



REPORT ON TECHNOLOGY TRANSFER AND WEALTH CREATION (T2WC) SURVEY

Survey Objectives:

- To document technology transfer activities among APRU member universities in the Asia-Pacific region.
- To identify and highlight the key constraints and challenges faced by APRU member universities in technology transfer.
- To propose recommendations for improving national policy environments for university technology transfer and facilitating regional cooperation among APEC economies.

Survey Methodology and Sample Description:

- Structured e-mail questionnaire, administered to the TLO (technology licensing office) Director (or his/her equivalent) in the 29 member universities of APRU who have agreed to participate.
- Use of standard definitions of Association of University Technology Managers (AUTM) survey where possible.
- All statistical analysis presented is based on the sample returns, without weighting.

Distribution of Responses:

- **22 universities**
 - 10 North America
 - Asia/Austral-Asia: 9 Asia, 1 each Australia, New Zealand, South America
- **76% response rate** (91% for North American universities and 67% for Asia/Austral-Asian universities)
- **86% public universities**
- More than **70% have medical schools**
- Average of **1,546 tenure track faculty members**, 1,003 PhDs, 23,346 students, of which an average of 29% were graduate students



DISTRIBUTION OF RESPONSES

	Frequency	Percentage
North America	10	45.5
University of California, Berkeley		
University of California, Los Angeles		
University of California, San Diego		
University of California, Santa Barbara		
University of Washington		
University of Southern California		
The University of British Columbia		
University of Oregon		
Stanford University		
University of California, Irvine		
Japan	4	18.2
Kyoto University		
Osaka University		
The University of Tokyo		
Waseda University		
Asia (excluding Japan)	5	22.7
Hong Kong University of Science and Technology		
National University of Singapore		
Seoul National University		
University of Science and Technology of China		
National Taiwan University		
Australia/New Zealand	2	9.1
The University of Sydney		
University of Auckland		
South America	1	4.5
University of Chile		
Total	22	100.0

Key Findings and Policy Issues/Recommendations

- The North American Universities in APRU generally have a significantly higher level of technology creation and transfer activities than other APRU member universities. The longer history of involvement in such activities is one contributing factor.
- Technology creation and transfer intensities are increasing among all APRU member universities; they are growing at a faster rate among universities outside of North America.
- Significant differences exist between North American member universities of APRU and member universities from other regions in terms of Objectives of Technology Transfer (TT), policies governing these TT activities, technology areas of emphasis, and organizational approaches. This may reflect the diversities of environmental contexts.
- The majority of APRU member universities have not implemented systematic monitoring of the economic impact of technology transfer on new firm formation, job creation, and other economic measures.



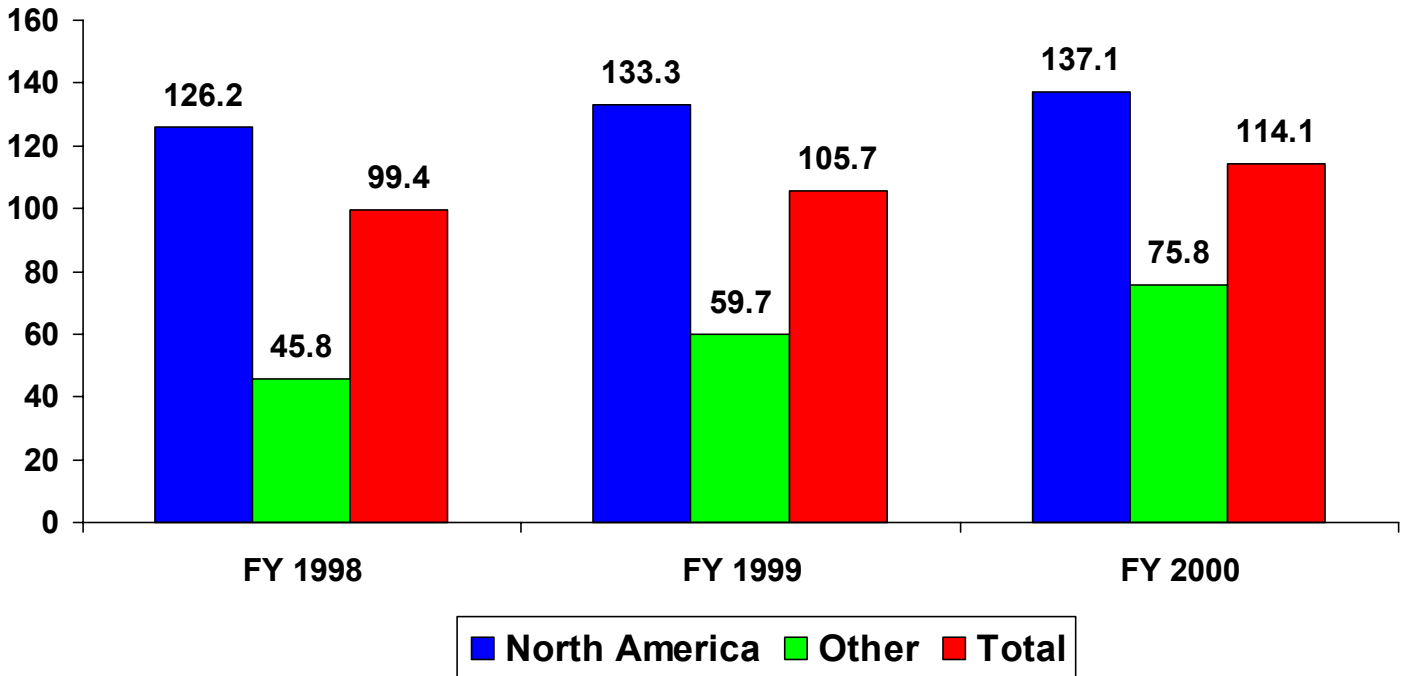
T2WC Conference Participation

20 APRU Institutions from 9 Countries Sent 64 Participants
from the following universities:

- Fudan University
 - Hong Kong University of Science & Technology
 - Kyoto University
 - National University of Singapore
 - Osaka University
 - Seoul National University
 - Stanford University
 - Tsinghua University
 - University of British Columbia
 - University of California, Berkeley
 - University of California, Los Angeles
 - University of California, Santa Barbara
 - University of Oregon
 - University of Southern California
 - University of Sydney
 - University of the Philippines
 - University of Tokyo
 - University of Washington
 - Waseda University
- 34 organizations were represented and included: 5 private, 4 government and 22 academic institutions

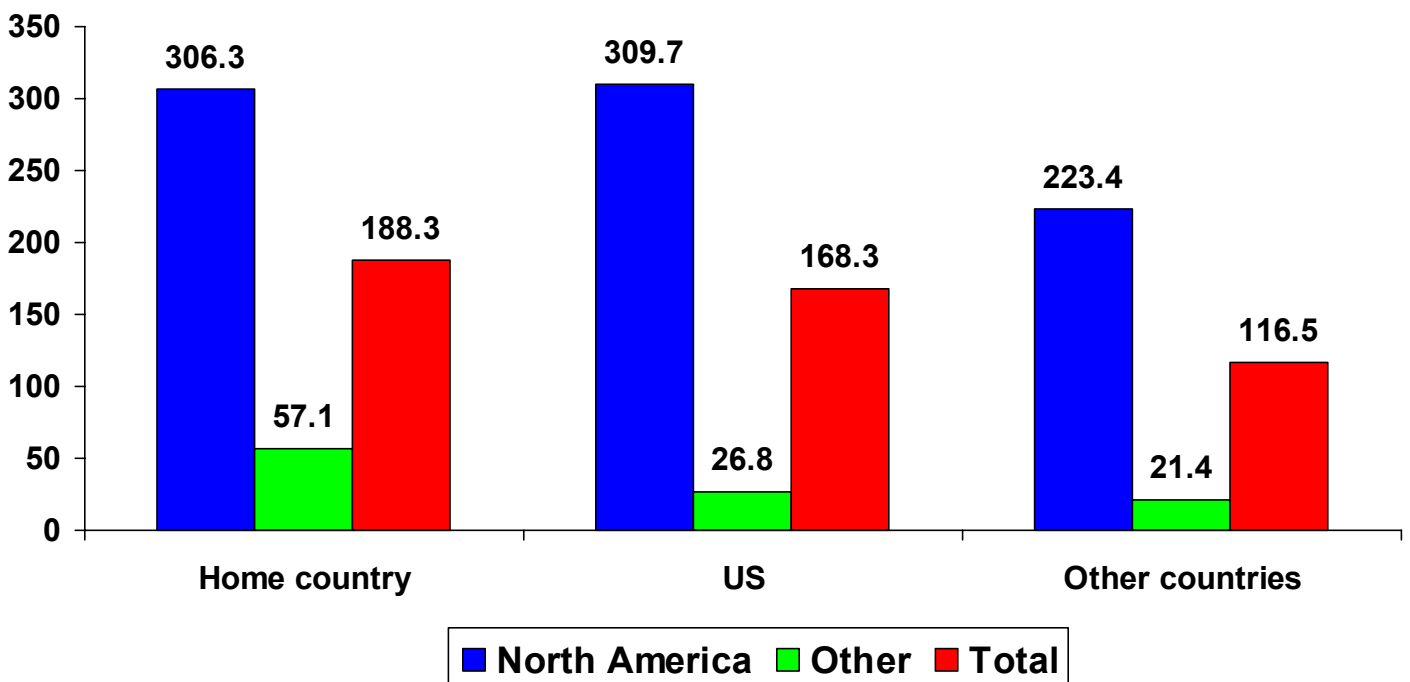
Research, Invention Disclosure and Patenting

Three year range: 99 to 114 Invention Disclosures

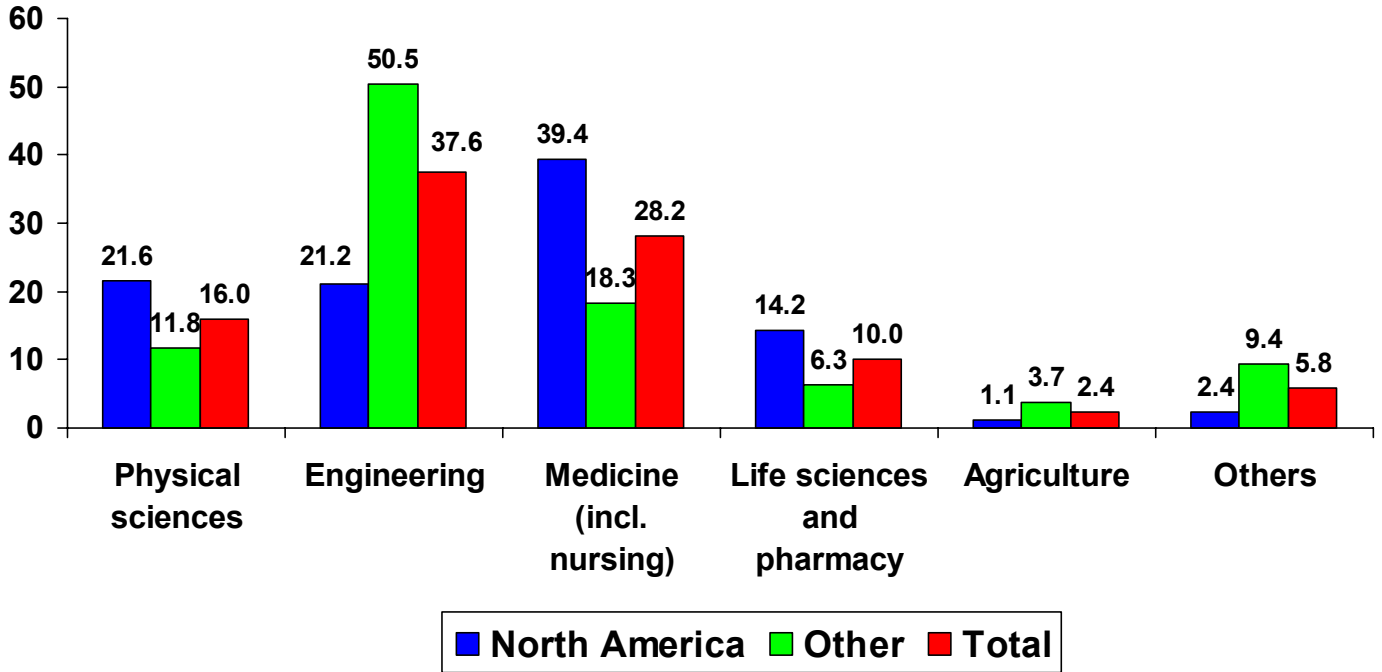


Cumulative Non-Expired Patents Issued

Range from 117 to 188
 Mean # as of end of FY2000

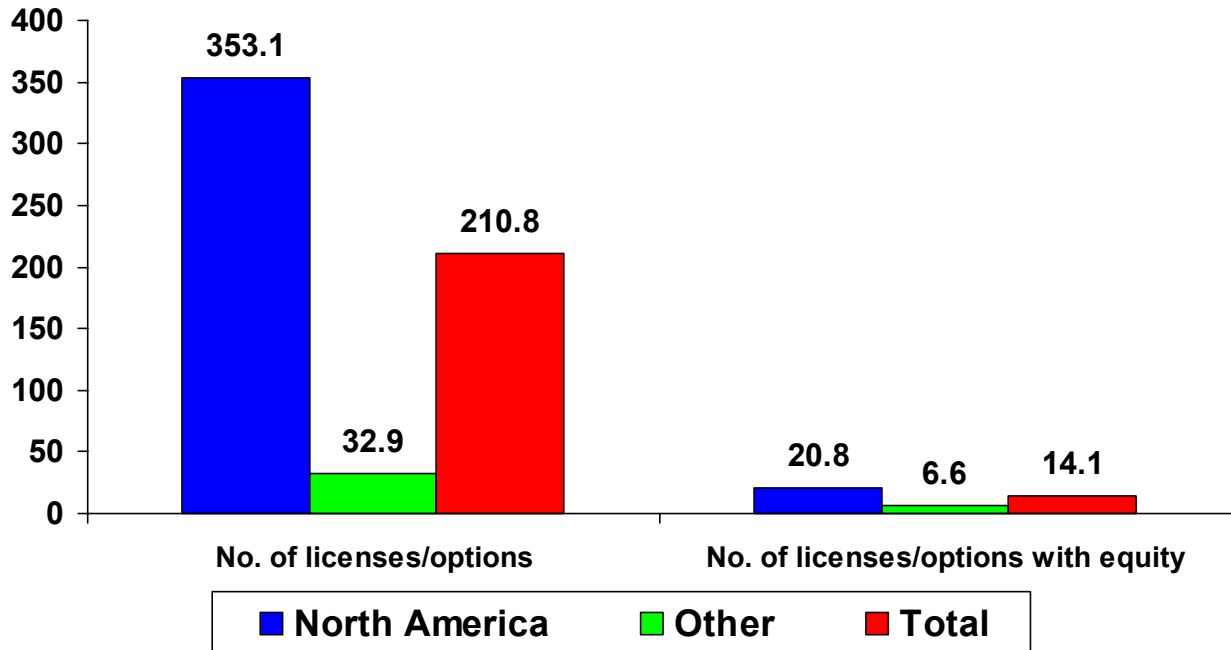


Cumulative Non-Expired Patents Issued as of End FY2000
 Mean percentage of patents generated by researchers
 in the following schools/departments

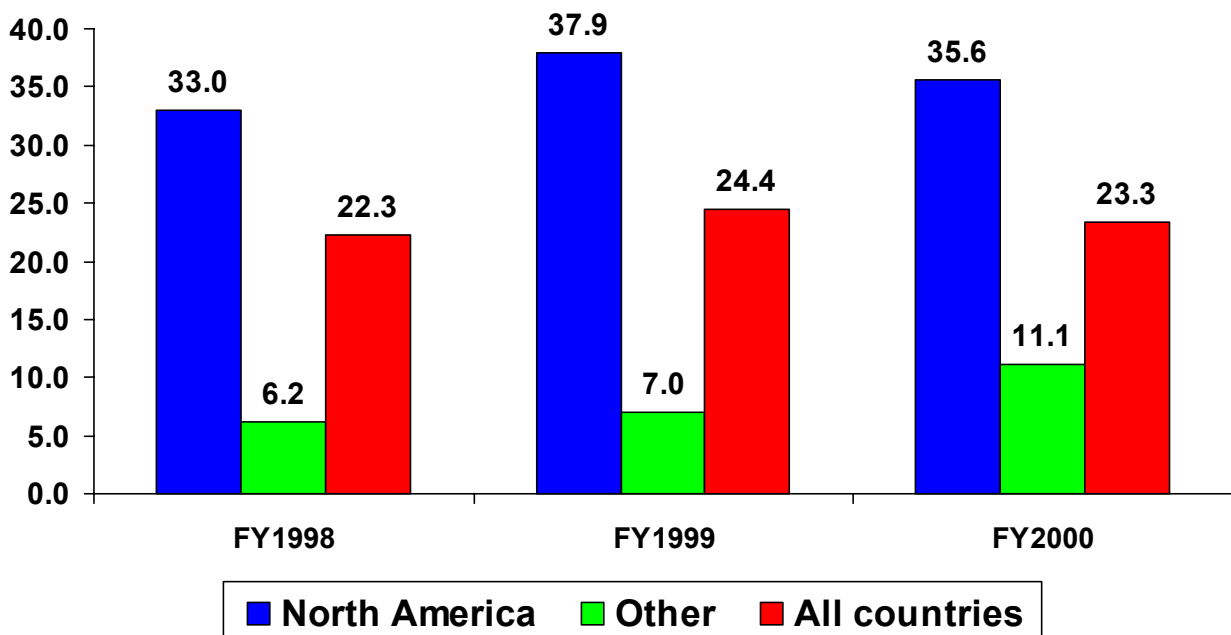


Technology Licensing

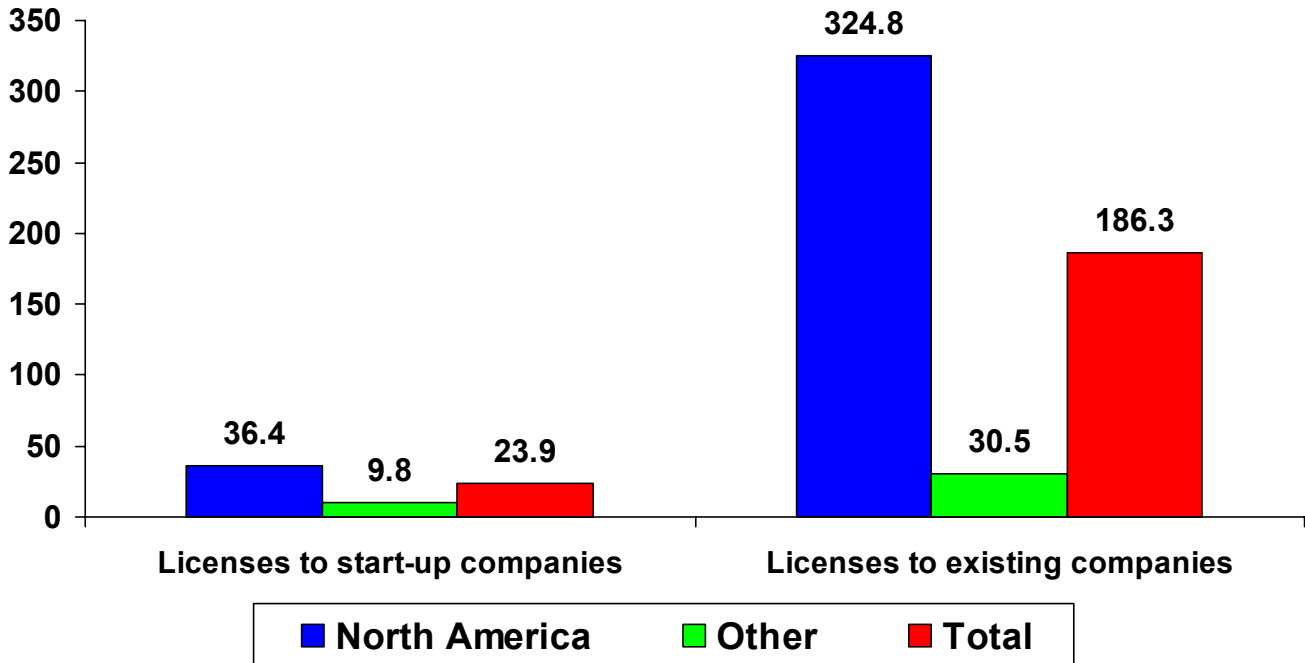
New Technology Licensing Agreements
 Mean cumulative # of licenses/options executed as of End FY2000
 (Data exclude one outlier)



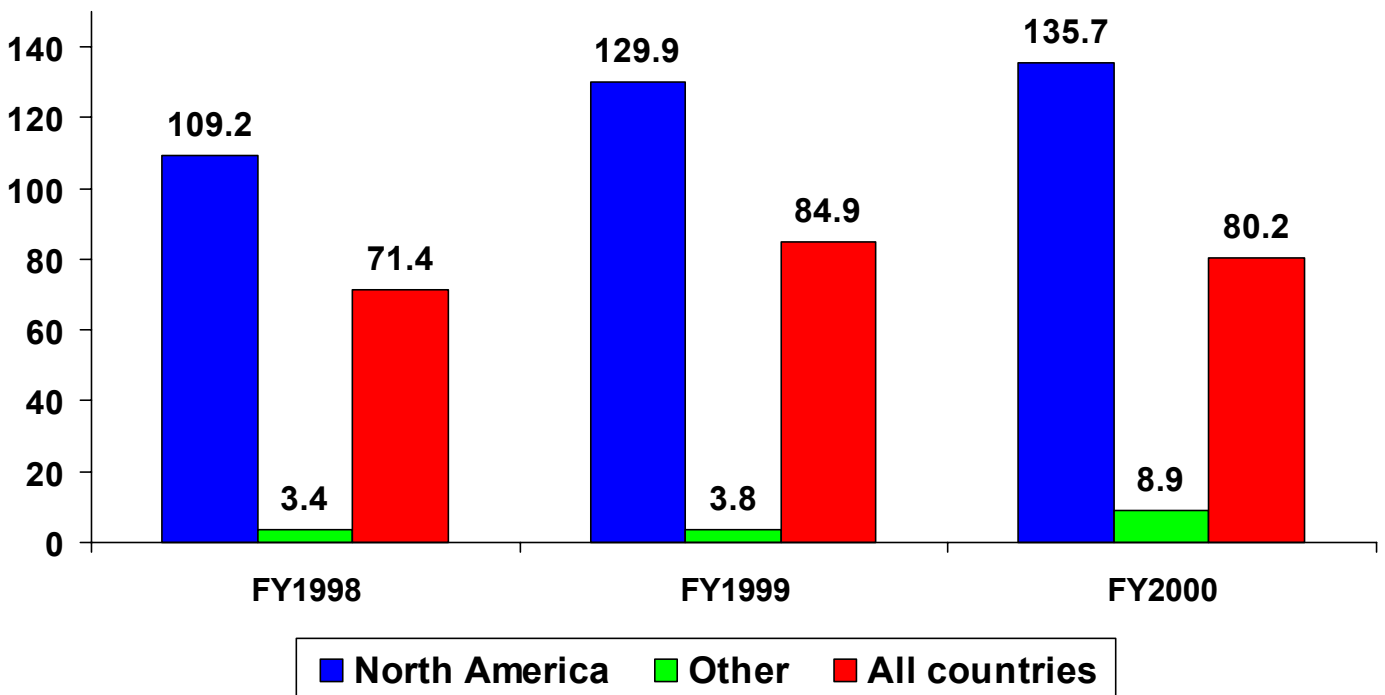
Technology Licensing Agreements According to Recipient Organization
 Mean # of licenses to existing companies



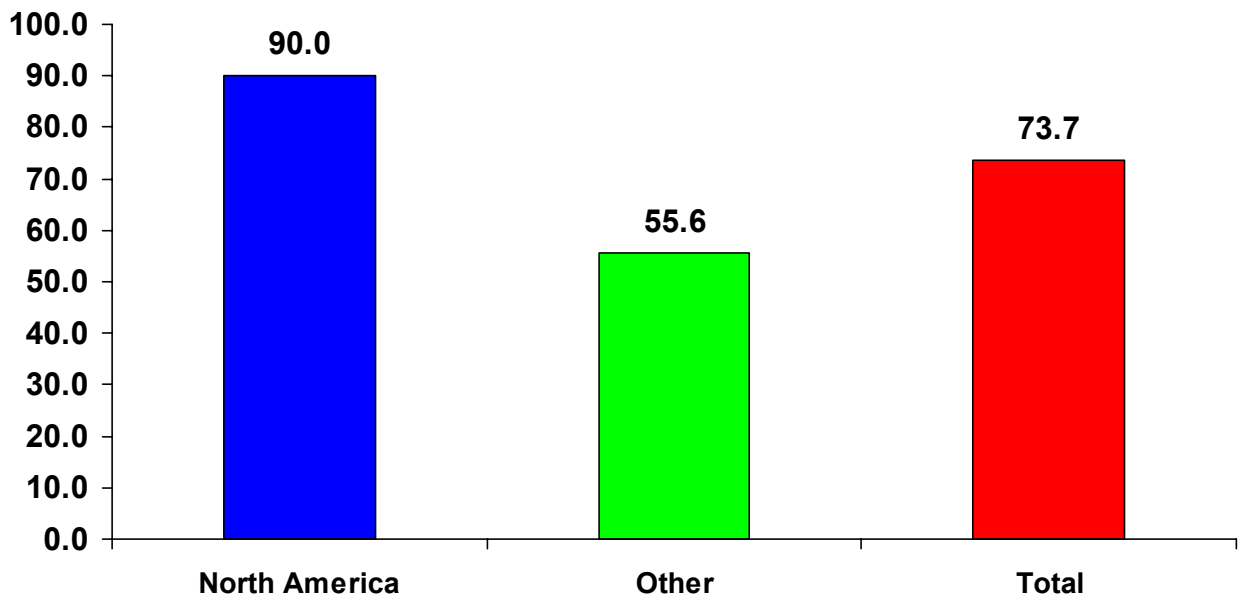
Technology Licensing Agreements According to Recipient Organization
 Mean cumulative # of licenses as of End FY2000



Licenses Yielding Income
 Mean # of licenses/options yielding license income



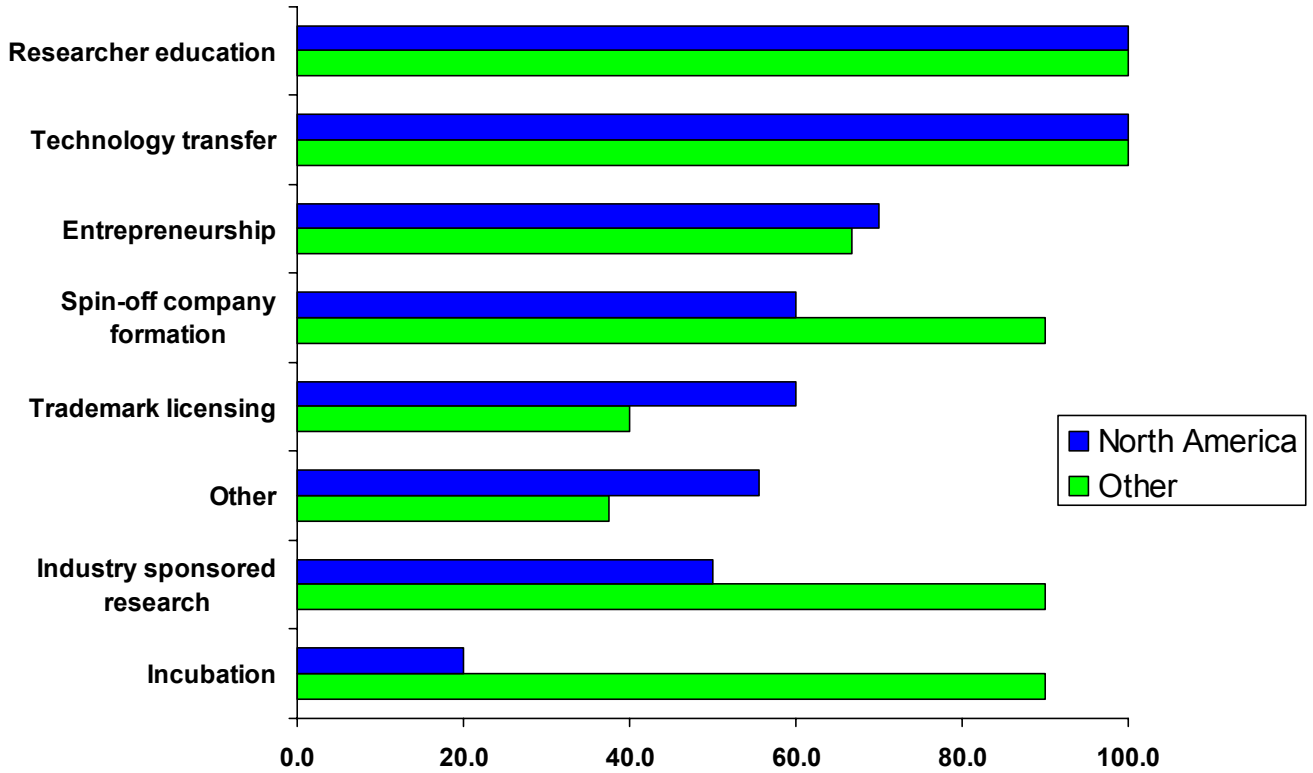
Research Funding Generated by Licensing
Did any technology licensing over past 3 years generate new sponsored research grants to university by recipient company?
(Percentage of universities responding 'yes')



Technology Transfer or Licensing Office

Range of Responsibilities for TTOs

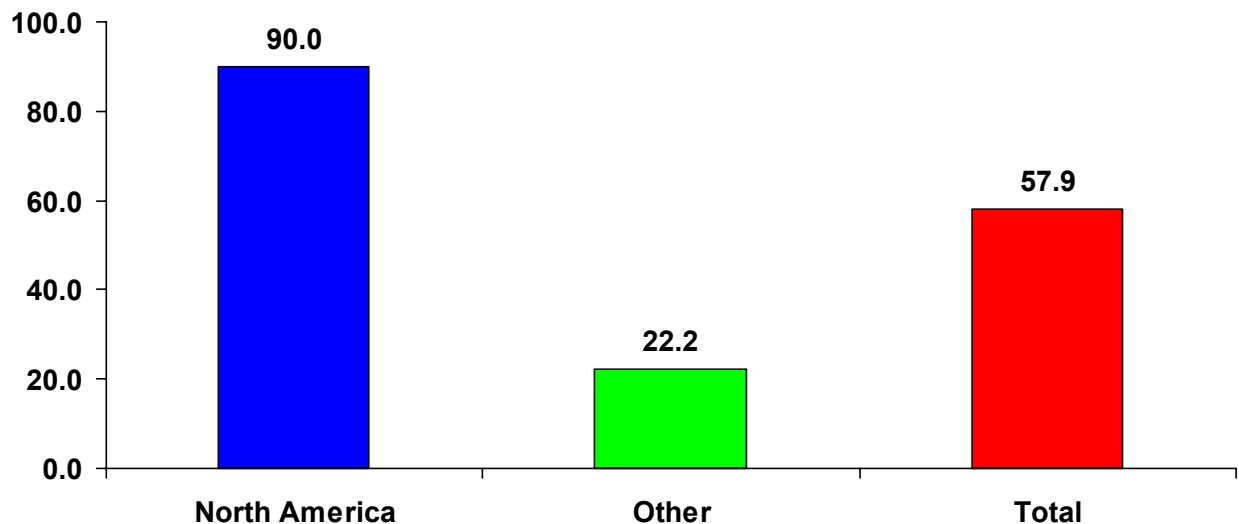
Percentage of universities whose TTOs have the following responsibilities by region



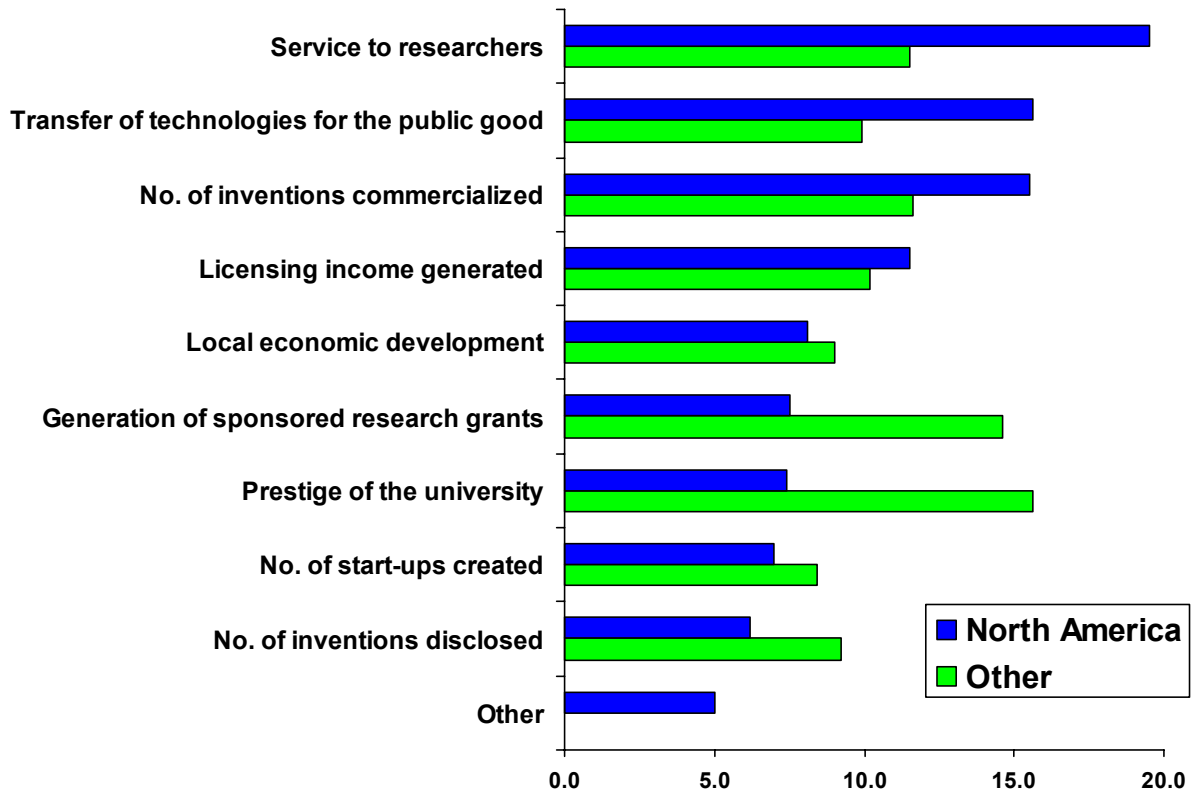
License Income Received v. Cost of Operation

Would license income received over the past three years cover the cost of the operation of the TTO?

(Percentage of universities responding 'yes')



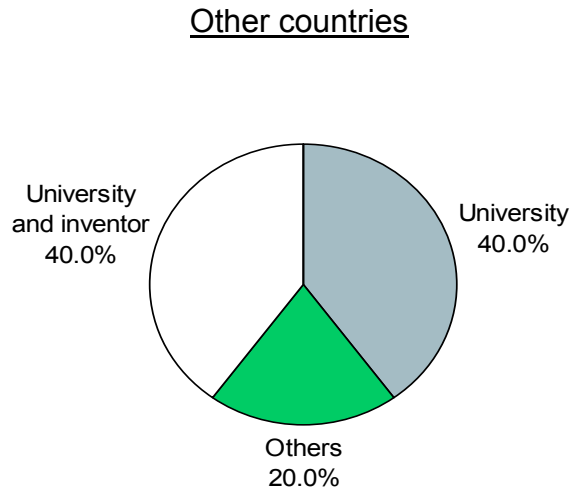
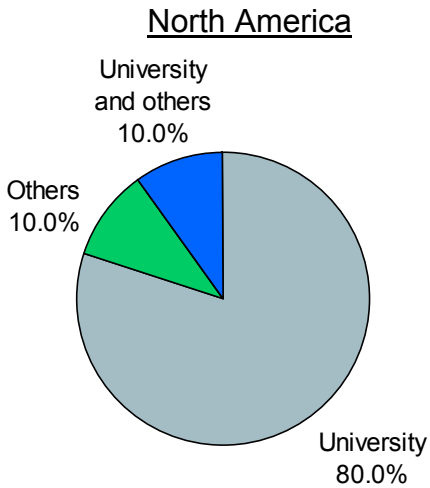
Importance of Technology Transfer Objectives
 (Mean score)



University Policies Affecting Technology Transfer

Invention Policies

Ownership of patent rights to technologies developed by faculty, students and staff
 (Percentage of universities)

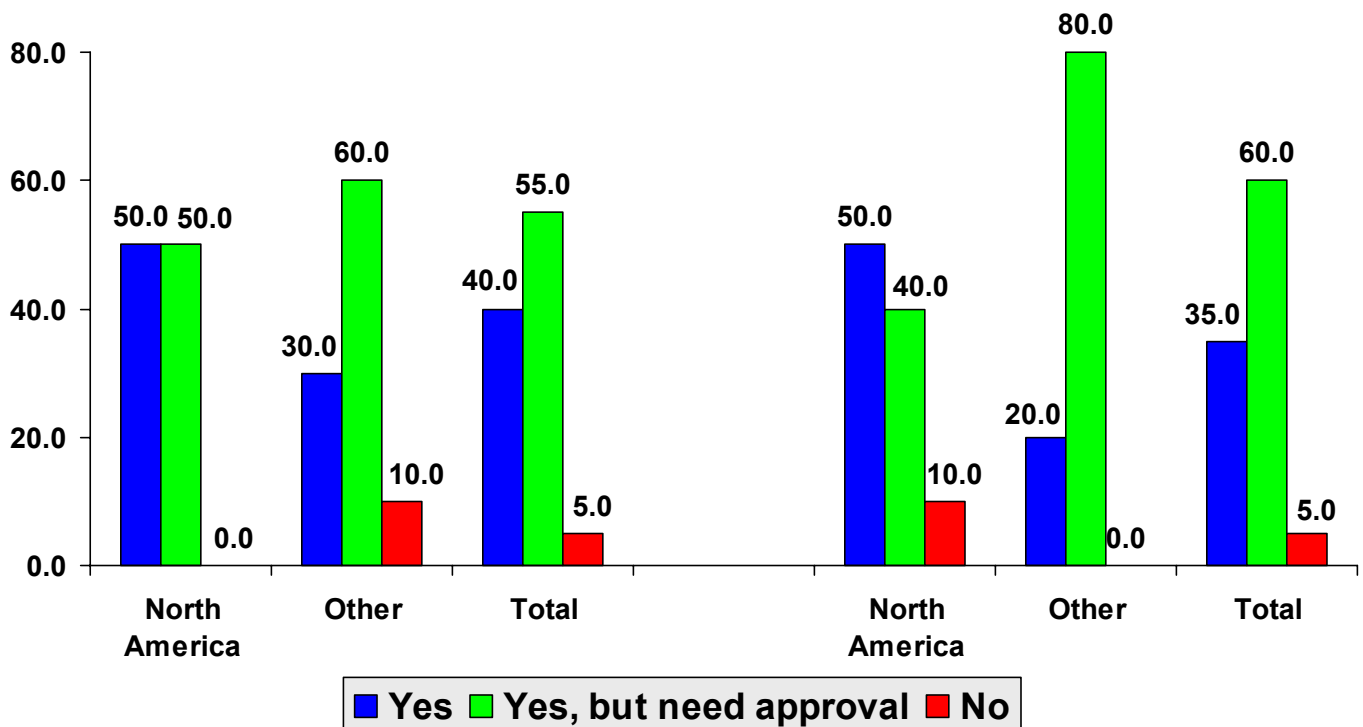


Start-Up Company Policies

Can a tenure-track faculty member serve on board of directors of:

Existing companies

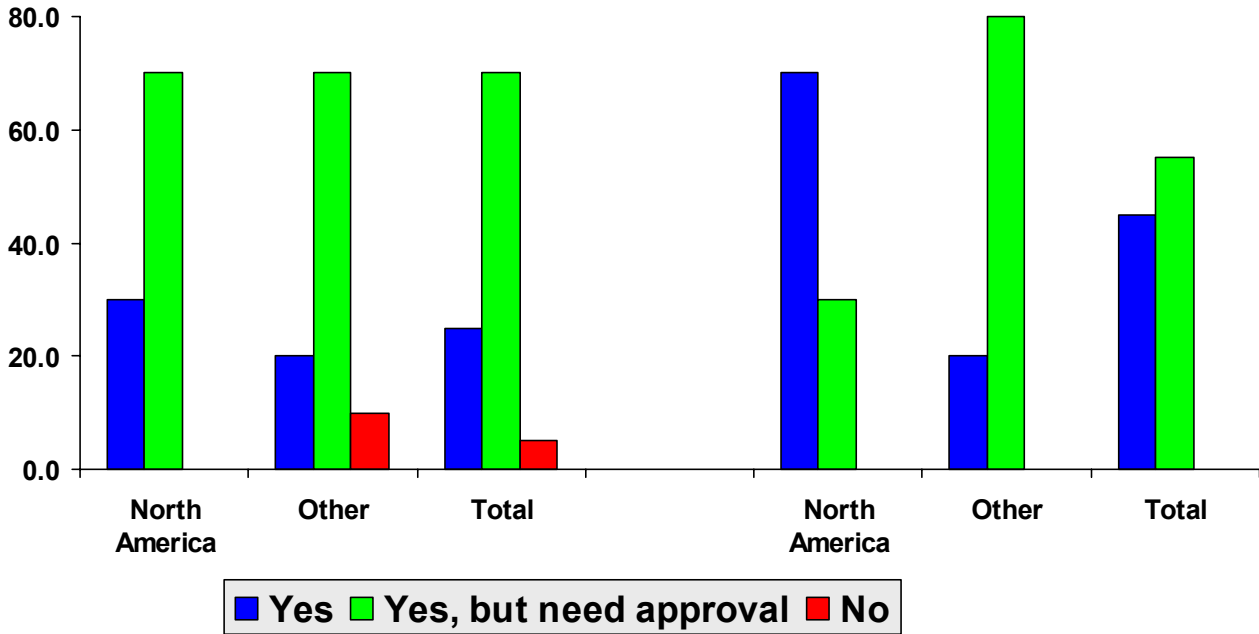
Start-up company to commercialize invention



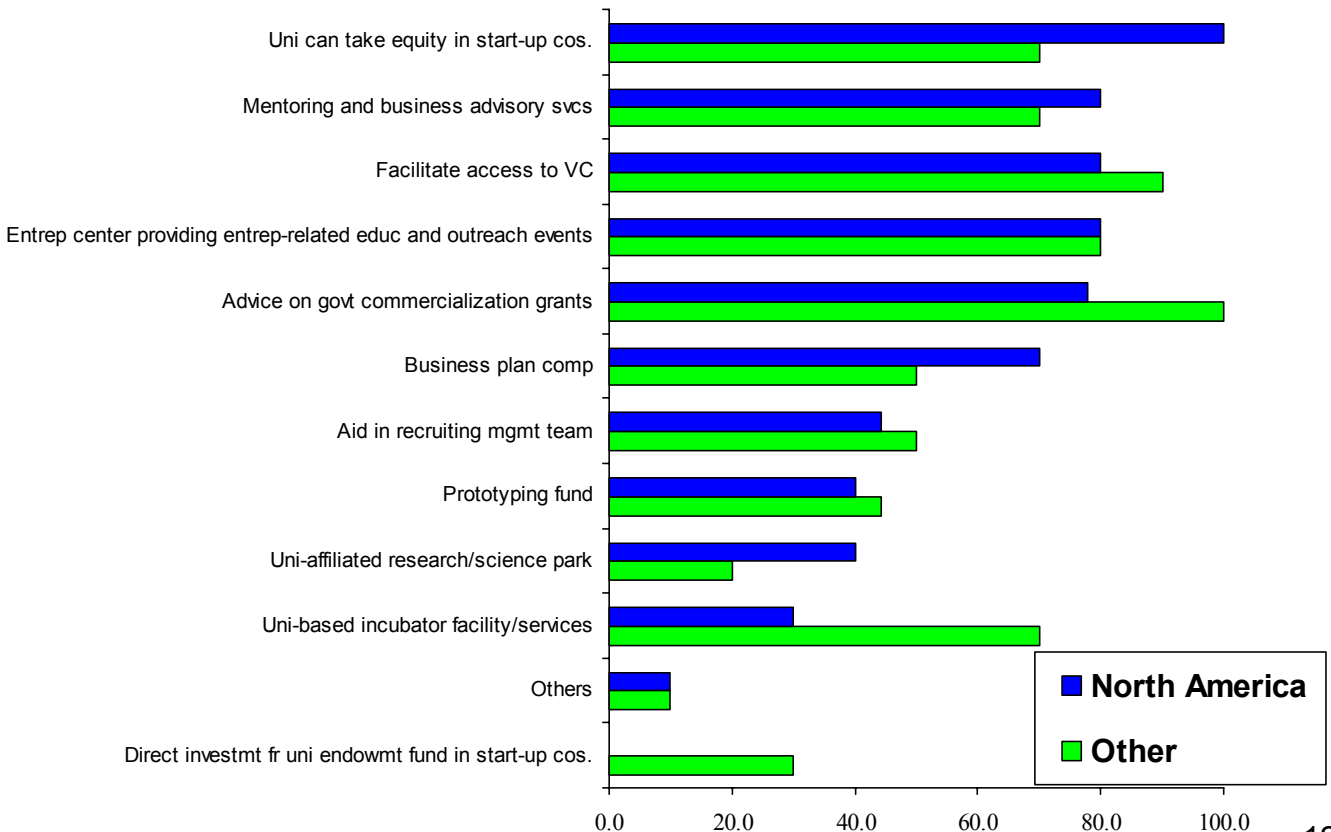
Start-Up Company Policies Can a tenure-track faculty member:

Take no-pay leave for involvement in start-up co. to commercialize invention

Engage in consulting for industry



Assistance Provided to Start-Up Companies (Percentage of universities providing assistance)

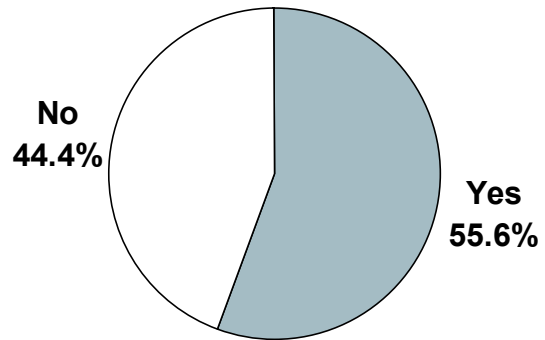
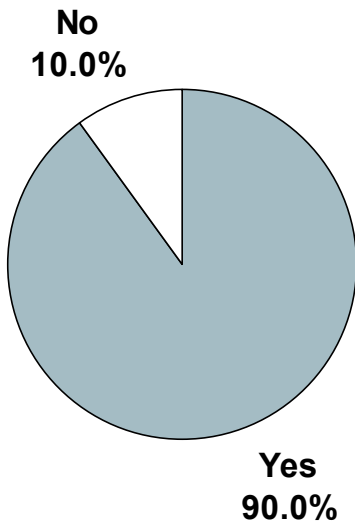


Conflict of Interest Policy

Does university have a written policy statement on conflict of interest for faculty member involvement with business/industry?
 (Percentage of universities)

North America

Other Countries

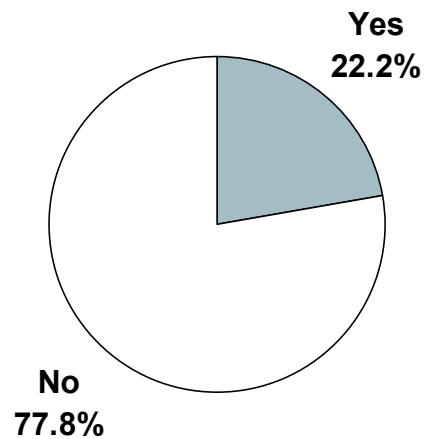
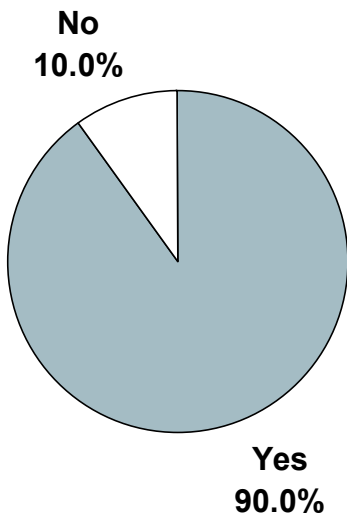


Equity Management Policy

Does university have an equity management policy for start-up companies receiving technology licensing?
 (Percentage of universities)

North America

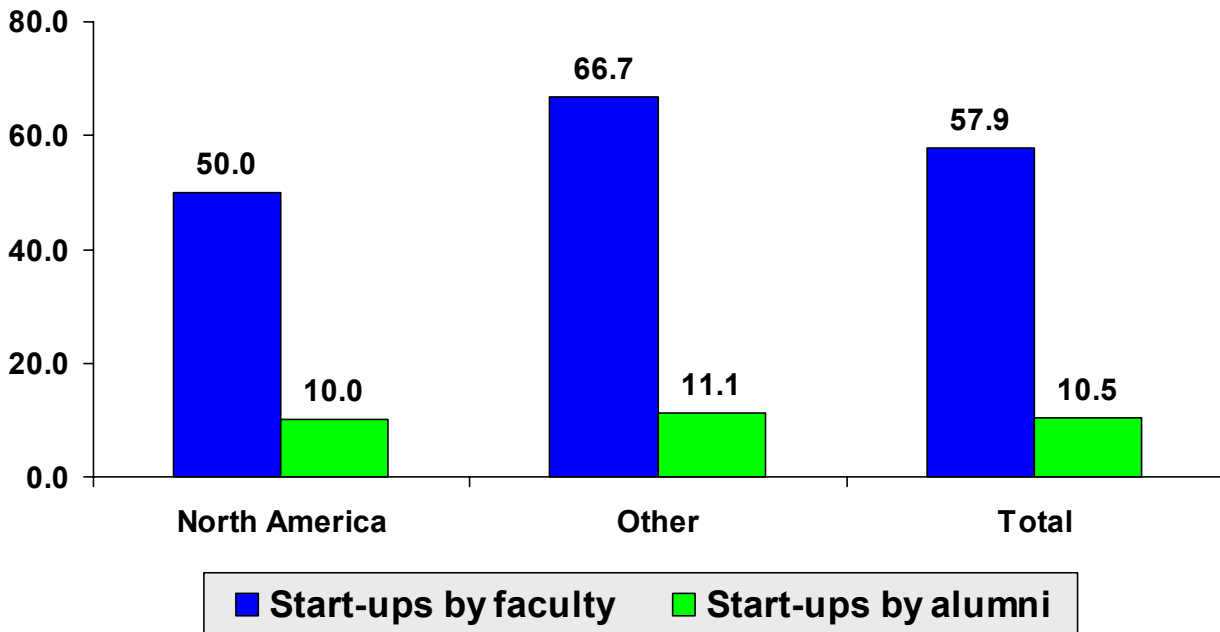
Other Countries



Economic Impact and Wealth Creation

Tracking of Start-up Companies

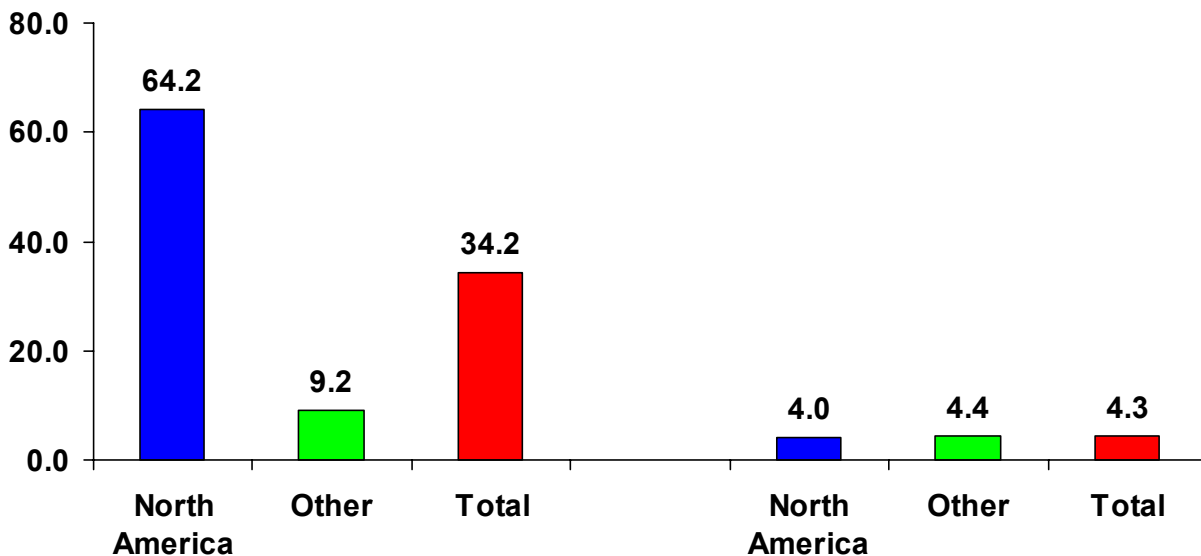
Does university track number of start-up companies by faculty members/alumni?
 (Percentage of universities responding yes)



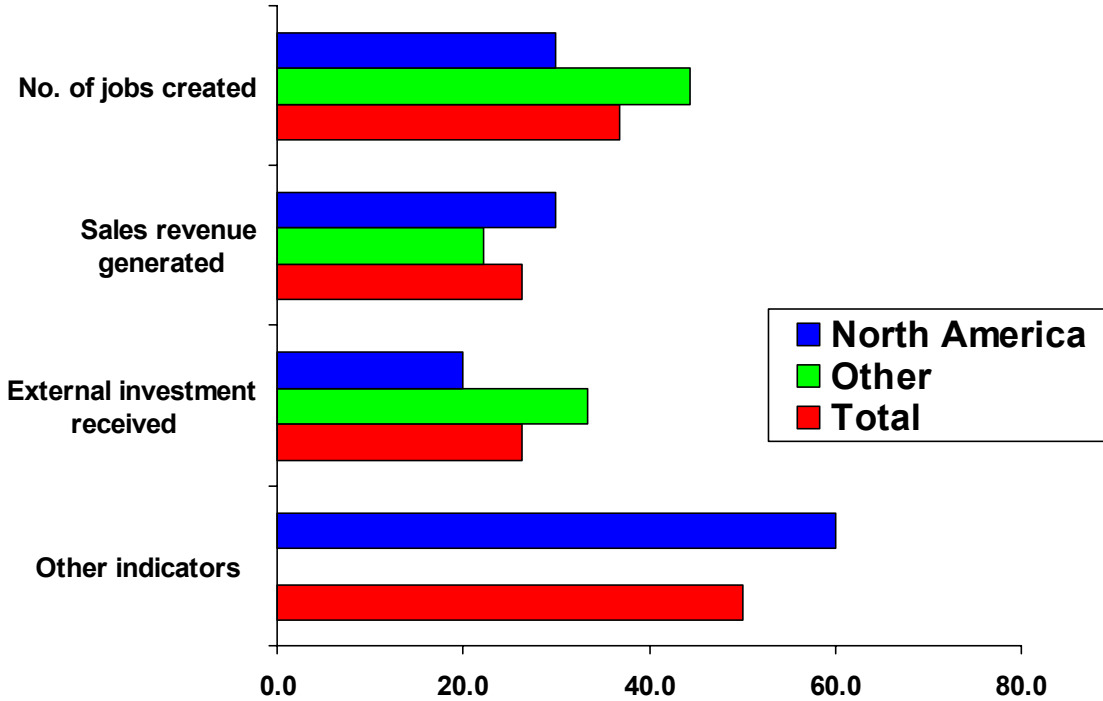
Tracking of Start-up companies by Faculty members
 Mean cumulative no. of start-up companies as of end FY2000
 (for universities that track start-ups by faculty members only)

With technology licensing

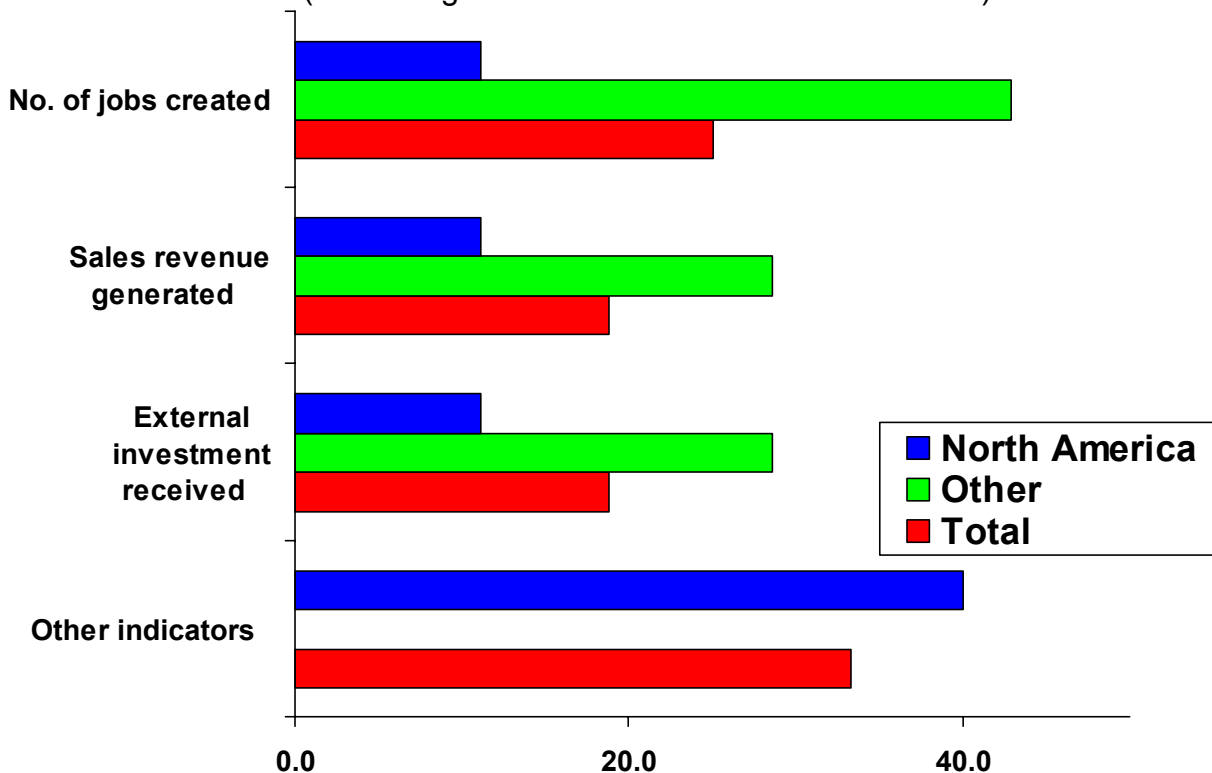
Without technology licensing



Tracking of Economic Impact/Wealth Creation Indicators of Start-Up Companies with Technology Licensing from University
 (Percentage of universities which track indicator)



Tracking of Economic Impact/Wealth Creation Indicators of Start-Up Companies without Technology Licensing from University
 (Percentage of universities which track indicator)



Policy Issues and Recommendations

- Technology transfer activities have been extensively monitored among North American universities through organizations like the Association of University Technology Managers (AUTM); this the first time that comparable information on universities outside North America is available.
- Some APRU member universities from outside North America were not able to participate in this survey because they have not yet set up a Technology Transfer Organization (TTO), or they have not developed capacity to collect such data yet. Some of the participating universities indicated that this is the first time they have compiled such data.
- APRU can play a useful role to promote information collection on technology transfer activities and on the economic impacts of technology transfer among its members.
- The diversity of APRU members (also) makes the organization an ideal forum for promoting comparative research on best TT practices under different environmental contexts and for facilitating information exchange and knowledge sharing.
- APRU might consider replicating the survey in the future (involving more member universities,) and promoting joint research into improving methods for analyzing the economic impact of university technology transfer under diverse environmental conditions.

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NOTE:

This report is summarized from a presentation made at the 6th APRU Annual Presidents' Meeting at University of California, Berkeley on June 21, 2002. The presentation was prepared by:

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