IB students & first-year university performance: 2003 - 2012
An undergraduate admissions model

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Andrew Arida
Associate Registrar, Student Recruitment & Undergraduate Admission
University of British Columbia

Overview of presentation

- An example of how post-secondary institutions can work with the local IB community

- An equitable and evidence-based method of assessing anticipated/predicted DP scores (based upon first-year performance) to make undergraduate admission decisions

- A model for determining admission "equivalencies" for non-local curricula

- An examination of consistency in the IB Diploma score among jurisdictions

The University of British Columbia

- Campuses in Vancouver and Kelowna, BC, Canada

- Four-year public research-intensive; consistently ranked in top 40 of the world's institutions of higher education

- Over 50,000 students

- Global citizenship, service learning, and integrated/interdisciplinary first-year programs

- Highly competitive admission

- Second highest post–sec destination of IB transcripts in the world (2013)

- 956 IB Diploma and 142 IB certificate students registered in 2013; 15% of direct-entry class has IB experience

The University of British Columbia

Admission based-upon:

1. Academic performance:

   - Canada: Average calculated on 4 - 6 senior-year academic courses

   - US: Average calculated on junior- and senior-year courses; SATs and ACTs required

   - Rest of World: As appropriate to jurisdiction

   - IB: IB anticipated diploma score

2. Personal Assessment:

   - All programs consider applicant personal profiles and assessment of non-cognitive criteria in the admission decision

Evaluating IB diploma applicants

- IB diploma students evaluated on diploma score alone
- Admitted on "anticipated" (January – March) IB diploma scores
- Minimum scores required in key pre-requisite courses (HL or SL)
- Additional consideration for English HL or Math HL
- Optional transfer credit for HL (5/6) and some SL
- First-year credit for Theory of Knowledge

Why IB?

Why IB?

1. Diversity: 70 countries represented in 2013 first-year class

2. IB is prevalent throughout Canada

3. Straightforward, reliable method of assessment for admission

A reliable method of assessment for admission

Admission Decision Based Upon…	Correlation with first year performance
N. America IB, anticipated grades	$R^2 = .29$, $p < .001$
N. America IB, final grades	$R^2 = .44$, $p < .001$
World IB, anticipated grades	$R^2 = .24$, $p < .001$
World IB, final grades	$R^2 = .31$, $p < .001$
BC secondary school admission average	$R^2 = .29$, $p < .001$
US secondary school grade-point average, SAT I, SAT II, and parental / SES combined **	$R^2 = .25$, $p < .001$

** From: Geiser, S., & Santelices, M. (2007). *Validity of high-school grades in predicting student success beyond the freshman year: High-school record vs. standardized tests as indicators of four-year college outcomes.* Berkeley: Center for Studies in Higher Education, University of California, Berkeley.

Why IB?

1. Diversity: 70 countries represented in 2013 first-year class

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3. Straightforward, reliable method of assessment for admission

4. Data on first-year performance

    -   Mean first year average of N. American IB students is 4.35% higher than other N. American secondary school students

5. IB students are engaged

New to UBC Survey data

- Respondents rated their ability in the following areas on a 6 point scale (very poor, poor, fair, good, very good, excellent)

- Results displayed show % of respondents who rated "very good" or "excellent"

- Results displayed are those with statistically significant effect sizes

New to UBC Survey – start of 1ˢᵗ semester

SKILL/ABILITY	IB	Non-IB
Research skills	35%	9%
Library skills	24%	9%
Ability to read and comprehend academic material	43%	21%
Ability to prepare and make a presentation	47%	22%
Analytical and critical thinking skills	38%	21%
Ability to be clear and effective when writing	40%	20%
Ability to take personal social responsibility	55%	47%
Ability to work as a team member	50%	40%
Ability to motivate and lead others toward a goal (leadership skills)	38%	28%
Ability to speak clearly and effectively in English	72%	60%
Quantitative (mathematical and statistical) skills	31%	27%
Ability to appreciate racial and ethnic diversity	76%	63%

New to UBC Survey – end of 1ˢᵗ semester

Skill/Ability	IB	Non-IB
Library skills	48%	27%
Research skills	53%	37%
Ability to prepare and make a presentation	43%	29%
Ability to read and comprehend academic material	62%	43%
Analytical and critical thinking skills	51%	41%
Quantitative (mathematical and statistical) skills	34%	31%
Ability to appreciate cultural and global diversity	84%	72%
Ability to take personal social responsibility	65%	58%
Ability to be clear and effective when writing	46%	37%
Ability to understand and appreciate aboriginal cultures	32%	38%
Ability to speak clearly and effectively in English	77%	66%

New to UBC – first semester experience

In which of the following activities have you participated in at UBC?	IB	non-IB
participate in a conference	24%	19%
student leadership activities	30%	16%
research with a faculty member	7%	5%
volunteer work	54%	30%
community service as part of a class	12%	9%
student government	6%	3%
political activities (e.g. local, municipal, provincial, federal other than student government)	9%	4%
tutoring or teaching other students (paid or voluntary)	21%	11%
attend special lectures	38%	29%
join an intramural team	15%	15%
mentoring programs (student to student, alumni to student)	11%	8%
student club or organization	63%	46%

National Survey of Student Engagement (NSSE)

- More that 1,200 institutions in Canada and US, since 1999

- Approximately 450,000 first and senior year respondents in 2008

- 125+ questions and 5 composite engagement benchmarks

- http://nsse.iub.edu

NSSE – How do IB students stand out?

Likely to participate in high impact activities:	IB	Non-IB
Work on a research project with a faculty member outside of course or program requirements.	39.7%	30.8%
Study abroad.	59.9%	48.8%

Academic evaluation of IB students

Issues:

Anticipated Diploma Score "anticipates" final diploma score.

Admission decisions based (fundamentally) on final IB Diploma grades.

What is the accuracy of admissions decisions based upon anticipated IB Diploma grades?

Discrepancy between anticipated and final IB diploma scores, 2004
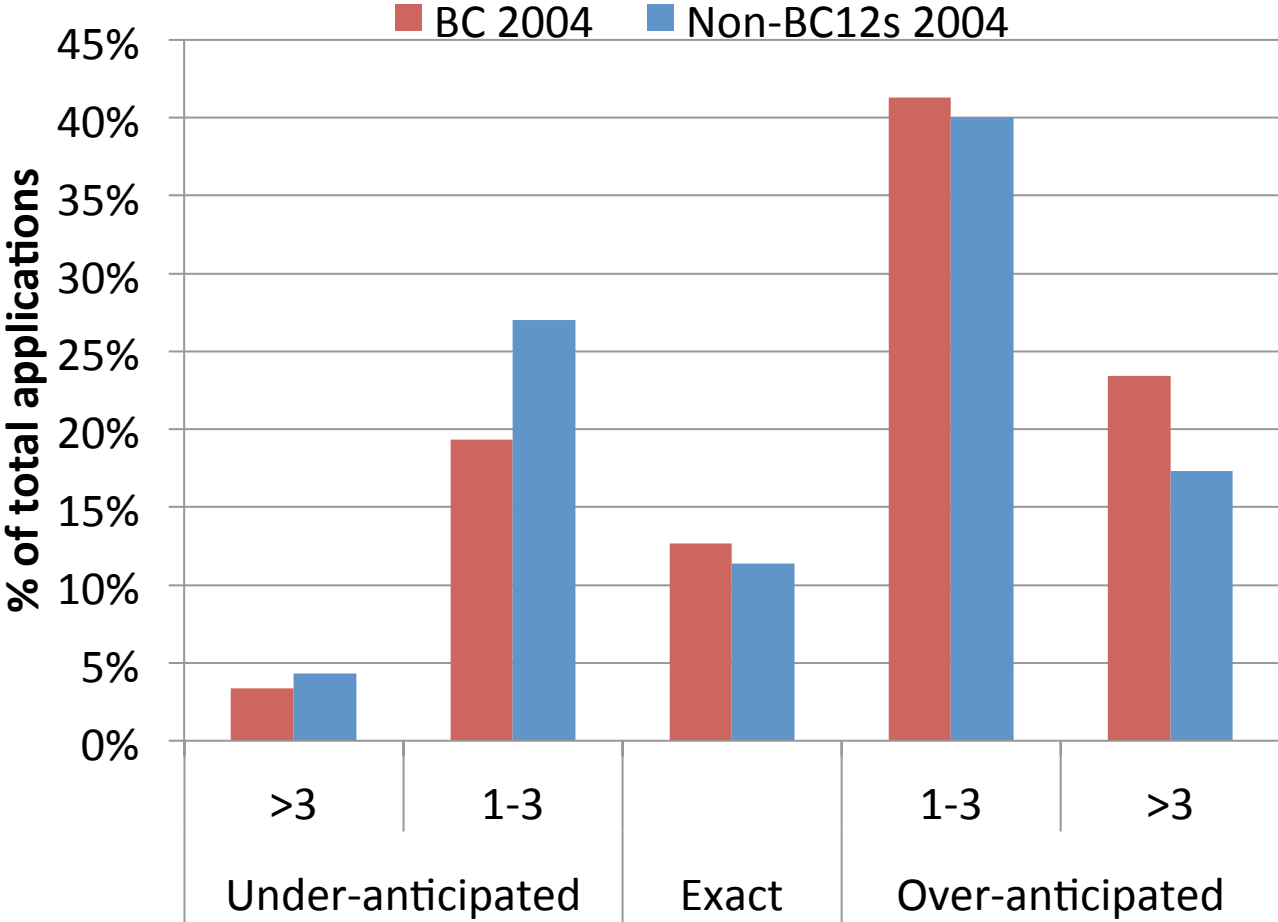
Accuracy and consistency of anticipated IB grades

- Collaboration with 11 local IB schools and regional coordinator

- Four-year study assessing accuracy and consistency of anticipated IB Diploma grading practices

- Documented change between anticipated and final IB diploma scores

- Yearly reports generated, feedback shared and discussed with schools

- What did we discover?

Findings

- Little change in overall accuracy within the system
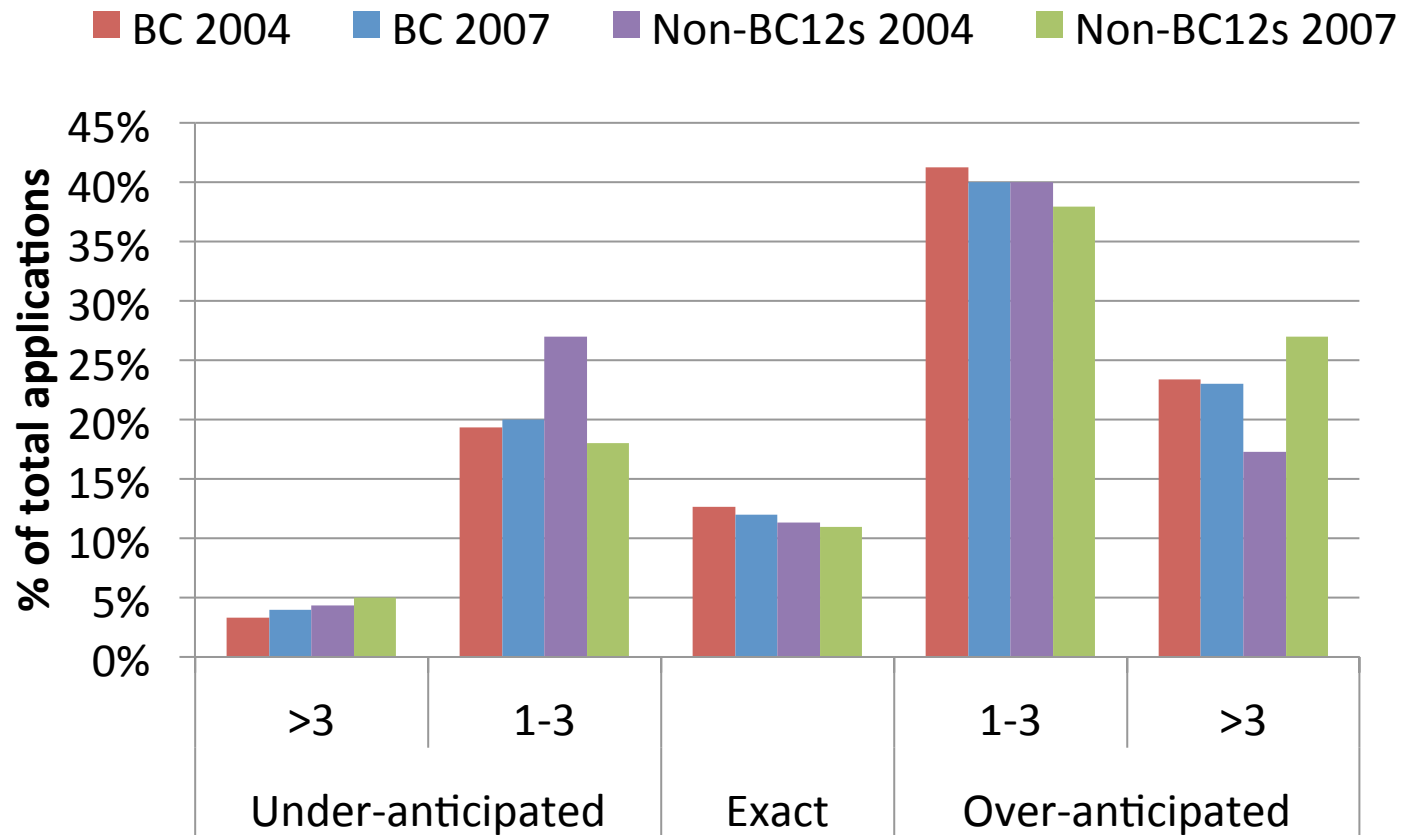
Findings

- Improved consistency within the system; no outliers

- Standard error anticipated-to-final:

  2.61 points on diploma

  .70 on individual component

- Greater change between spring and summer grades than among BC12 students

Conclusions and Issues

- Cumulative effect in IB diploma grades is a factor

BC 12	Over-estimation
English 12	85% / 83% (+2%)
Math 12	85% / 83% (+2%)
French 12	85% / 83% (+2%)
Biology 12	85% / 83% (+2%)
Overall	85% / 83% (+2%)

Conclusions and Issues

- Cumulative effect in IB diploma grades is a factor

BC 12	Over-estimation	IB Diploma	Over-estimation
English 12	85% / 83% (+2%)	English HL	6 / 5 (+1pt)
Math 12	85% / 83% (+2%)	Math SL	6 / 5 (+1pt)
French 12	85% / 83% (+2%)	French HL	6 / 5 (+1pt)
Biology 12	85% / 83% (+2%)	Biology SL	6 / 5 (+1pt)
		Geog HL	6 / 5 (+1pt)
		Chem SL	6 / 5 (+1pt)
		EE & ToK	3 / 2 (+1pt)
Overall	85% / 83% (+2%)	Overall	39 / 32 (+7)

Conclusions and Issues

- Restriction of range in IB diploma grades
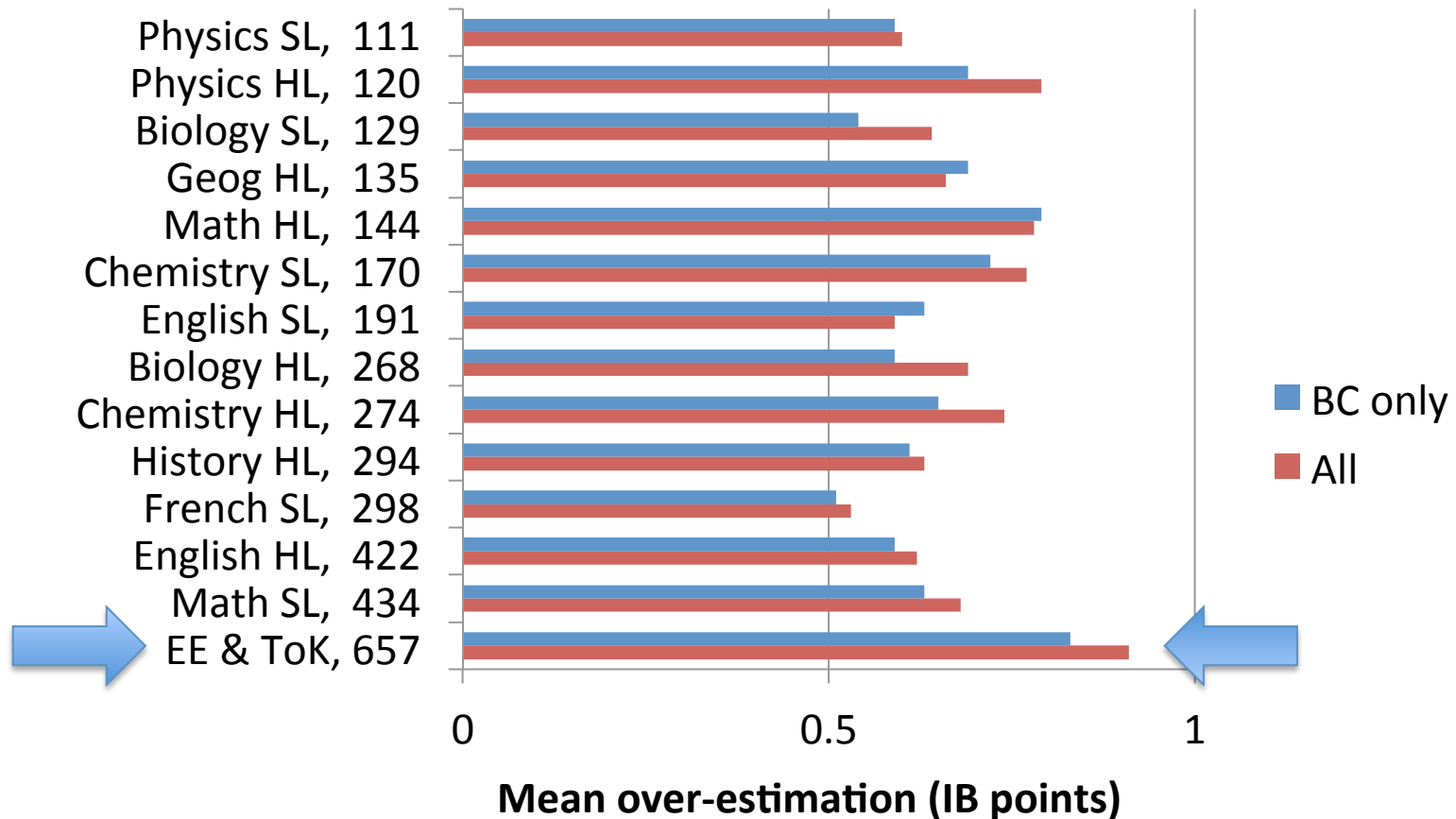
Conclusions and Issues

- Manual grade adjustment does not increase equity

Anticipated IB Grades, 2007			
	no adjustment	-1	-2
% true admits	82%	79%	73%
% false admits	12%	10%	5%
% false refuse	3%	6%	12%
% true refuse	3%	5%	10%

Solution:

- Don't worry about what anticipated IB diploma scores tell us about final IB diploma grades
- Evaluate IB Diploma applicants based upon what anticipated IB diploma scores tell us about first-year performance at UBC

Fairness:

Applicants will not be disadvantaged by the structure (timing, sequencing, grading schemes) of the educational system followed that provides the basis of admission

Pre-2004 IB Diploma "equivalency scale"

IB Diploma Points	BC12 Admission Average (%)		IB Diploma Points	BC12 Admission Average (%)
24	67 (C+)		34	93
25	70 (B-)		35	94
26	73 (B)		36	95
27	76 (B+)		37	96
28	80 (A-)		38	97
29	84 (A -)		39	98
30	87 (A)		40	98
31	90		41	99
32	91		42 - 45	99.9
33	92			

Approx. top 20% - 25% of BC12s are "A" students

Approx. 35% of BC12s are "B" students

BC12 grades are good predictors of first year success
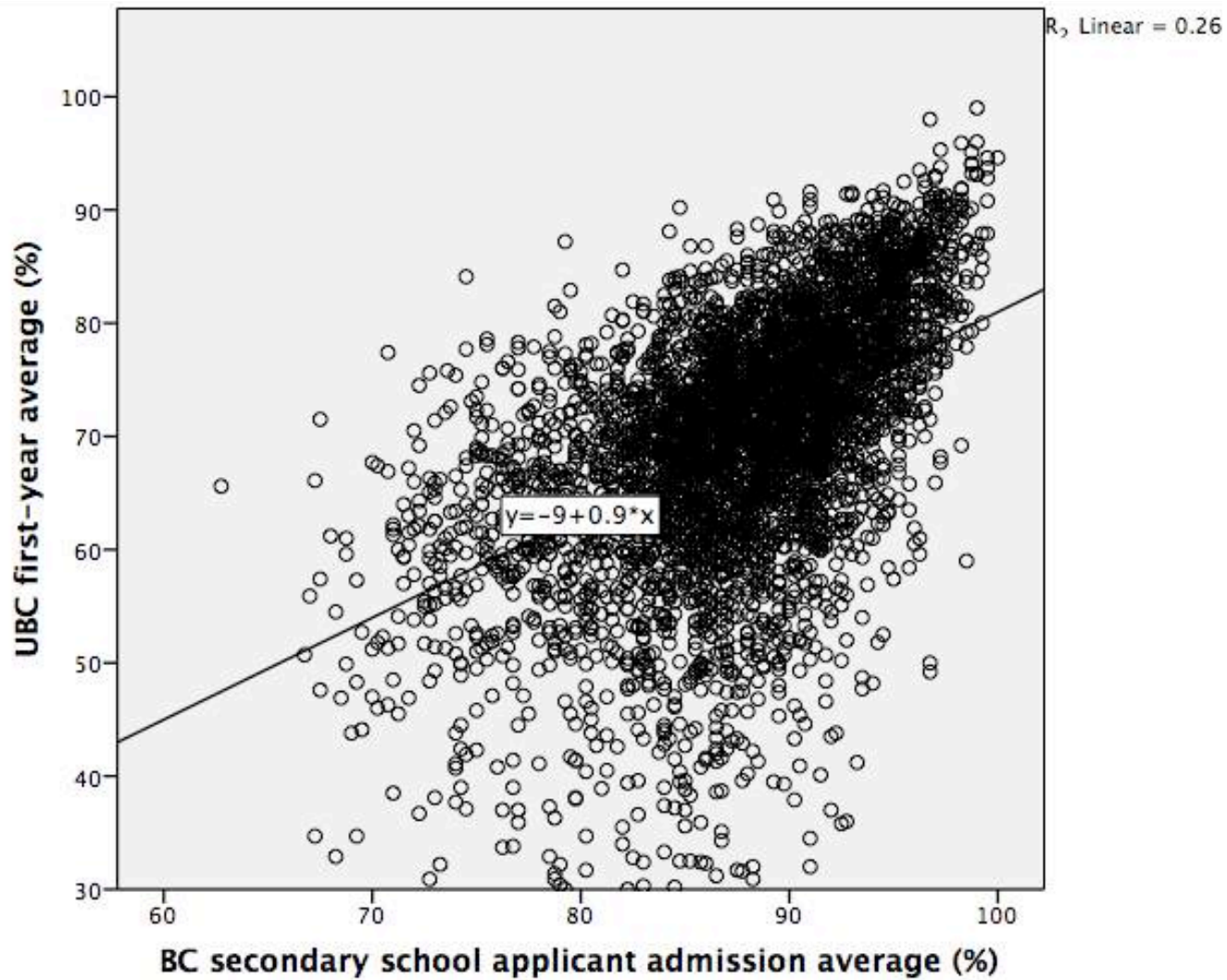
R, Linear = 0.26

y=-9+0.9*x

UBC first-year average (%)

BC secondary school applicant admission average (%)
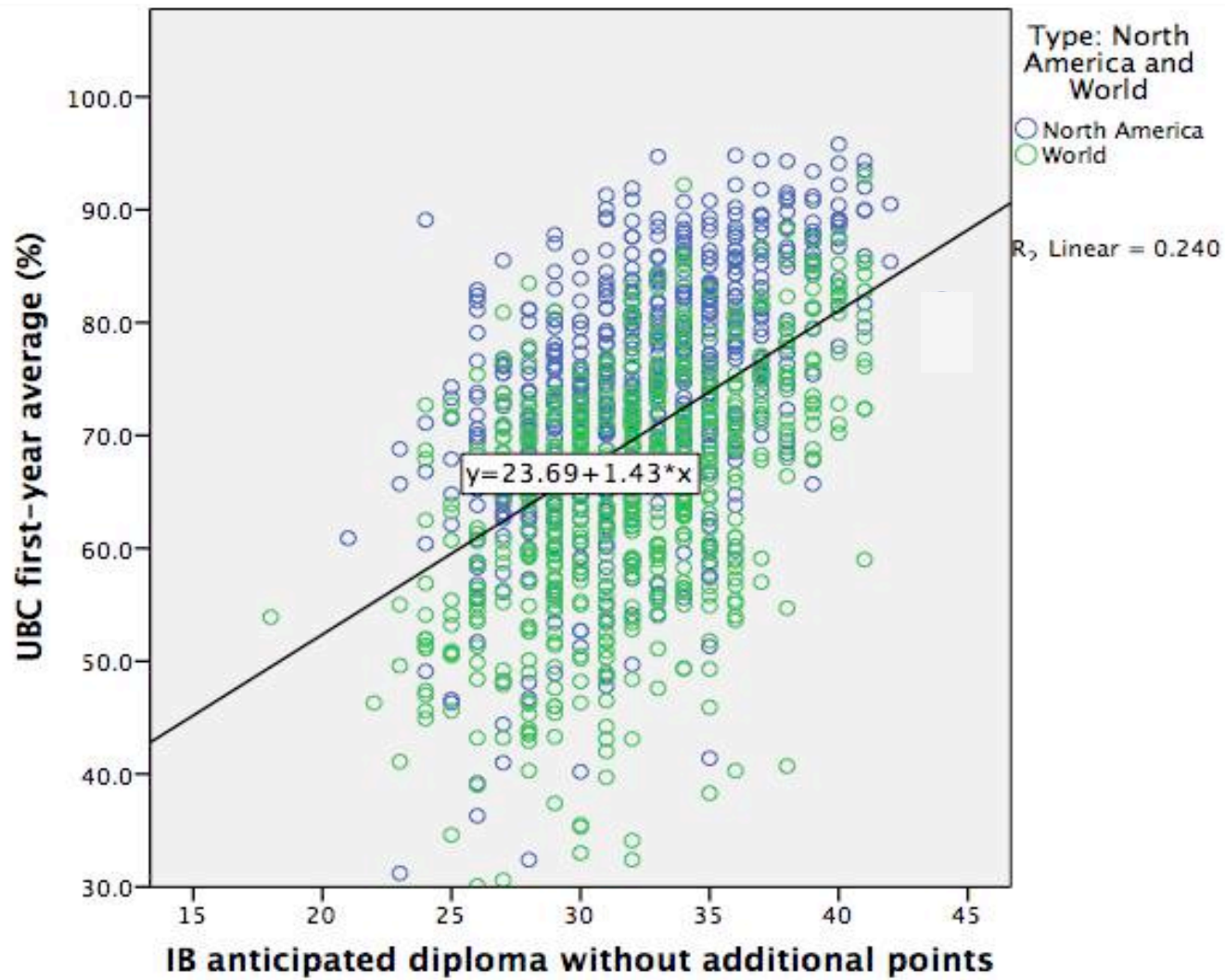
Using a linear regression to predict first-year performance

- Admission and first-year performance data from 11,000+ BC 12s and 800+ IB Diploma students
- (a * anticipated IB Diploma points) + b = 1st year UBC
- (x * BC12 Spring admission avg.) + y = 1st year UBC
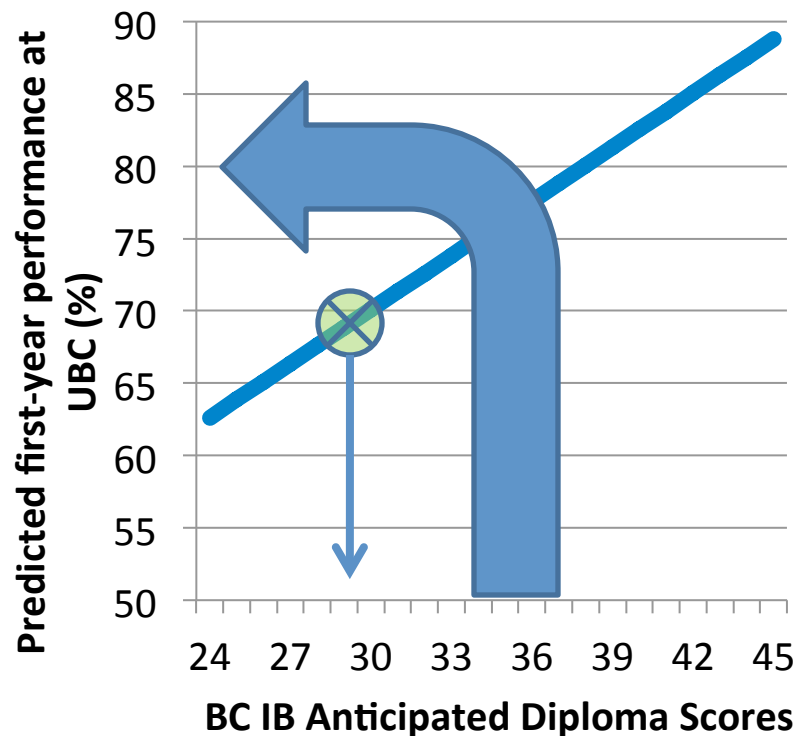- If predicted first year performance is the same…

Predicting first-performance at UBC, 2003 - 2006
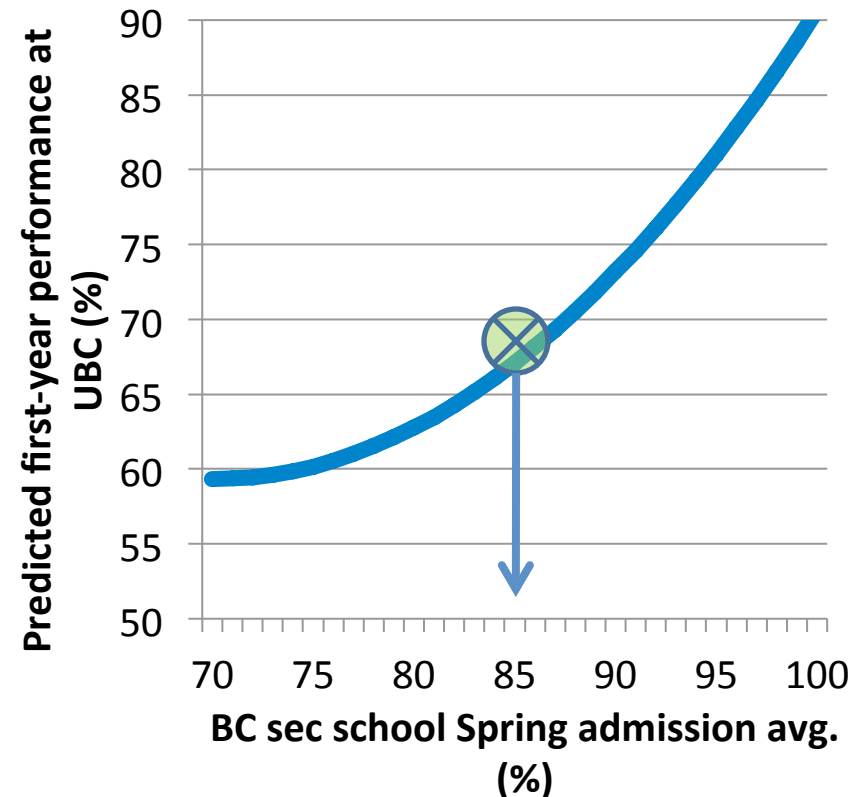
Revised IB-to-BC12 equivalency
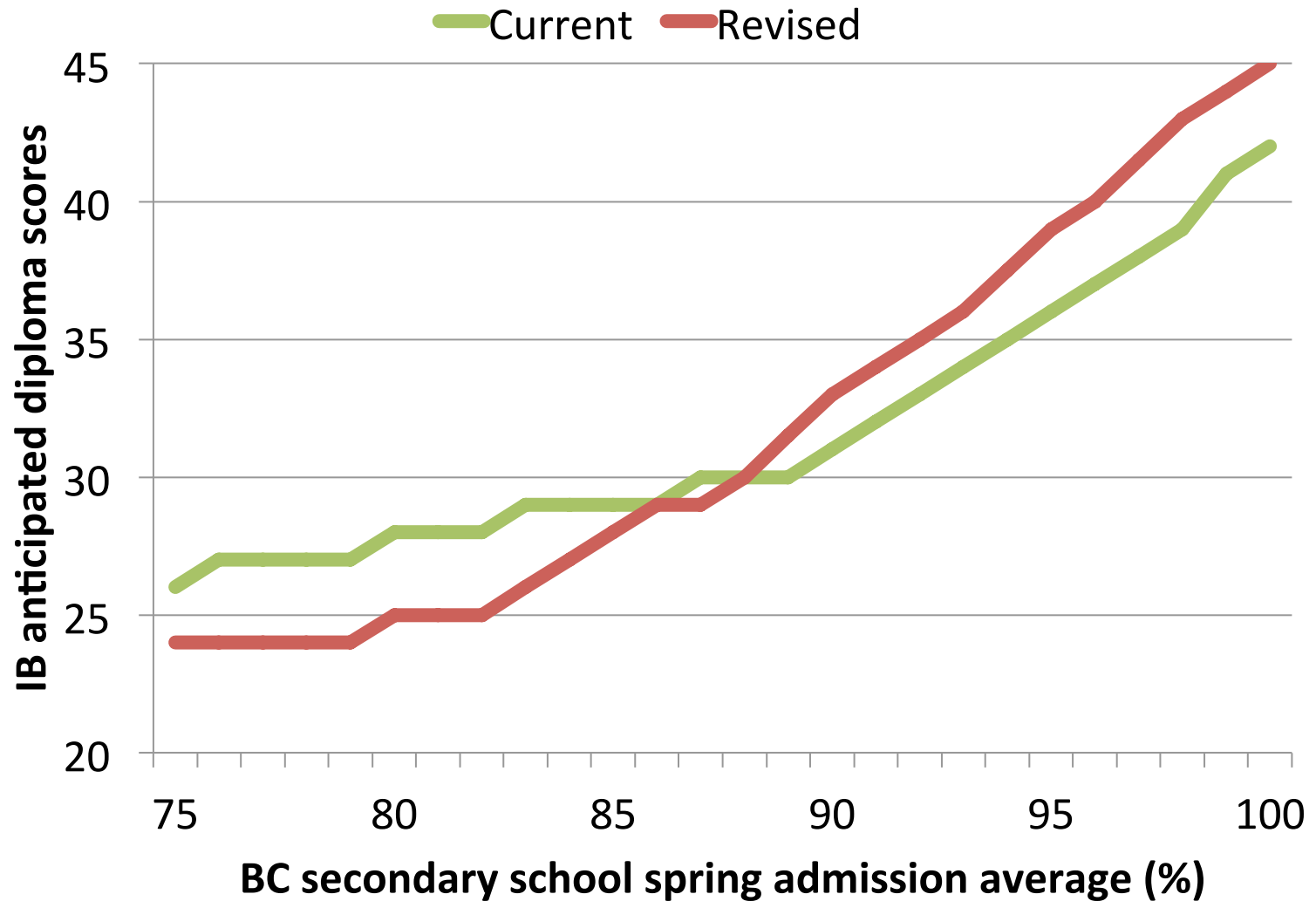
Revised: IB Diploma scores calibrated to %

old scale:

C+ to A range

New/revised scale:

B+ to A range

Following up: 2009 vs. 2007

Legend: Revised 2003 - 2006, Revised 2009

Y-axis: IB Anticipated Grades (20, 25, 30, 35, 40, 45)

X-axis: BC Secondary School Spring Admission Avg (%) (75, 80, 85, 90, 95, 100)
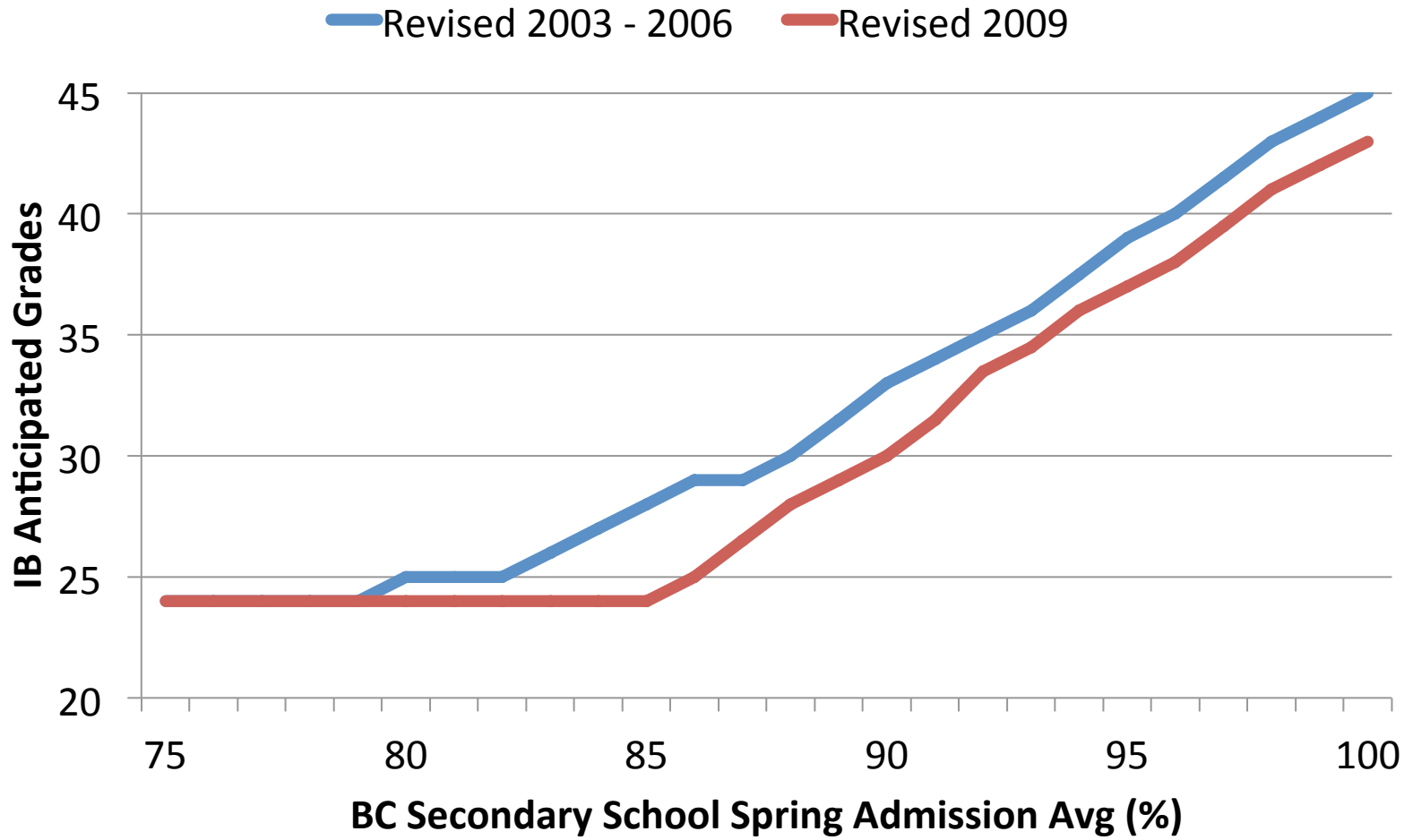
Conclusions

- Any IB diploma holder performs (at a minimum) at the same level as a B-average secondary school student

- An IB Diploma student with an anticipated score of 29/30 is expected to perform at the same level as an A student

- An IB Diploma student with a final score of 27/28 is expected to perform at the same level as an A student

- Revised equivalency scale was validated with 2009 performance data

Revised Study: 2011 and 2012

Research questions

- How common is it for IB Diploma schools to submit anticipated diploma point scores with a prediction for the three additional points?

- How accurate are IB anticipated scores in relation to final IB Diploma grades? And does accuracy vary by jurisdiction?

- What can we learn about first-year performance based upon the composition of the IB Diploma?

- Do anticipated IB Diploma point scores predict first-year performance differently depending upon the jurisdiction from which the student is applying?

Anticipated point scores

True Anticipated Scores Rec'd	% with Add'l Points	
Sec School	Applicants	Registrants only
BC	97%	96%
Can	96%	94%
China	56%	44%
USA	39%	28%
World	54%	47%
Total	**78%**	**70%**

- *True Anticipated*: Defined as submission of an anticipated diploma point score including six IB courses with or without additional points

- Conclusion: Consistency can only be achieved without additional points

Admission decisions with or without the anticipated points?

		Secondary School					
		BC	Can	China	USA	World	Total
With	(n)	774	164	38	9	431	1416
Add'l	Overestimation >=3	37%	33%	63%	33%	32%	35%
Points	Overestimation >=4	26%	20%	42%	22%	24%	25%
Without	(n)	812	181	73	31	847	1944
Add'l	Overestimation >=3	29%	26%	56%	19%	39%	34%
Points	Overestimation >=4	19%	16%	38%	13%	26%	22%

- Confirms previous study; accuracy of additional points is particularly an issue in BC

- Without additional points, overestimation is a bigger issue outside of N America

- Anticipated scores *without* additional points are slightly better predictors of first year success than anticipated scores *with* additional points (R^2 of .387 and .373, respectively)

- Conclusion…

# Predicting first-year success for IB students

- IB grades: anticipated without additional points, final with additional points

- IB school: geographic location of the IB school

- New school: whether the established school is a new, "newer", or established IB school

- English: whether the student took Engl A, Engl B, HL or SL

- Math: whether the student took Math HL

- Program: program at UBC

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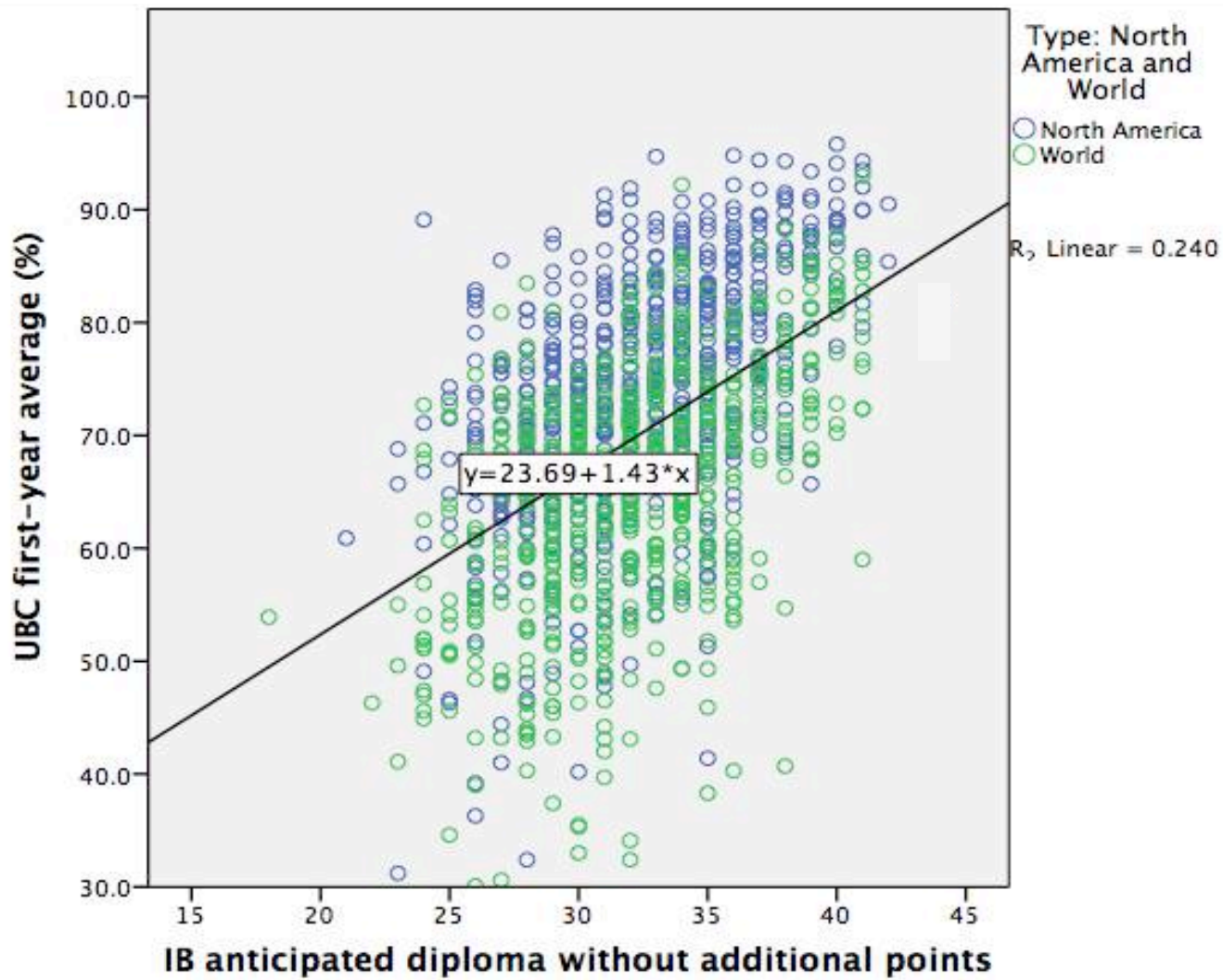
Conclusions

- Anticipated IB Diploma evaluation does not include additional points

- Final IB Diploma evaluation does include additional points

- Students receive a bump for English or Math HL

- Different equivalency scales based upon jurisdiction of the applicant

  - Impact of cultural adjustment?

  - Impact of direct-entry into second year courses?

Feedback and Discussion

Andrew Arida

Associate Registrar, Student Recruitment & Undergraduate Admissions

andrew.arida@ubc.ca