

The View from Canada: Graduation, Retention, and Job Market Needs in the Earth Sciences

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Canadian Federation of Earth Sciences

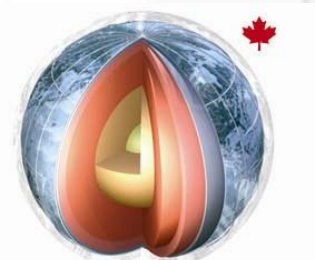
www.geoscience.ca

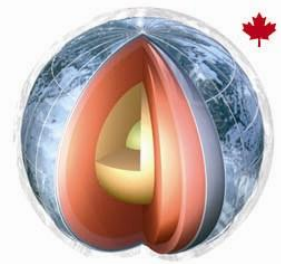
Rob Raeside, Dave Eaton,

Council of Chairs of Canadian Earth Science Departments

The state of affairs in Canada

- 35 universities offering full Earth Science degree programs – all provide data to CCCESD
 - geology, geological engineering, geophysics, environmental science, oceanography
- 5 additional ‘feeder’ schools
- uniform data collection since 1974 on undergraduate numbers and graduations

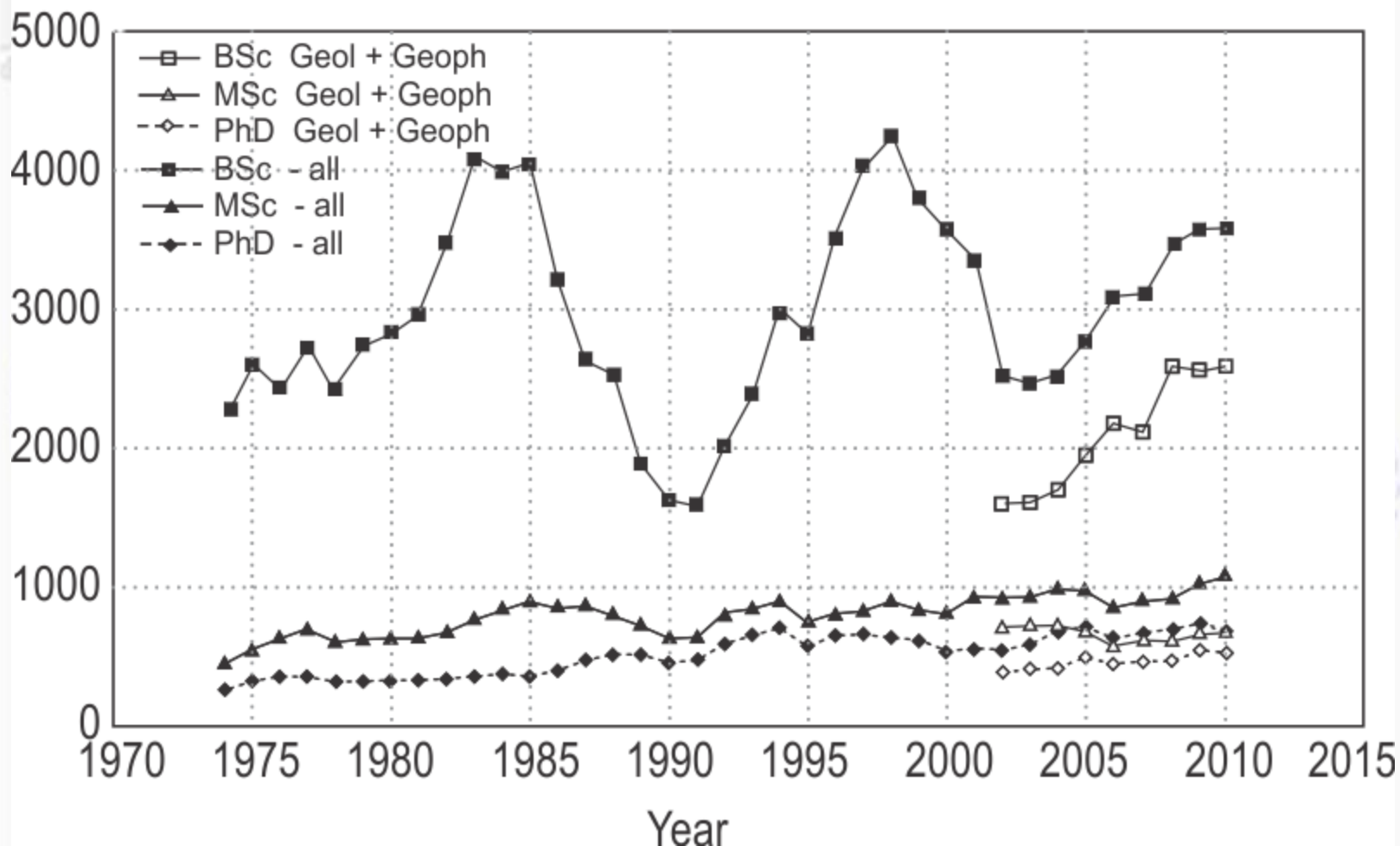


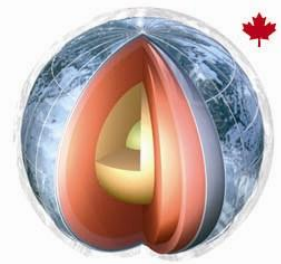


Students enrolled



Fig. 1. Number of BSc (> year 1), MSc and PhD program registrants

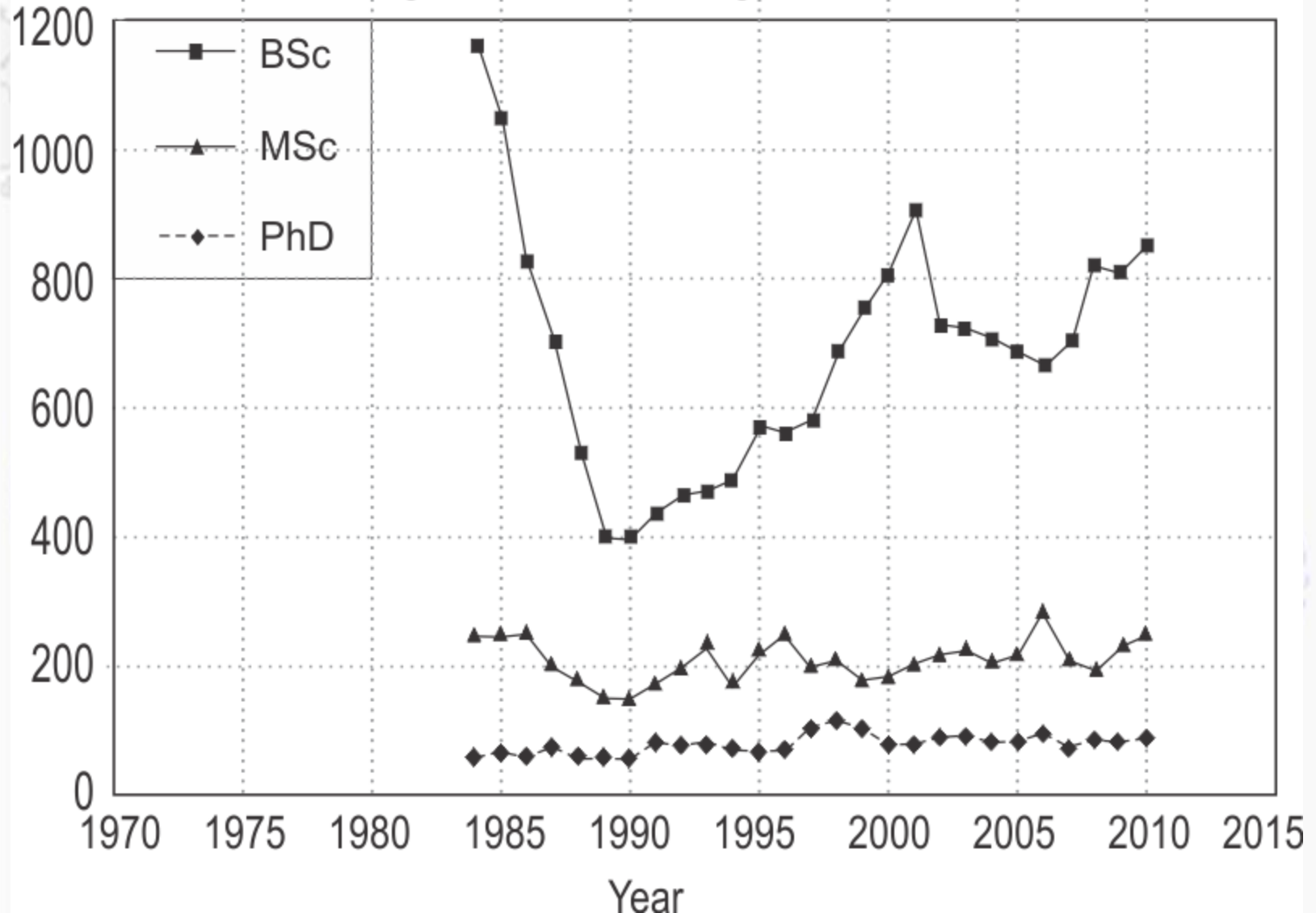


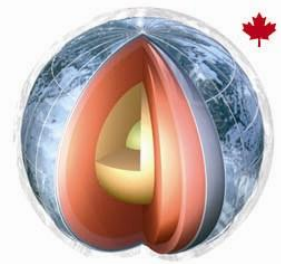


Students graduated



Fig. 3. Numbers of graduated students

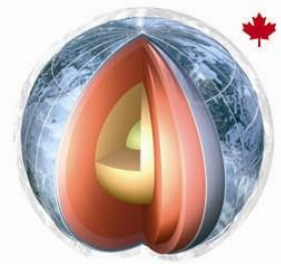




Estimated retention rates in Earth Science



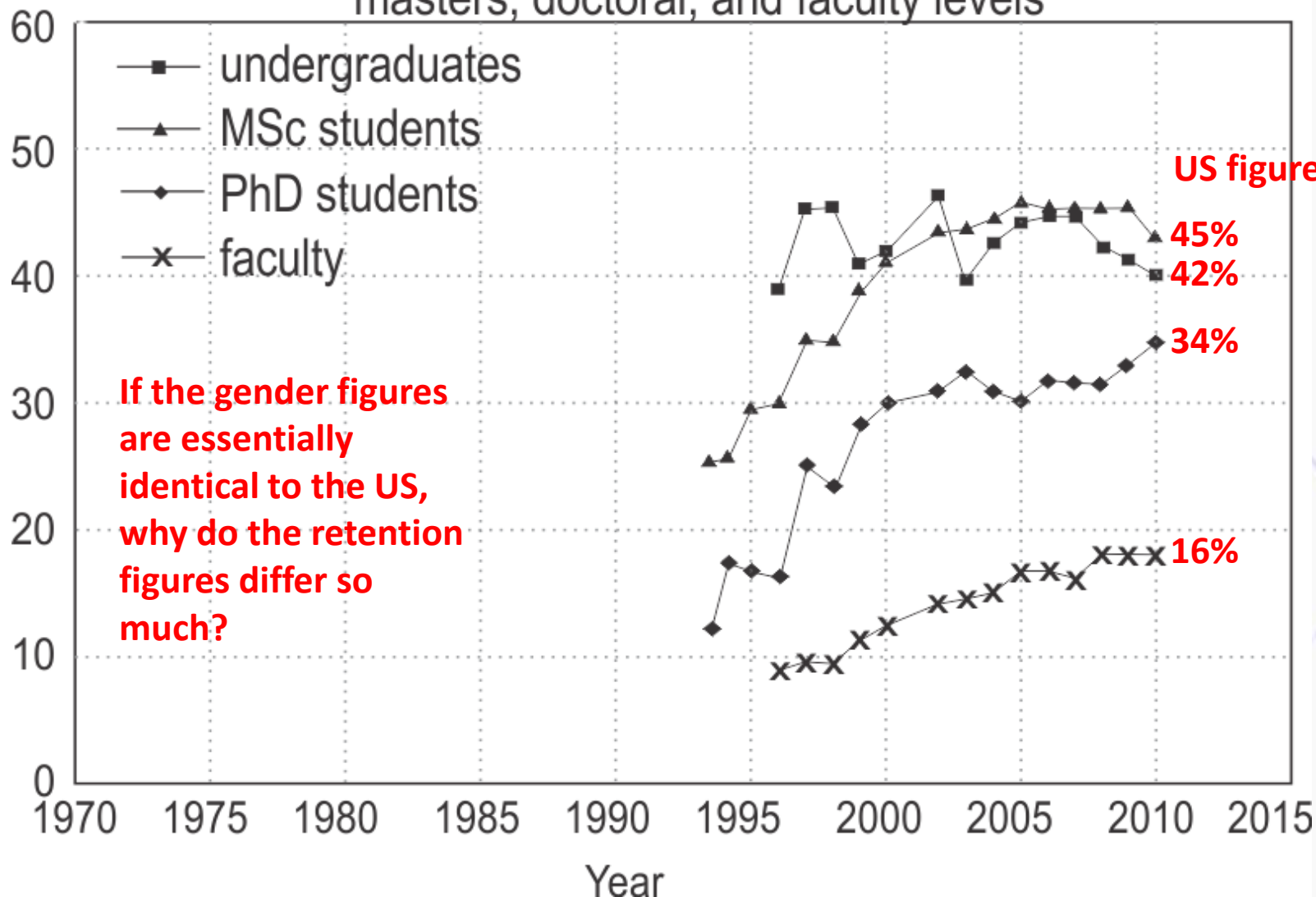
- National average estimated at ca. 90%
- Individual cases:
 - **University of Calgary** ca.
 - Dalhousie University ca. 85%
 - Acadia University ca. 94%
- lateral influx has resulted in >100% in cases
- Atlantic Universities have an overall retention rate of 75-85% (all programs)
- We do NOT know how many graduates we lose to non-geoscience professions nation-wide. Suggested figures of ca. 20%
- Why does this differ from the US scene?

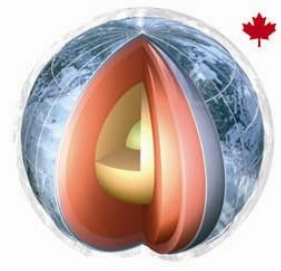


Gender corollary



Fig 4. Percentage of females in each of undergraduate, masters, doctoral, and faculty levels

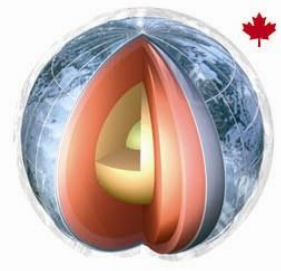




Field training as part of university degree program



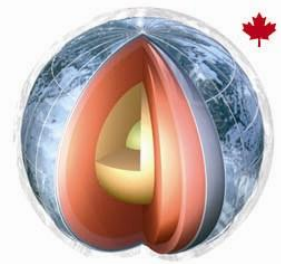
- Canada: short field training built into semesters (just before, just after), allowing students to have jobs (in the geosciences) during the summer.
 - More summer jobs than students is the reality
 - Students graduate with at least 2 summers relevant experience
- US: departmental field camps; at least one summer field training required for undergraduate degree. Expensive, prevents building up work experience



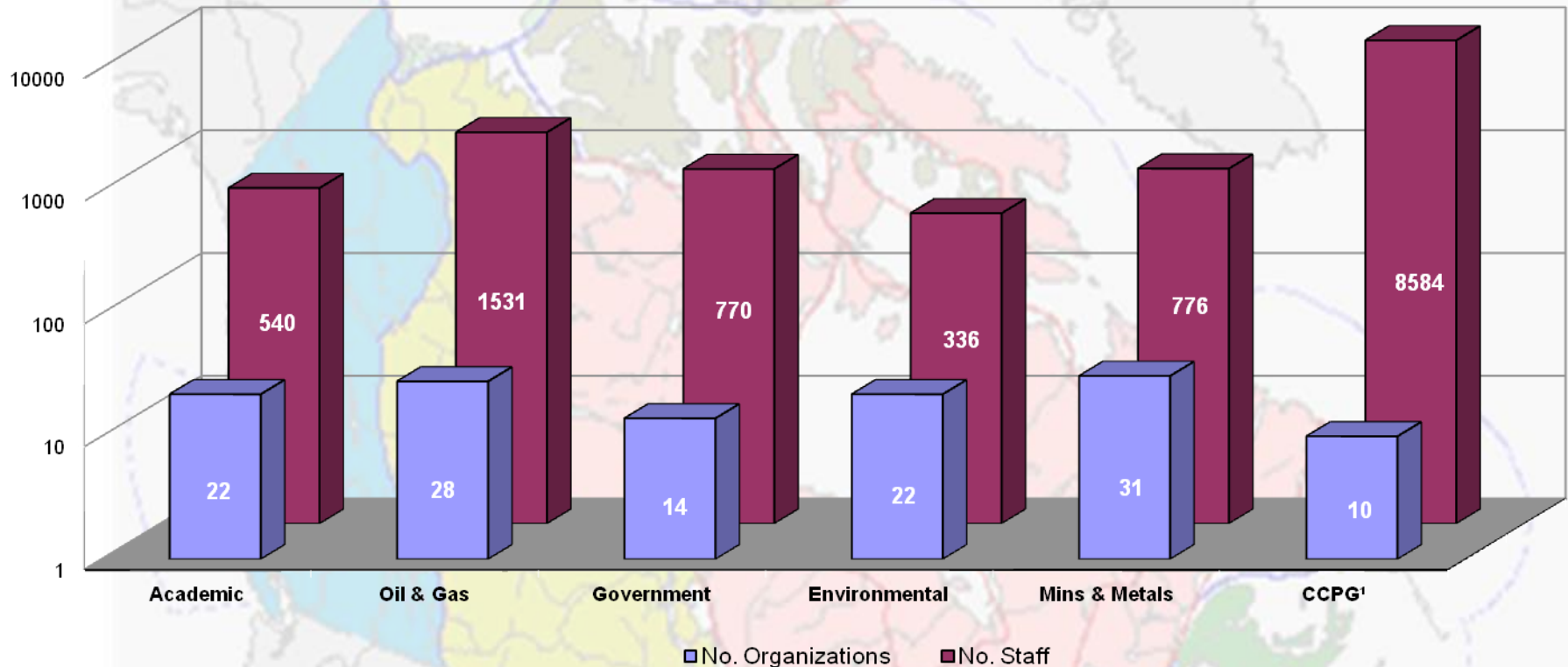
The Canadian Job Market



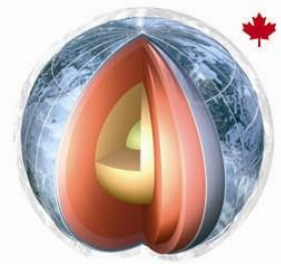
- 2007-2008
 - CFES carried out a survey among 127 employer organizations
- Published August 2008
 - Economic meltdown, quick resource sector recovery
- data are therefore likely conservative in resource sectors.



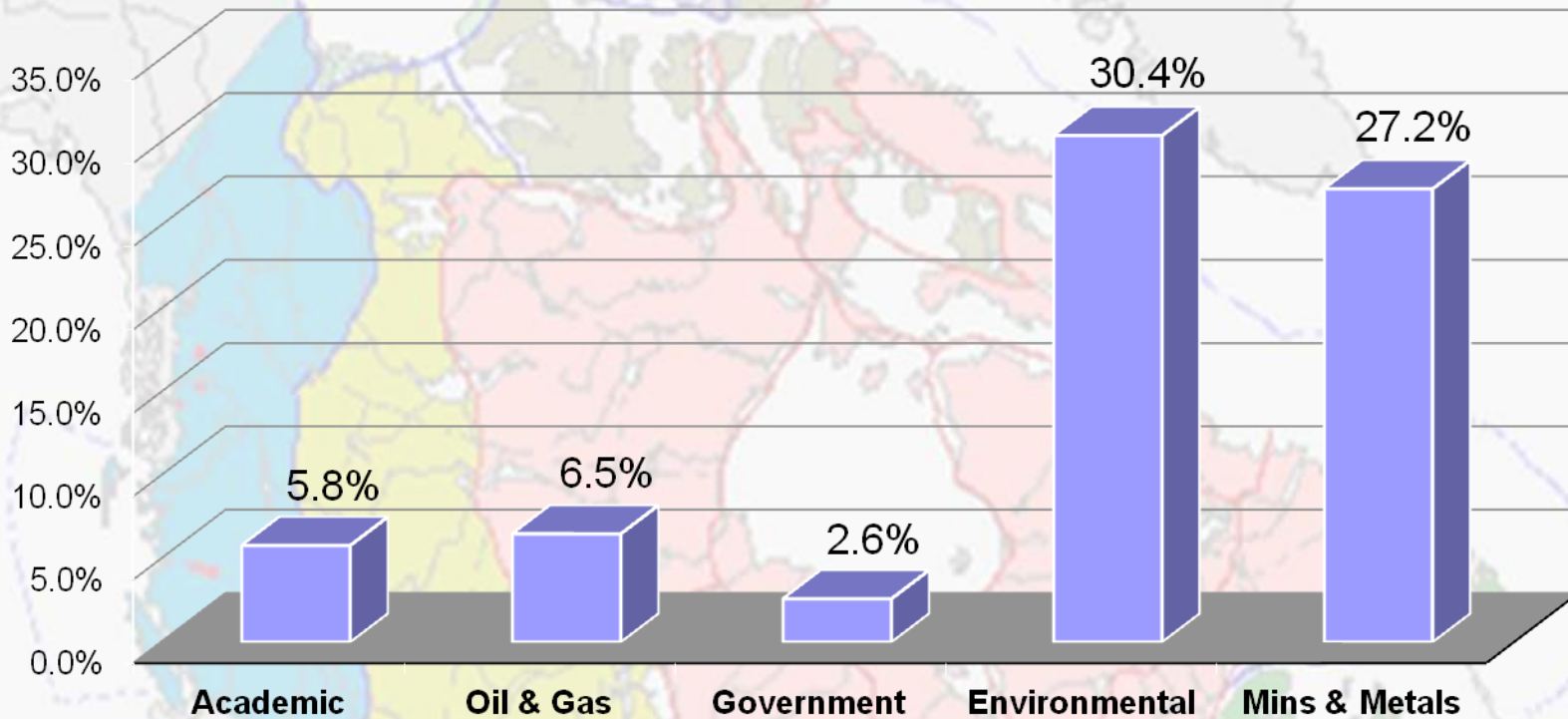
Number of Responding Organization and Geo-science Staff/Members

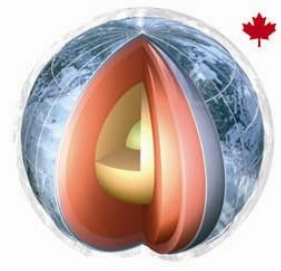


¹CCPG = Geoscientists Canada, the Canadian equivalent to AIPG. The CCPG numbers reflect registered geoscientists in all sectors.



Expected Net Change in 5 Years (from 2008)

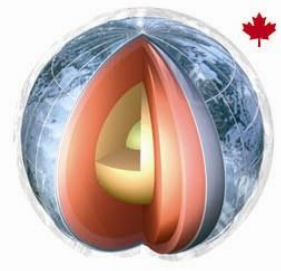




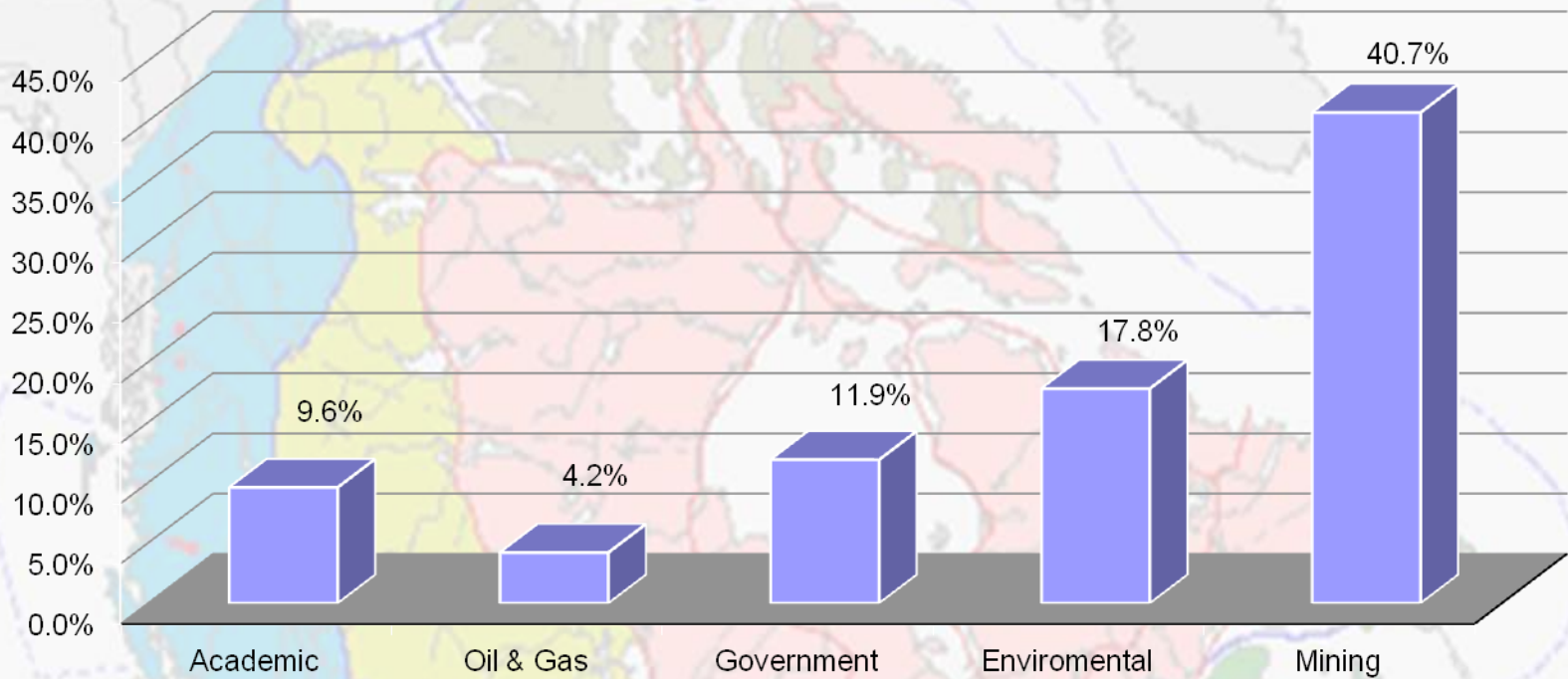
What the previous figure means for just one of these sectors: minerals



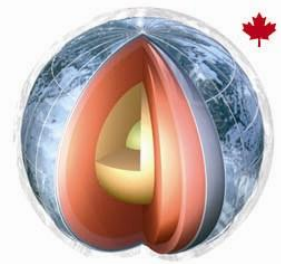
- The Mining Industry Research Council (www.mihr.ca) predicts that the Canadian mining industry as a whole needs to recruit ca. 9,000 people per year to meet the demand of replacement workers and new workers under a moderate growth scenario.
- This number is not limited to geoscientists, but includes all other occupations in the mining industry: geologists, engineers, technicians/technologists, skilled trades, labourers, etc.
- it is 10 x the Canadian overall graduation rate.....
- In case you missed it:
http://www.agiweb.org/workforce/webinar-videos/GeoWebinar_CanadianExploration.html



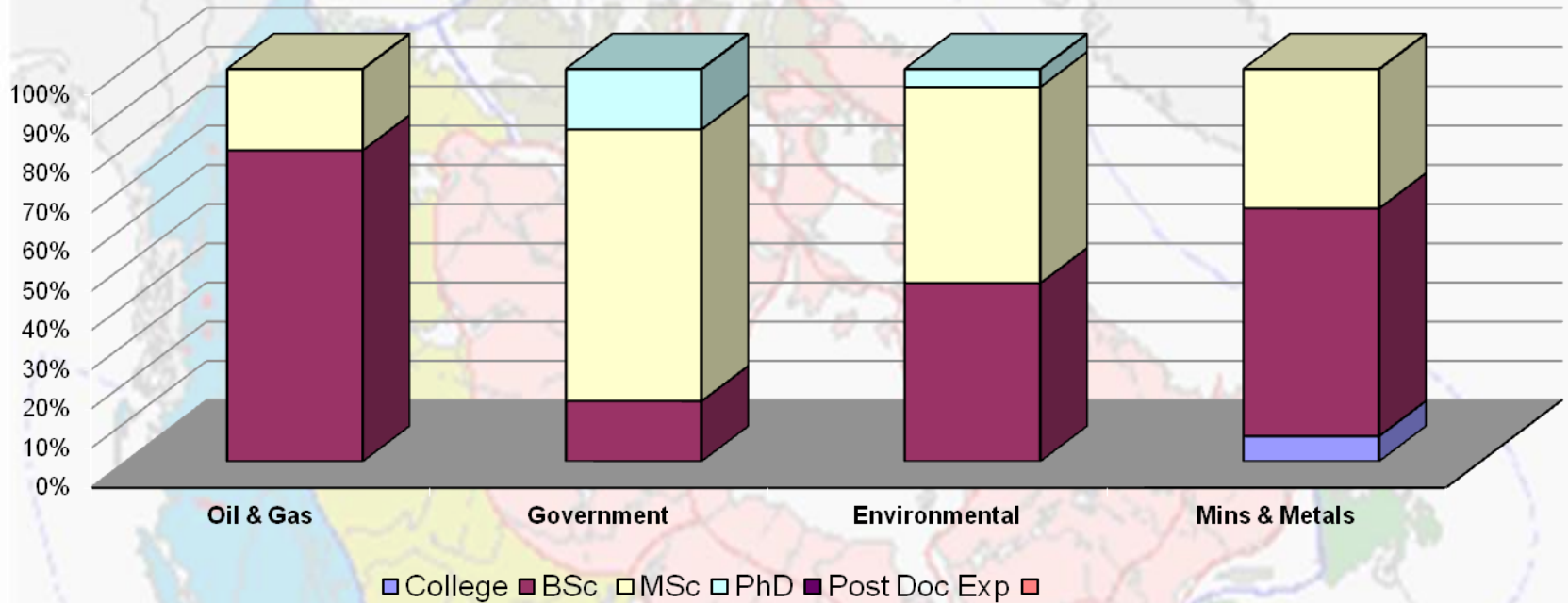
Complicating factor Temporary contracts

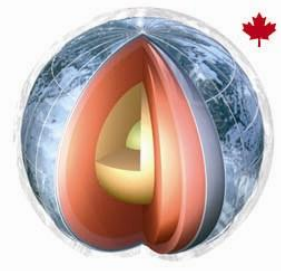


Note: Academic does not include technical staff



Education Requirements by Sector





Conclusions

Comparing the US and Canada



- Similar:
 - Degree requirements
 - Gender balance
- Different:
 - course-based field training vs. summer field camp
 - Job entry qualifications
- Anticipated shortages in Canada will cause economic havoc without recruitment of new Canadians