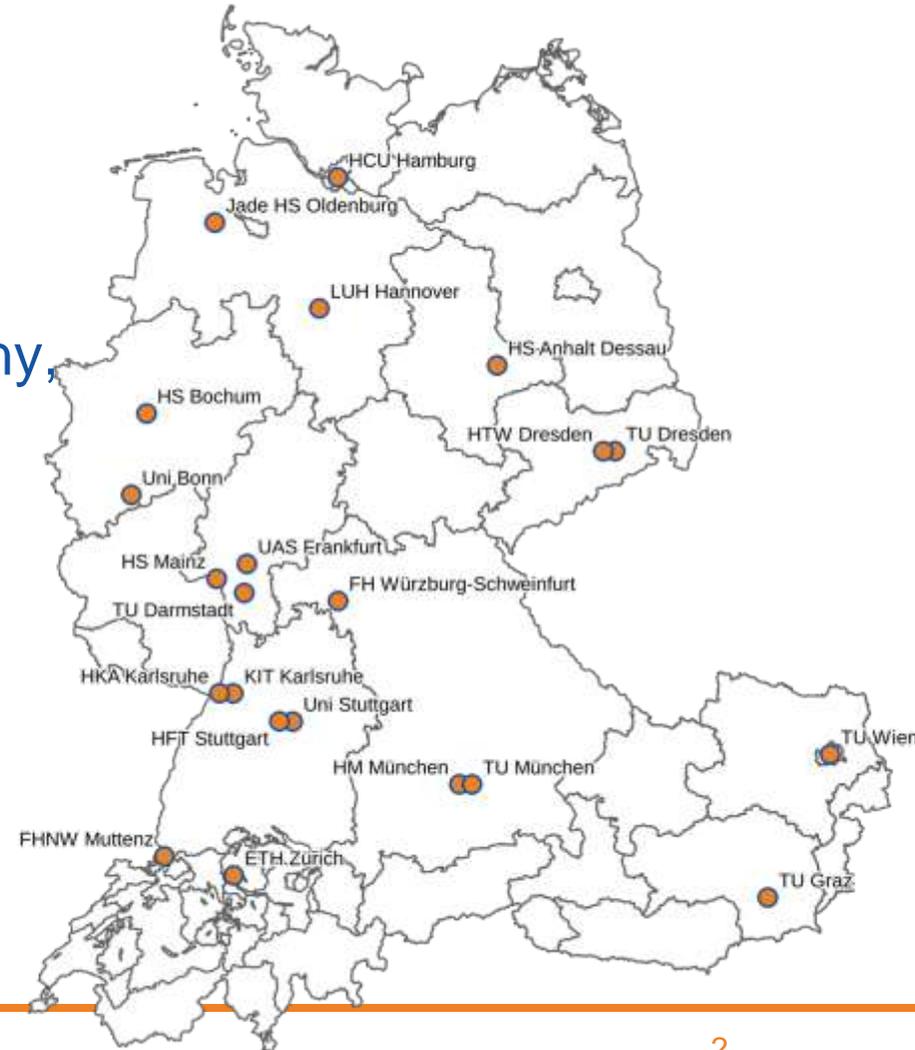
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# Introduction



- KonGeoS
  - Konferenz der GeodäsieStudierenden
  - Conference of German-speaking Geodesy students
- Representing students from 22 universities in Germany, Austria and Switzerland
- Meetings every semester
  - Field trips
  - Lectures
  - Working Groups
  - General Assembly





**Valentin**

**Fahrer**

**KIT Karlsruhe**

[fahrer\[at\]kongeos.xyz](mailto:fahrer[at]kongeos.xyz)



**Valentin**

**Großmann**

**HfT Stuttgart**

[grossmann\[at\]kongeos.xyz](mailto:grossmann[at]kongeos.xyz)



**Joshua**

**Wolf**

**HCU Hamburg**

[wolf\[at\]kongeos.xyz](mailto:wolf[at]kongeos.xyz)



**Clara**

**Väh**

**FHWS Würzburg**

[vaeth\[at\]kongeos.xyz](mailto:vaeth[at]kongeos.xyz)



**Adrian**

**Weng**

**Uni Bonn**

[weng\[at\]kongeos.xyz](mailto:weng[at]kongeos.xyz)

# Background: Development in the labor market



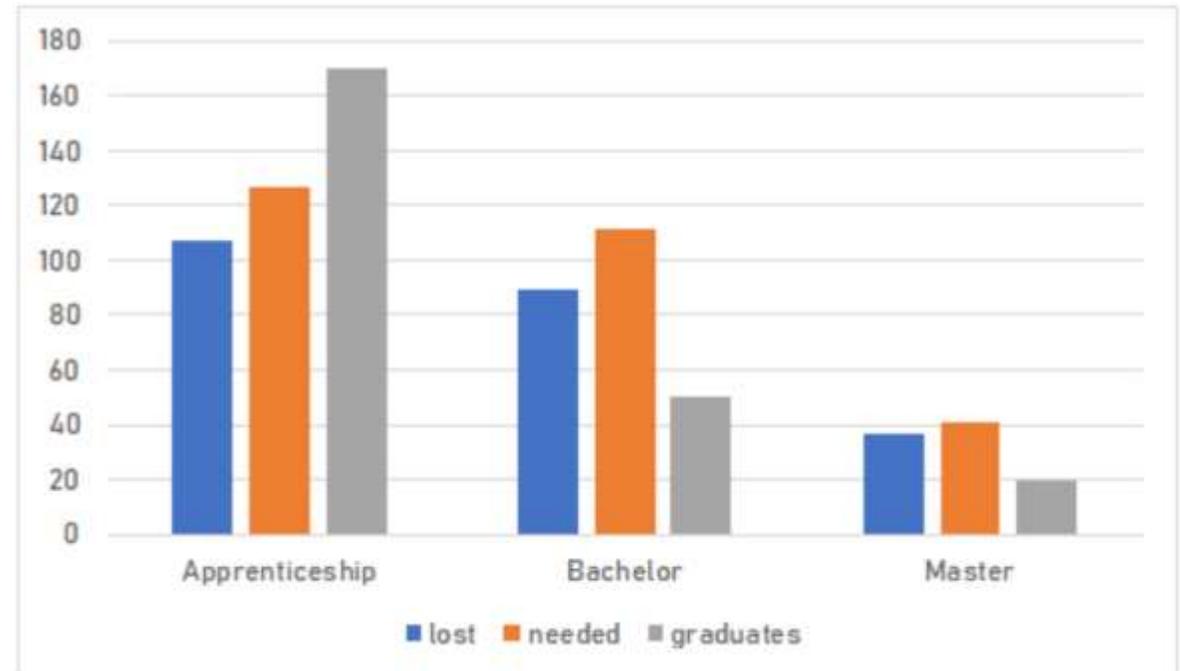
- Workforce shall decline by 9.2% until 2030
  - Low birthrates and immigration
  - Could lead to economic Activity declining by 4%
- Median age of workforce is projected to decline because of retirings

	<b>2019</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>
<b>Workers in 1000</b>	43,570	40,011	37,687	35,767	33,299
<b>Percentage</b>	100	91.8	86.5	82.1	76.4
<b>Median Age</b>	44.4	43.7	44.5	44.0	43.0
<b>Activity Rate %</b>	70	66	66	66	65

# Background: Development in the labor market



- Survey conducted in North-Rhine Westphalia
- Fewer students graduating than needed
  - More losses than graduates
- Apprenticeship numbers are somewhat misleading
  - Many Alumni continue with a bachelors or masters degree



# Background: Geodesy studies in German-speaking universities



- 24 Universities offering a degree in a program typically called “Geodesy and Geoinformatics”
- Two types of Universities
  - Universities of applied sciences
  - (Technical) Universities
- Different degrees and study lengths
  - B. Eng. (7 Semesters) and M. Eng. (3-4 Semesters)
  - B. Sc. (6 Semesters) and M. Sc. (4 Semesters)



# Background: Geodesy studies in German-speaking universities



- Universities of applied sciences
  - Longer periods of practical training
  - Large number of projects and practical exercises
- (Technical) Universities
  - Greater focus on theoretical aspects and further specialization (e.g., in physical geodesy, hydrography, geodetic earth observation or industrial metrology)



# Research methodology: First semester student numbers

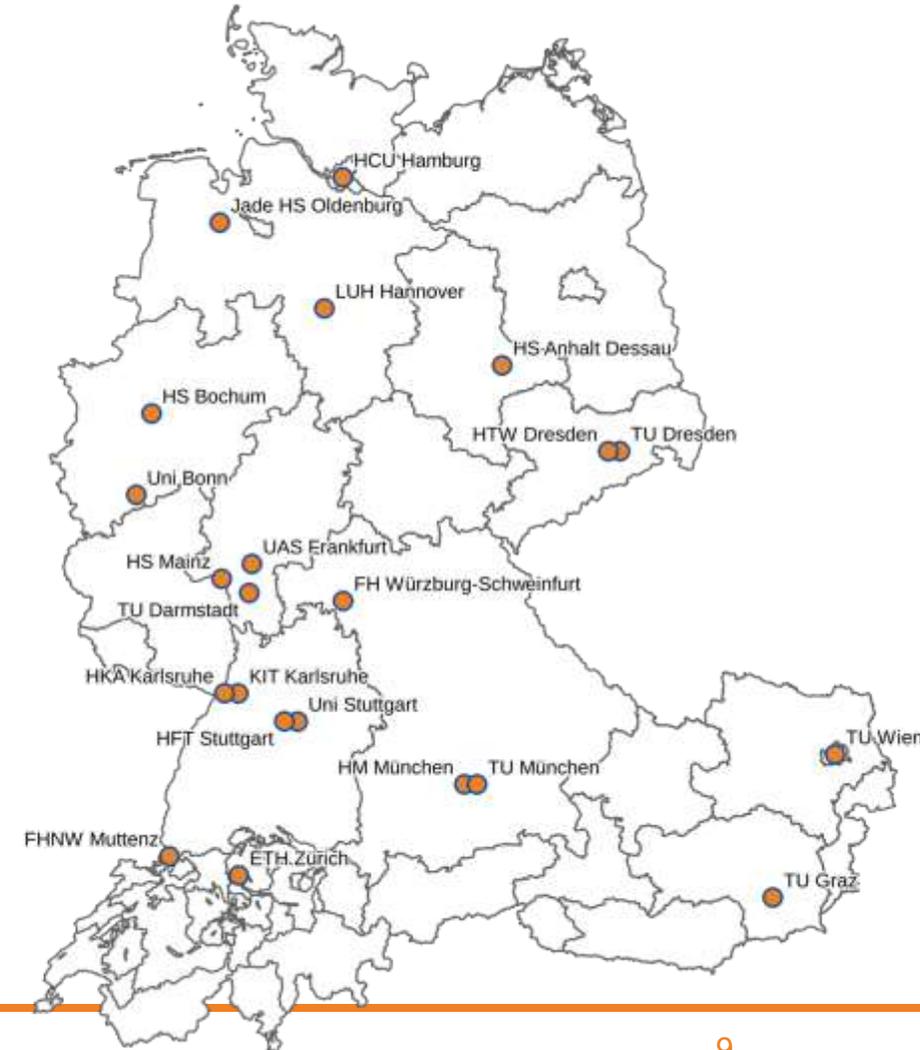


- The German first semester student numbers are published yearly by the German Federal Statistical Office (Statistisches Bundesamt)
- From these, the values for ten year period were selected
- The Austrian and Swiss numbers had to be obtained directly from the universities
- For the University of Applied Sciences of Northwestern Switzerland (FHNW), the first-semester numbers were only available starting from the 2019/20 winter semester

# Research methodology: The annual KonGeoS-survey



- Conducted every semester among first semester students
- Organized by KonGeoS
- Carried out by the KonGeoS members
  - 22 universities of applied sciences and (technical) universities in Germany, Austria and Switzerland
- 7 questions regarding...
  - ... the motivations to start studying Geodesy
  - ... the future job plans of the students

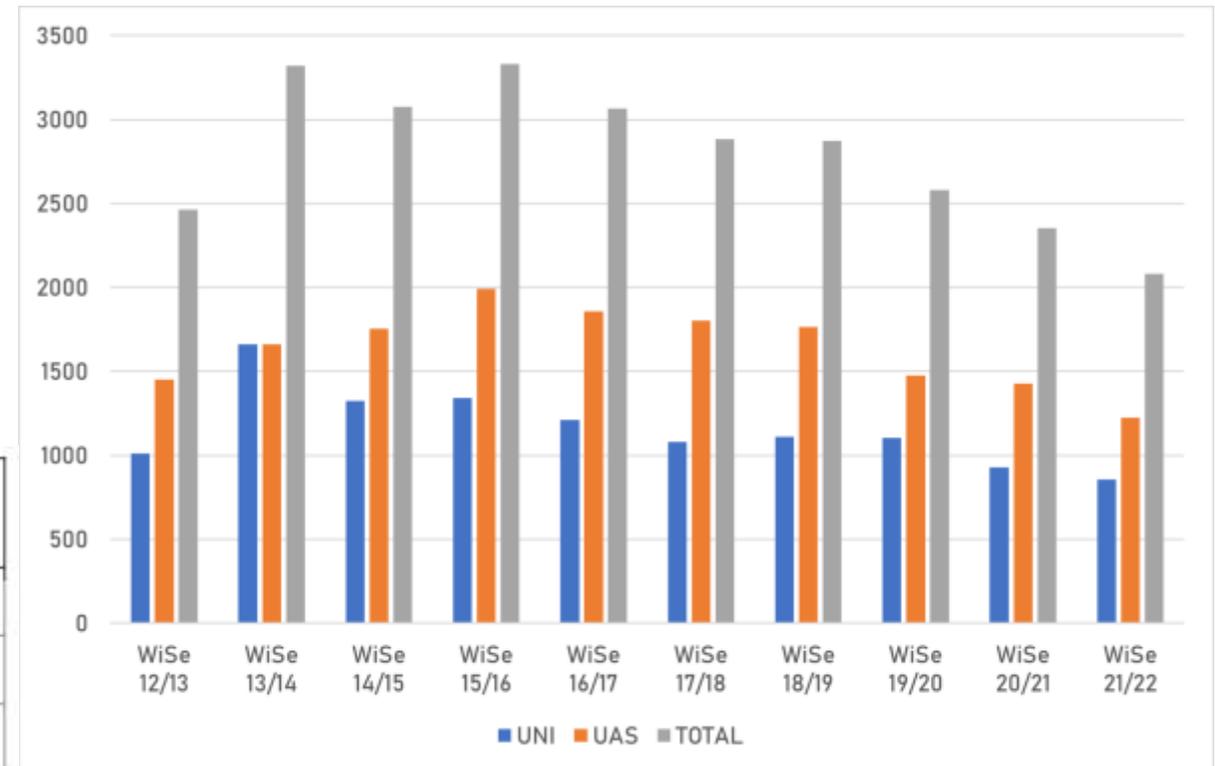


# Results: First semester student numbers

- Germany
  - Highest level from 2014 to 2016
  - Declining numbers since then
- ~2000 students starting in WiSe 2021/22
  - 41% Universities
  - 59% Universities of applied sciences

	WiSe 12/13	WiSe 13/14	WiSe 14/15	WiSe 15/16	WiSe 16/17	WiSe 17/18	WiSe 18/19	WiSe 19/20	WiSe 20/21	WiSe 21/22
<b>UNI</b>	1012	1660	1323	1340	1209	1080	1109	1103	927	857
<b>UAS</b>	1452	1661	1754	1992	1858	1802	1764	1476	1426	1224
<b>Total</b>	2464	3321	3077	3332	3067	2882	2873	2579	2353	2081

**Table 2:** First semester student numbers for all German universities  
(Statistisches Bundesamt, 2012-2021)

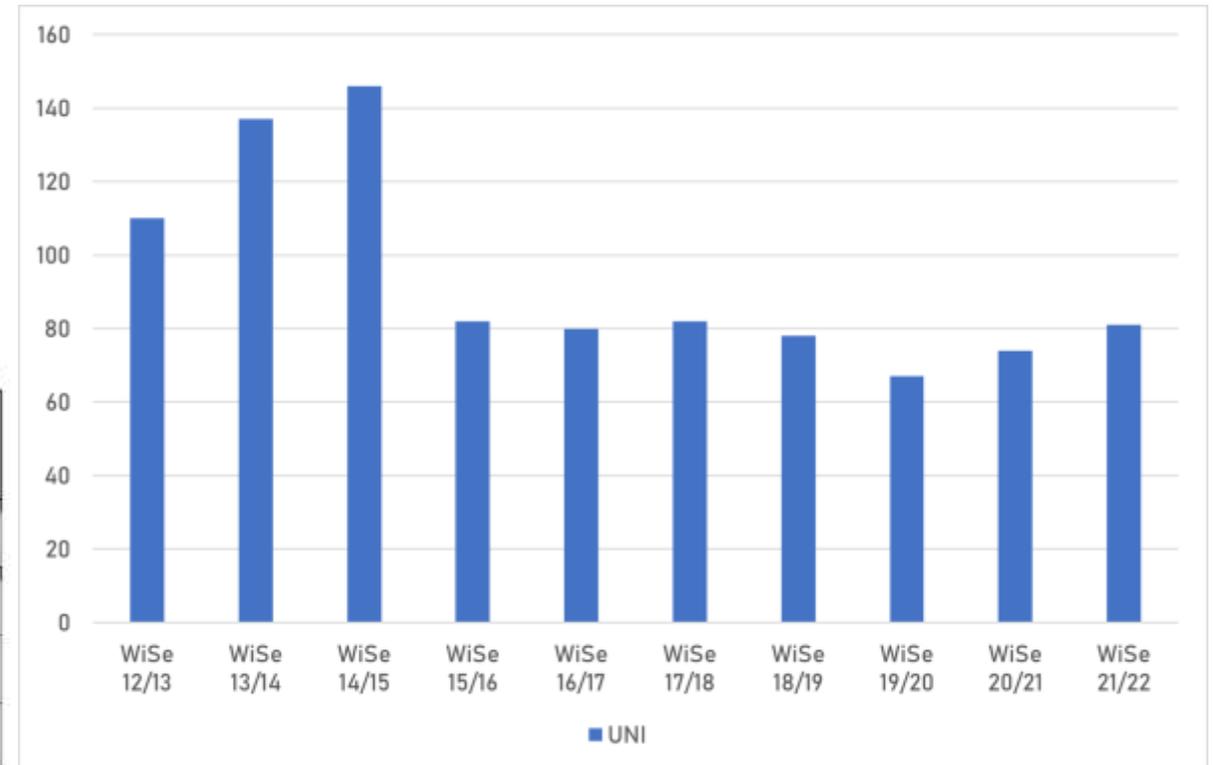


# Results: First semester student numbers

- Austria
  - Only two universities
  - Highest numbers 2012 to 2014
  - Stagnating numbers since then
  - ~80 new students every year

	WiSe 12/13	WiSe 13/14	WiSe 14/15	WiSe 15/16	WiSe 16/17	WiSe 17/18	WiSe 18/19	WiSe 19/20	WiSe 20/21	WiSe 21/22
<b>UNI AT</b>	110	137	146	82	80	82	78	67	74	81
<b>UNI CH</b>	67	65	62	53	61	73	75	80	84	98
<b>UAS CH</b>								44	30	35
<b>Total CH</b>								124	114	133

**Table 3:** First semester student numbers for all Austrian and Swiss universities  
(ETH Zürich(2021)), FHNW(2013-2021), TU Wien (2022), TU Graz (2022))

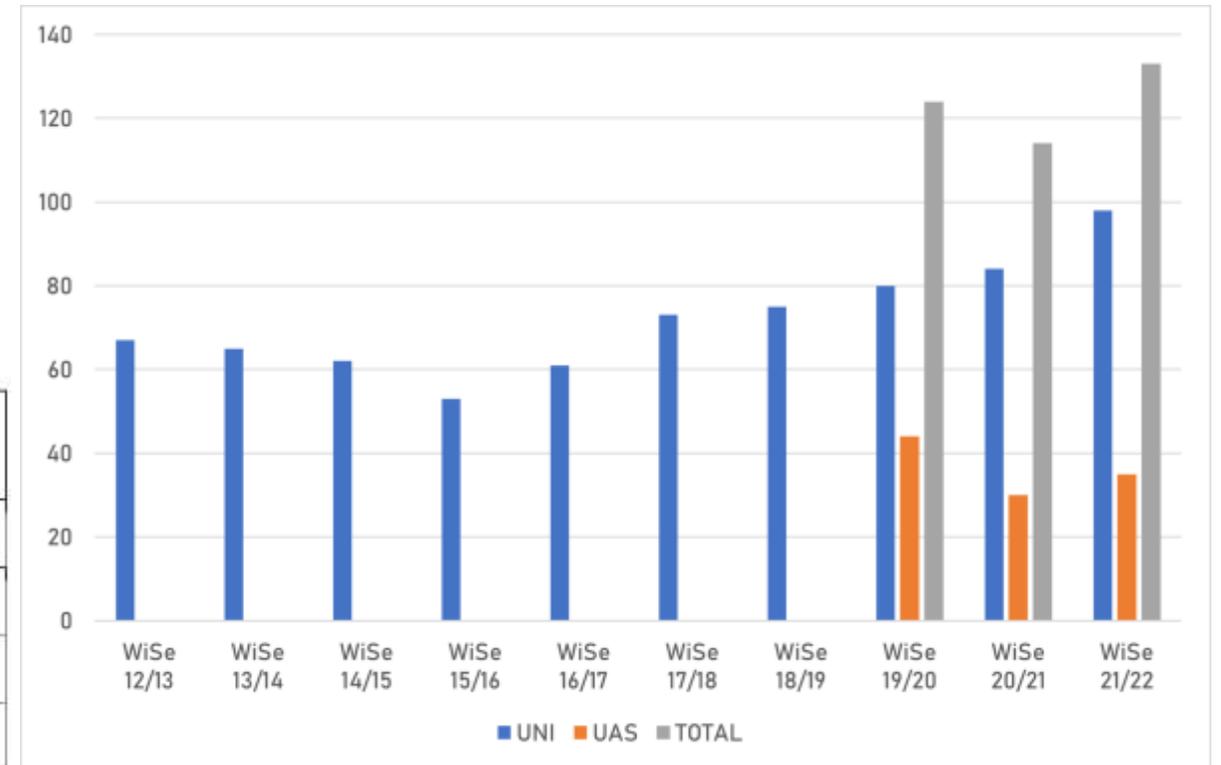


# Results: First semester student numbers

- Switzerland
  - Growing numbers at ETH Zurich since 2015
  - 70% Zurich technical university (ETH Zurich)
  - 30% University of Applied Sciences of Northwestern Switzerland (FHNW),

	WiSe 12/13	WiSe 13/14	WiSe 14/15	WiSe 15/16	WiSe 16/17	WiSe 17/18	WiSe 18/19	WiSe 19/20	WiSe 20/21	WiSe 21/22
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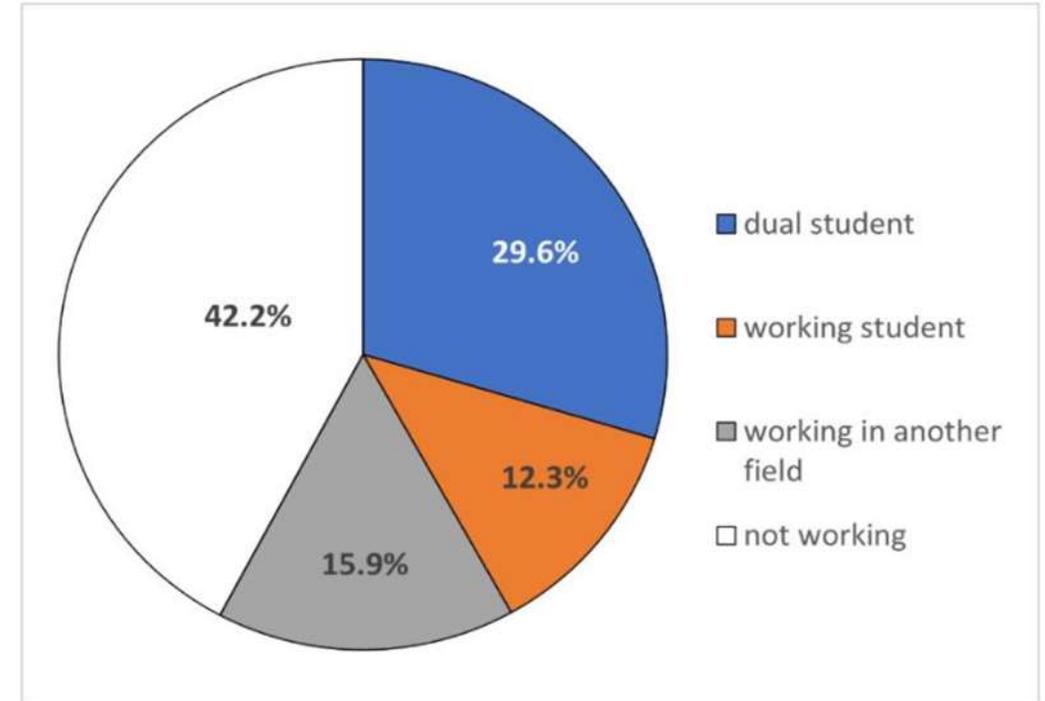
# Results: First semester student numbers

- Germany
  - Declining numbers since then 2016
  - More students at Universities of applied sciences (59%)
- Austria
  - Stagnating numbers since 2014
  - Only universities
- Switzerland
  - Growing numbers since 2015
  - Less students at Universities of applied sciences (30%)

# Results: The annual KonGeoS-survey



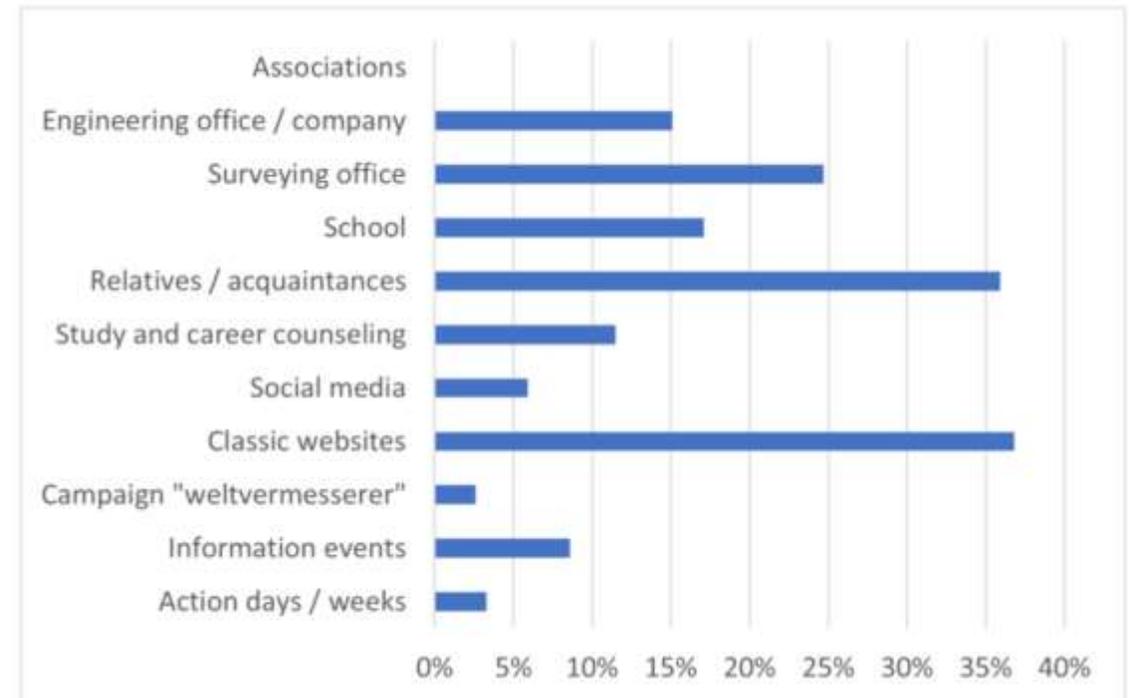
- More than half of the students are working besides their studies
- Most of them in the surveying field
- „dual studies“ are attractive



# Results: The annual KonGeoS-survey

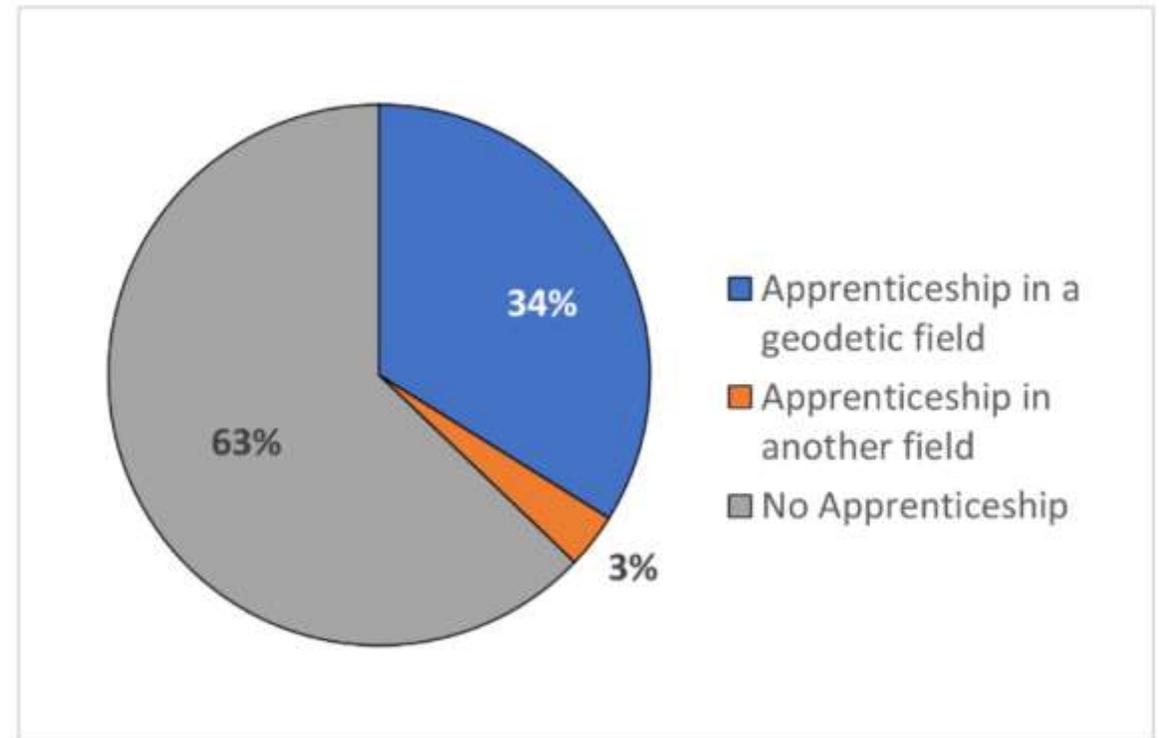


- Many learned about Geodesy from relatives and acquaintances
- Classic websites include websites to compare study programs / jobs
- Social media still has a lot of potential left



## Results: The annual KonGeoS-survey

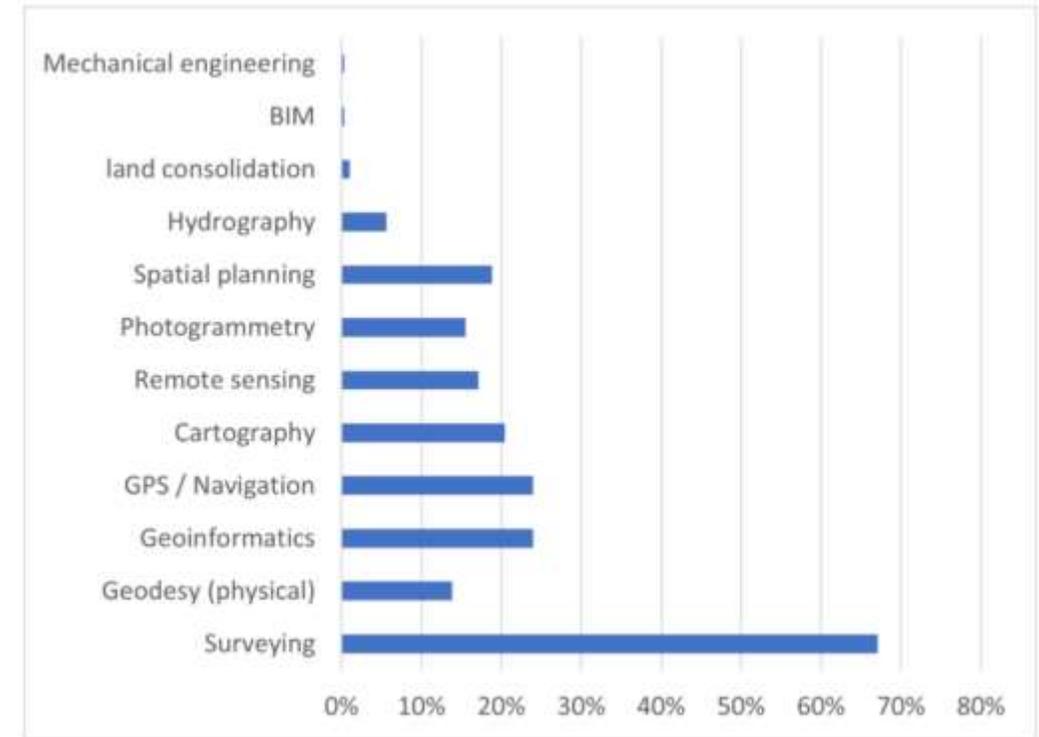
- More than a third completed an apprenticeship beforehand
- Preference of more practical education to begin with
- Bias in statistics of people entering the surveying field



# Results: The annual KonGeoS-survey



- Most students plan to work in classical surveying after their studies
- GIS, GPS and Navigation are also popular



## Conclusion

- Difficulties in finding qualified workers
  - Declining birth rates and low immigration numbers
- Too few students at universities of applied sciences and universities in Germany
- Sustainable numbers in Austria and Switzerland
- Many students completed an apprenticeship before their studies
- Most students want to work in classical surveying
- The profession needs to be brought further into the public eye



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**Thank you!**

**KonGeoS - @kongeos\_dach**



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