AGU/AGI Heads and Chairs webinars
Introductions

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Today’s Webinar

The Geoscience Workforce: Current Trends and Impacts from COVID-19

Leila Gonzales, Christopher Keane, and Lukas Poteracke
- Decrease in on-campus majors
- Graduate Enrollment is slowly breaking long-term trend
• Concern about the lack of a lag in BS degree drop

• Graduate degrees rising as oil and gas hiring contracted

• Note how far we are from any true crisis!
- Geoscience has the second highest level of female participation of any STEM field
- We are now nearly 20 years of stability
- That 50% of geoscience graduate students come from outside of geoscience leads to deviations by degree level

U.S. Geoscience Enrollment by Percent Female, 1975-2019

- Undergraduate
- Graduate
• Similar trends to enrollment as expected

• Note that women complete their degree at a higher rate than men at all degree levels

• Industry sees similar trends on initial hiring – so much that many major companies no longer have gender hiring preferences.
Topic of geoscience degree graduates mapped to their sector of first employment, 2013-2018
The total geoscience field is doing fine!

The industry components continue to shift.
Consulting / environmental services and government are the primary industries where geoscientists work.

Other sectors*
- Agriculture, Forestry, Fishing and Hunting: 0.05%
- Retail Trade: 0.01%
- Finance and Insurance: 0.07%
- Accommodation and Food Services: 0.002%

<table>
<thead>
<tr>
<th>Industry Sector</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Professional, Scientific, and Technical Services</td>
<td>39.1%</td>
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<tr>
<td>Public Administration</td>
<td>27.2%</td>
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<tr>
<td>Mining, Quarrying, and Oil and Gas Extraction</td>
<td>9.3%</td>
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<td>Educational Services</td>
<td>8.8%</td>
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<tr>
<td>Management of Companies and Enterprises</td>
<td>3.3%</td>
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<tr>
<td>Manufacturing</td>
<td>3.1%</td>
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<tr>
<td>Admin and Support and Waste Mgmt and Remediation Svs</td>
<td>2.9%</td>
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<tr>
<td>Other Services (except Public Administration)</td>
<td>1.8%</td>
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<tr>
<td>Construction</td>
<td>1.1%</td>
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<tr>
<td>Utilities</td>
<td>1.0%</td>
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<tr>
<td>Wholesale Trade</td>
<td>1.0%</td>
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<tr>
<td>Transportation and Warehousing</td>
<td>0.5%</td>
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<tr>
<td>Information</td>
<td>0.3%</td>
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<tr>
<td>Health Care and Social Assistance</td>
<td>0.2%</td>
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<tr>
<td>Arts, Entertainment, and Recreation</td>
<td>0.2%</td>
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<tr>
<td>Other sectors*</td>
<td>0.1%</td>
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Credit: AGI; data derived from the U.S. Bureau of Labor Statistics, Occupational Employment Statistics
All Occupations: 3.7%

Other STEM fields
Computer and math: 12.1%
Life, physical, social sci.: 4.7%
Engineers: 3.8%

Source: AGI; data derived from U.S. Bureau of Labor Statistics, Employment Projections
Projected Geoscience Workforce Changes by Industry
2019-2029

Source: AGI; data derived from U.S. Bureau of Labor Statistics, Employment Projections
Departments

Most departments expecting cuts of 5-20% as of February 2020.

Will do follow up surveying to assess actual budget cuts for AY 2020-2021.
Majority of departments are reporting no impacts.

Most impacts occurred during Spring 2020.

Staff furloughs continue thru August for some departments, reduced hours for staff more common in June.
Departments

Course instructional formats

- In-person
- In-person with safety measures
- Flipped/blended
- HyFlex
- Online only

Academic departments

Spring 2020 (start)  Spring 2020 (end)  June 2020  July 2020  August 2020
Spring 2020
93% changed to virtual/at-home
4% terminated lab sections
5% no change
Departments

Spring 2020
Conversion to virtual: 63%
Cancelled field course: 34%

Local field activities included self-guided investigations and in-person instruction with a small number of students.
Impacts to research and project activities, Spring 2020

Respondents

- Deferred to later time
- Mode changed to literature review
- Mode changed to virtual or computational
- Active research terminated
- Planned research cancelled
- Other
- No impact

Faculty • Post-docs • Students
Academics

Methods currently being used for work and research, June-August 2020

- Computational research
- Fieldwork
- Lab-based activities
- Literature review and writing
- Online research
- Other

Respondents

- Faculty
- Post-docs
- Students
Recent Geoscience Graduates

Employment of recent geoscience graduates by graduation year

- Academic faculty
- K-12 faculty
- Post-docs
- Non-academic geoscientists
- Enrolled in degree program
- Not employed

Respondents

- 2014-2018
- 2019
- 2020

American Geosciences Institute
No deviation from long-term employment trends of recent graduates.

77% of unemployed recent graduates are seeking employment in the geosciences, and just over half are seeking employment outside the geosciences.

Most common reasons for seeking employment outside of the geosciences:
Lack of job in geosciences
Lack of skills or training
Industry sectors of employed recent geoscience graduates, August 2020

- Agriculture, Forestry, Fishing, and Hunting: 0.4%
- Oil and Gas: 4.5%
- Mining: 0.8%
- Utilities: 0.8%
- Construction: 0.4%
- Manufacturing: 0.4%
- Transportation and Warehousing: 0.8%
- Environmental Services: 13.6%
- K-12 Education: 3.7%
- 2-year College: 1.7%
- 4-year University: 40.5%
- Research Institute: 0.4%
- Nonprofit/NGO: 5.4%
- Federal Government: 8.3%
- State Government: 14.9%
- Local Government: 2.5%
- Not specified: 0.8%

Percentage of employed recent geoscience graduates
Solid earth and all geoscience categories generally follow trend of early reporters.

**August 2020**

Early reporters

Y-o-Y: -2.4%

M-o-M: +20%

Credit: AGI; data derived from the U.S. Census Bureau, Current Population Survey
Percentage of all unemployment insurance claims

Geoscience
Usually: 9-12%
Apr-May: 6-7%
Jun – Jul: 9-8%

July 2020, 52% of claims from hospitality, retail, and healthcare (37%) and industry not specified (15%).
Year-over-Year Change in Employment by Industry Sector

- Oil and gas extraction
- Architectural and engineering services
- Management and technical consulting services
- Colleges and universities
- Local government, excluding education
- Mining, except oil and gas
- Specialized design services
- Computer systems design and related services
- Scientific research and development services
- Other professional and technical services
- Federal, except u.s. postal service
- State government, excluding education

Small businesses

• Impacts larger in mining & oil and gas, particularly in the support services subsector, than in environmental service/consulting sector

• Paycheck protection program loan support important

• Operating revenues down, but cash on hand ok and still able to meet financial obligations

• Business operations – minimal impact in terms of closures, staffing and supply chain disruptions.

• Signs of improvement by end of June, continuing thru August.
Expectations for financial performance: current calendar year relative to last year

<table>
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<tr>
<th>Companies</th>
<th>February 2020</th>
<th>June 2020</th>
<th>July 2020</th>
<th>August 2020</th>
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<tr>
<td>17% Lower than last year</td>
<td>42% Similar to last year</td>
<td>58% Higher than last year</td>
<td>60% Higher than last year</td>
<td>26% Higher than last year</td>
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Workplace policies available to employees

- Permanent in-office attendance
- Limited in-office attendance
- Limited work from home/telework
- Permanent remote/telework
- Use of shared workspace (e.g., WeWork)
- Fieldwork activities, site visits
- Access to lab facilities

Data by month:
- February 2020
- June 2020
- July 2020
- August 2020
Moderately to extremely driven by COVID-19

Workplace safety: 56%
Financial outlook: 44%
Hiring new employees: 40%
Regulations: 40%
Workplace safety is top concern for departments, faculty, and students.

Concerns over hiring new faculty, yet only 10% of departments report active faculty searches.

Concern over teaching (also shared by faculty) and retaining/attracting students, yet students more concerned with employability, and those who are not graduating are planning on returning full-time.
47% report no decision

37% plan to go online-only instruction

44% plan to have in-person instruction with safety measures, including hybrid formats.

Most reporting multiple options for next term.
Looking ahead

• Virtual labs and field experiences
  • Develop materials into introductory courses / modules that can be used to complement in-person instruction
  • Use materials in existing non-lab / non-field courses as enrichment activities
  • Use for when in-person instruction cannot take place (inclement weather, health, no faculty, etc.)
Looking ahead

• Employers
  • Possible shift to more telework in the long-term
  • Positive impacts seen with increased virtual collaboration.
  • Less travel = more contact with clients via phone/email

• Telework
  • Challenges with working from home when children are also doing remote schooling.
An audiovisual recording of today’s webinar will be available in the coming weeks.

Contact Pranoti Asher at pasher@agu.org if:
• you have any additional questions or comments
• you would like to join the AGU Heads & Chairs community
• you would like to participate in the AGU Heads & Chairs workshop at the AGU Fall Meeting
Upcoming Webinars

Heads & Chairs Webinars

**Oct 9:** Tools and Strategies for Finding Programmatic Strengths and Weaknesses

Other Upcoming Webinars

**Sep 30:** Discussion on COVID-19 Impacts to the Geoscience Enterprise:
Geoscience Employers and Non-academic Professionals

**Nov 17 & 19:** Responding to Societal Needs with 3D Geology (2-part series)

To view previous and register for upcoming AGU Heads & Chairs webinars:
http://www.americangeosciences.org/webinars