Apples and Oranges:
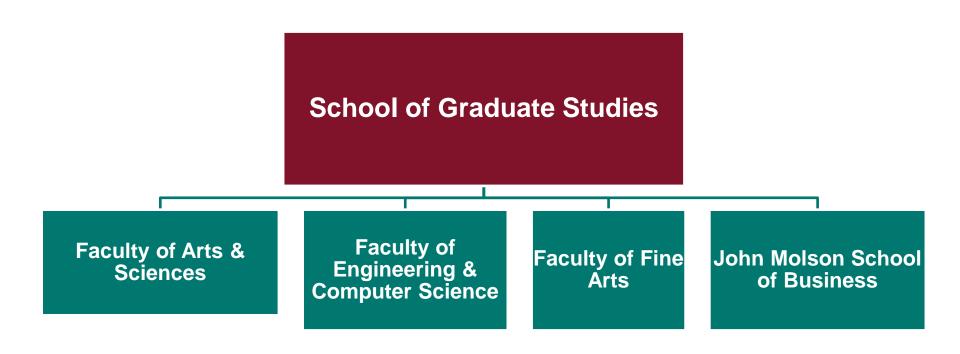# Metrics for Program Assessment

An application to graduate funding

Project

- Allocate graduate funding across faculties by including a performance indicator.

- *Challenge* ➡ design a unifying scoring system over very heterogeneous units with diverse standards.

Graduate Funding Allocation

School of Graduate Studies

- **Faculty of Arts & Sciences**
- **Faculty of Engineering & Computer Science**
- **Faculty of Fine Arts**
- **John Molson School of Business**

Scope

- Fairness & Transparency
  - *All units are judged over the same criteria and the process is public.*
- Reward "good behavior"
  - *Units that have been performing very well are rewarded with more funds.*
- Induce "good behavior"
  - *Units that are not as cooperative have tangible reasons to change their behavior.*
- Incorporate strategic directions of the university
  - *By choosing our criteria appropriately we align units' actions with the universities ambitions.*

Process

- Consulted with a few other Canadian Universities that adopted a similar "report card" system.
    - *Important for the rest of the institution to know that the criteria we are using are commonly used by others as well.*
- Assessment exercise is based on past three years.
- Assessment to be repeated every two years with new set of data.

Criteria (equally weighted)

- Popularity (Acceptance Rate)

$$\frac{\text{\# of Students Accepted}}{\text{\# of Students Applied}}$$

➢ *Demonstrates demand for a program of study.*

➢ *Highlights positive recruitment efforts made by the unit.*

❖ *Due to lack of (sector specific) national data we are favorable towards popular disciplines.*

Criteria (equally weighted)

- Capture Rate

$$\frac{\# \text{ of Students Registered}}{\# \text{ of Students Accepted}}$$

> - *Ability of a program to be a top choice among those interested.*
> - *Ability of a program to engage its applicants with appropriate recruitment efforts.*
> ❖ *Lack of discipline specific information and inability to normalize.*

Criteria (equally weighted)

- Time to Completion (TTC) Rate

$$\frac{TTC - Sector\ Average}{Sector\ average}$$

  - ➤ *TTC varies significantly across sectors.*
  - ➤ *We normalized by national sector averages (as per CAGS) and looked at % above and below*
  - ➤ *E.g. (18 terms- 15 terms)/15 terms=20% (above sector average)*

Criteria (equally weighted)

- External Awards per non-visa students
  - *Indicator of quality of students by external unbiased standards.*
  - *Vast majority of Canadian external awards are open only to Canadian Citizens.*
  - *To avoid "penalizing" programs with a large international population we concentrated our per capita ratio to non-visa students.*
  - *The use of any internal assessment of student quality would create undesirable incentive (eg GPA/grade inflation).*

Criteria (equally weighted)

- Attrition Rate

  # of students withdrawing / # of students registered

  - Disincentive to lowering admission standards
  - Incentive to engage and guide students properly within the program.

Criteria (equally weighted)

- Research Intensity

  Grand $$$ per capita

  ➢ *Most diverse criterion.*

  ➢ *Concentrated only on mainstream operating funding (eg. excluded infrastructure grants).*

  ➢ *Normalized by tri-council ratios:*

  $$NSERC\ total\ envelop / SSHRC\ total\ evelop = x$$

  $$CIHR\ total\ envelop / SSHRC\ total\ envelop = y$$

  $$NSERC\ \$\$\$\ awarded\ to\ CU / x \qquad CIHR\ \$\$\$\ awarded\ to\ CU / y$$

Conversion to Grades

- Linear transformation where the best raw performance (score) becomes a 100 and the worst a 0:

$$\text{Grade}=100 * \text{score} / \text{best score}$$

  Example: *Assume Psychology is the "richest" department with $80,000 per capita. Then Psychology gets a 100. If Economics gathered $55,000 per capita, the grade is 100*55,000/80,000=68.75*

  Note: In the case of negative indicators (i.e. TTC, attrition) the best score is the lowest number.

- Overall grade of a program is the average over all the criteria grades.

Allocation of Funds

$$\text{Share} = \frac{Enrollment\ in\ a\ program\ *\ Grade\ of\ program}{\Sigma_{all\ programs}\ Enrollment\ in\ a\ program\ *\ Grade\ of\ program}$$

Example: *Assume that psychology has 160 students registered in its program and an overall grade of 88 while Economics has 240 students and a grade of 65.*

$$Share_{Economics} = \frac{240*65}{(240*65)+(160*88)} = 52.56\%$$

$$Share_{Psychology} = \frac{160*88}{(240*65)+(160*88)} = 47.44\%$$

The share of Economics based on Enrollment only would have been 60% and Psychology 40%.

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