

# IB students & first-year university performance: 2003 - 2012

## *An undergraduate admissions model*

IBSO Fall Conference

Toronto, ON      October 2014

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## 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



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# UBC in Ontario

## **International Baccalaureate Reception**

Toronto Sheraton

Saturday, November 22

9:15 – 10:00 am

Prior to: Your Degree at UBC

10:00 am – 1:00 pm

*Registration at [you.ubc.ca](https://you.ubc.ca)*



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# 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



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# UBC's new programs

## Vancouver

- Dual degree program with Sciences Po in France
- Concurrent Master of Management program
- Bachelor of Media Studies

## Okanagan

- Major in Gender and Women's Studies
- Honors in Forensic Psychology



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# The University of British Columbia

Admission based-upon:

1. Academic performance:

- Ontario: Average calculated on six 4U or 4M courses, including English (ENG4U)
- IB: IB anticipated diploma score

2. Personal Assessment:

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



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# Evaluating IB diploma applicants

- IB diploma students evaluated on diploma score alone
- Admitted on “[anticipated](#)” IB diploma scores (January – March)
- 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



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# Why IB?



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## 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
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 in their learning



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# 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.



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## 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



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## New to UBC Survey – start of 1<sup>st</sup> 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 1<sup>st</sup> 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

<i>In which of the following activities have you participated in at UBC?</i>	<b>IB</b>	<b>non-IB</b>
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 than 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>



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## 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%



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# Academic evaluation of IB students



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# 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?**

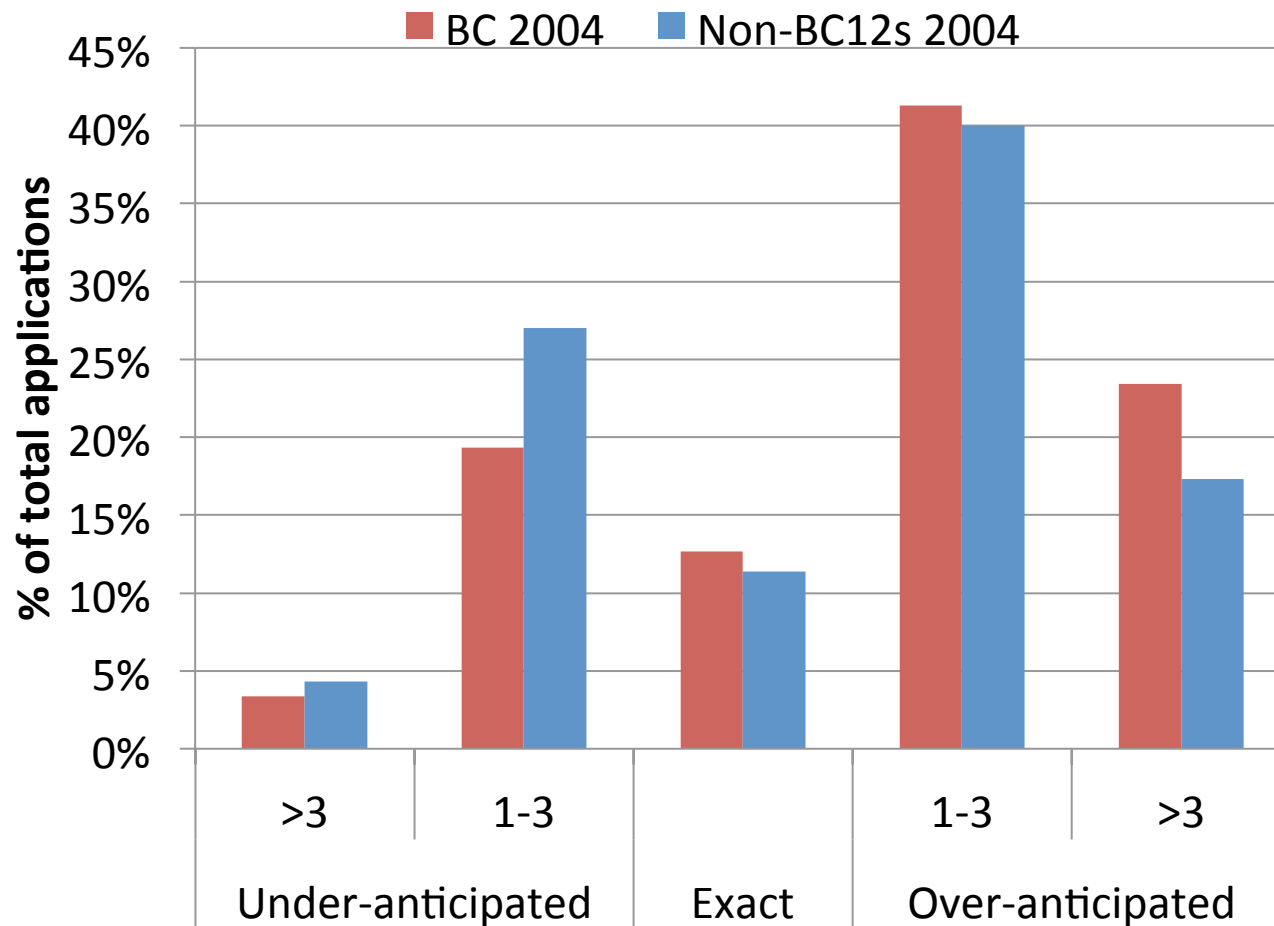


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# Discrepancy between anticipated and final IB diploma scores, 2004



# 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?

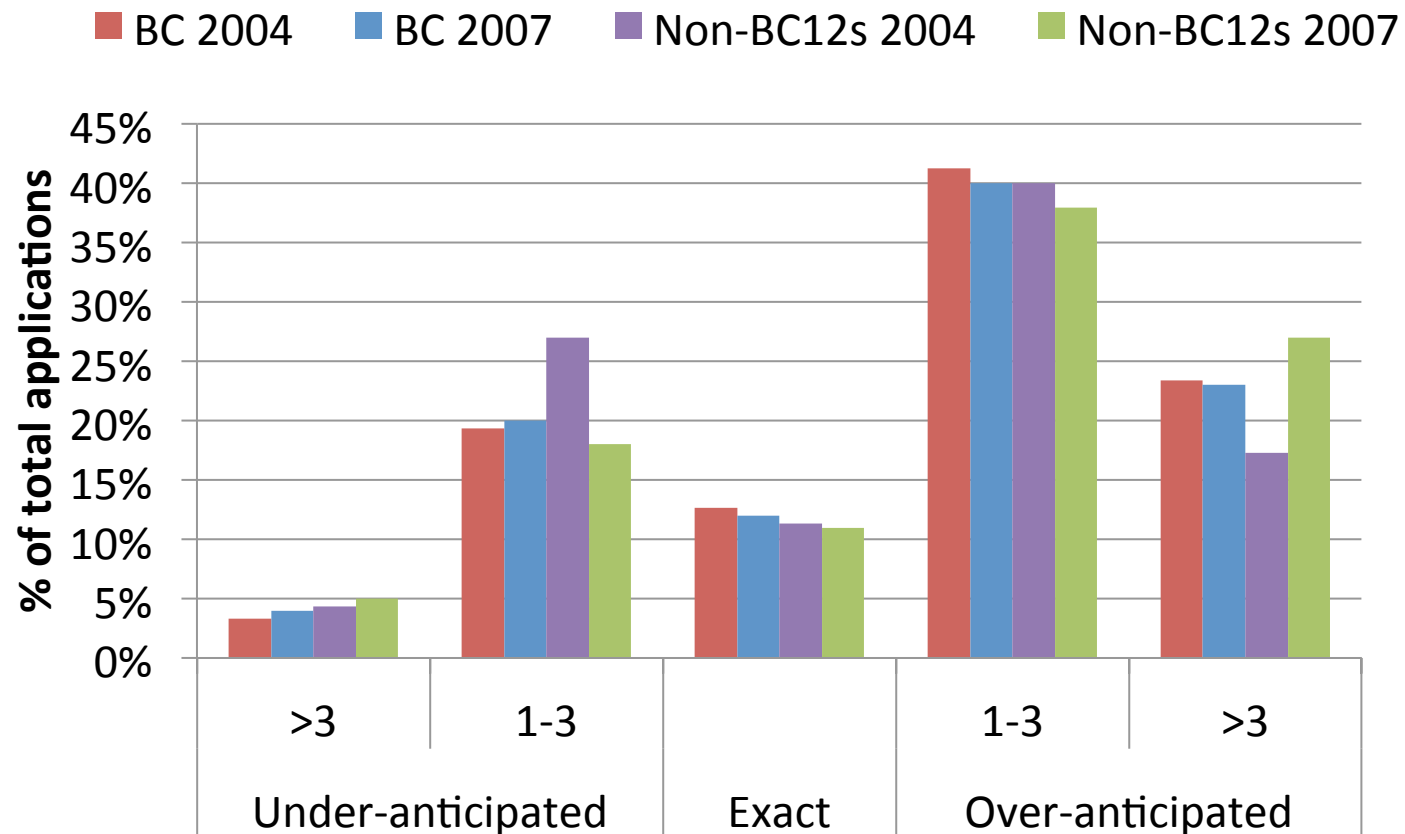


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# Findings

- 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



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# 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%)

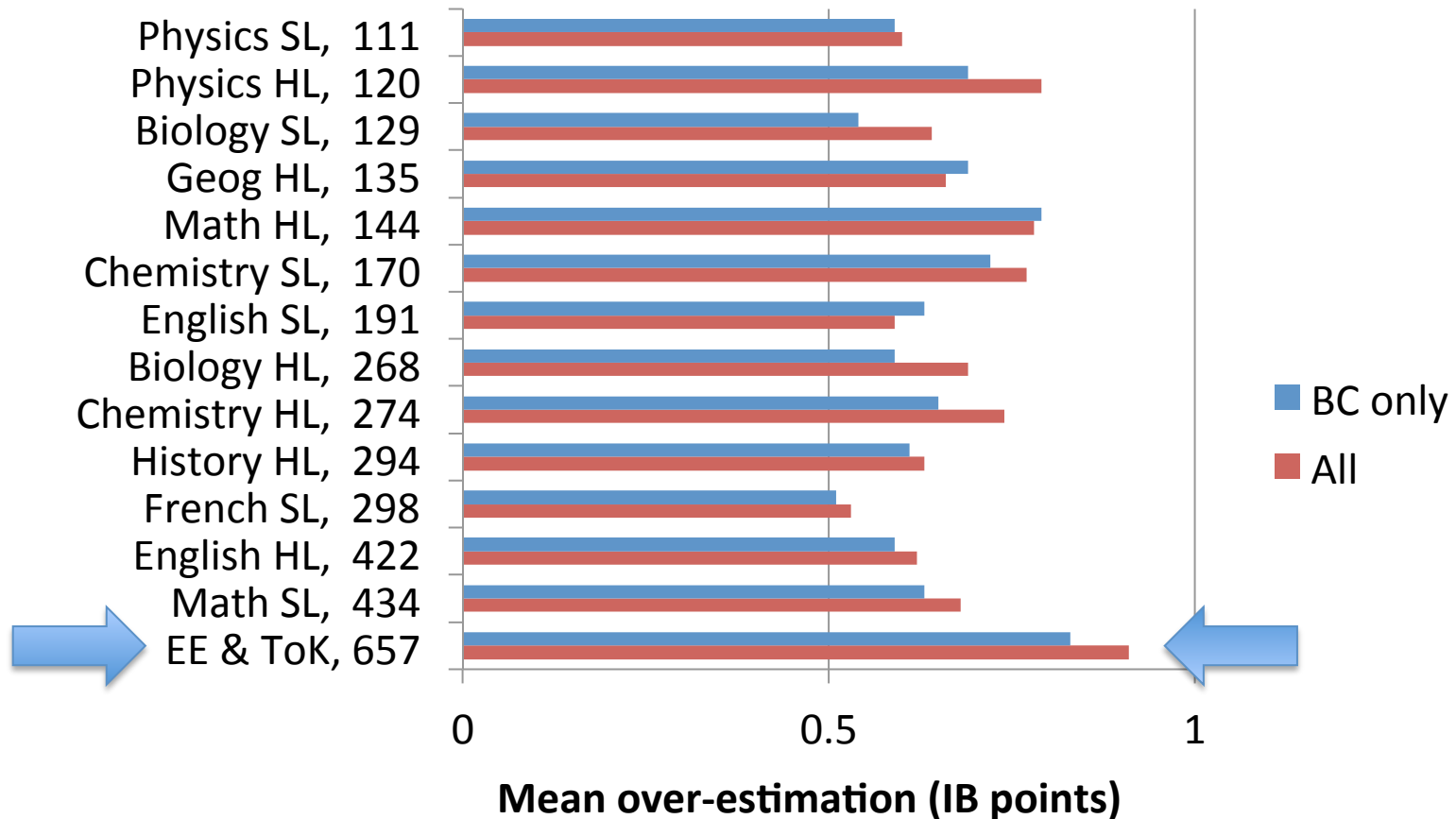
# Conclusions and Issues

- 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



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## **Fairness:**

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



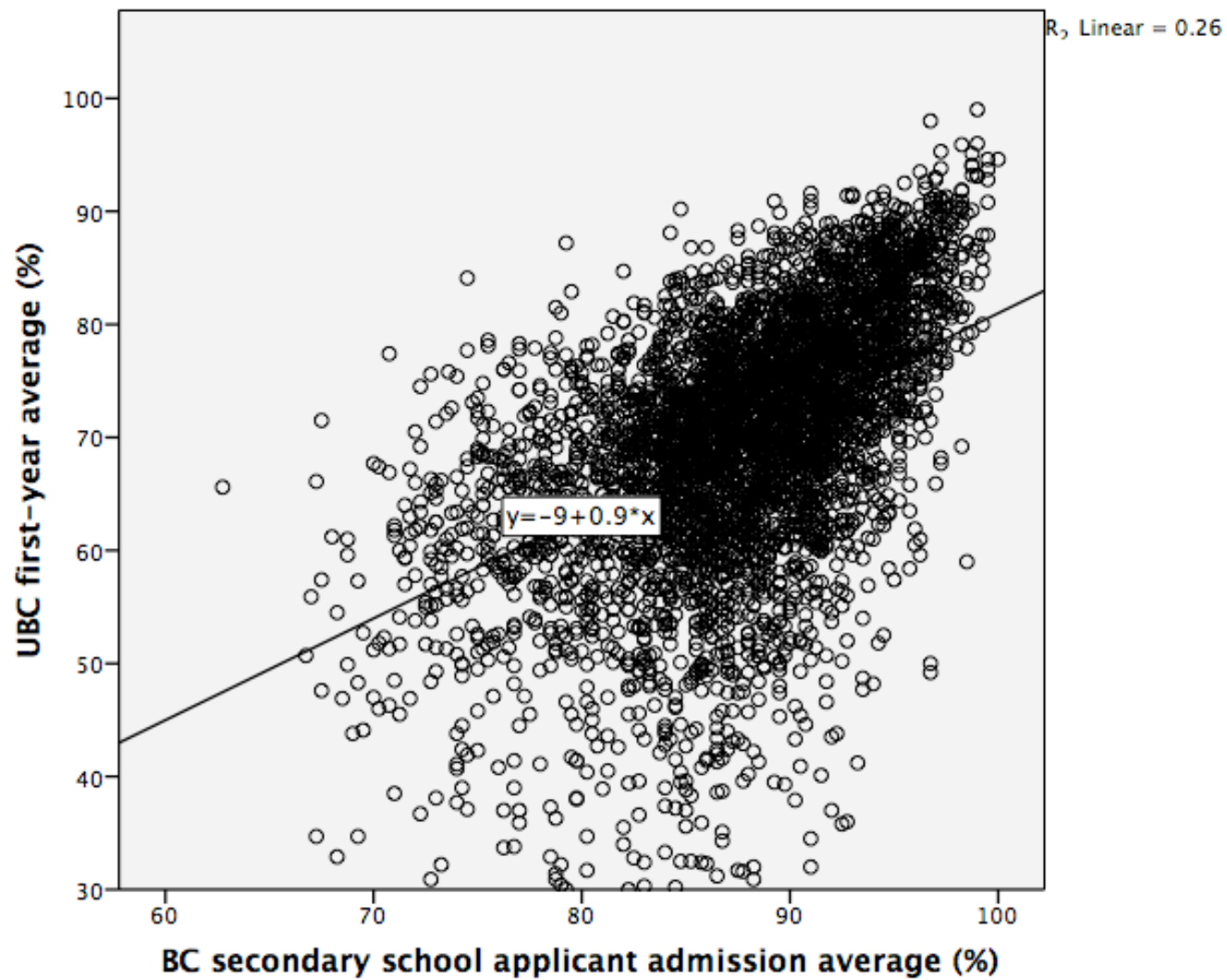
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# Pre-2004 IB Diploma "equivalency scale"

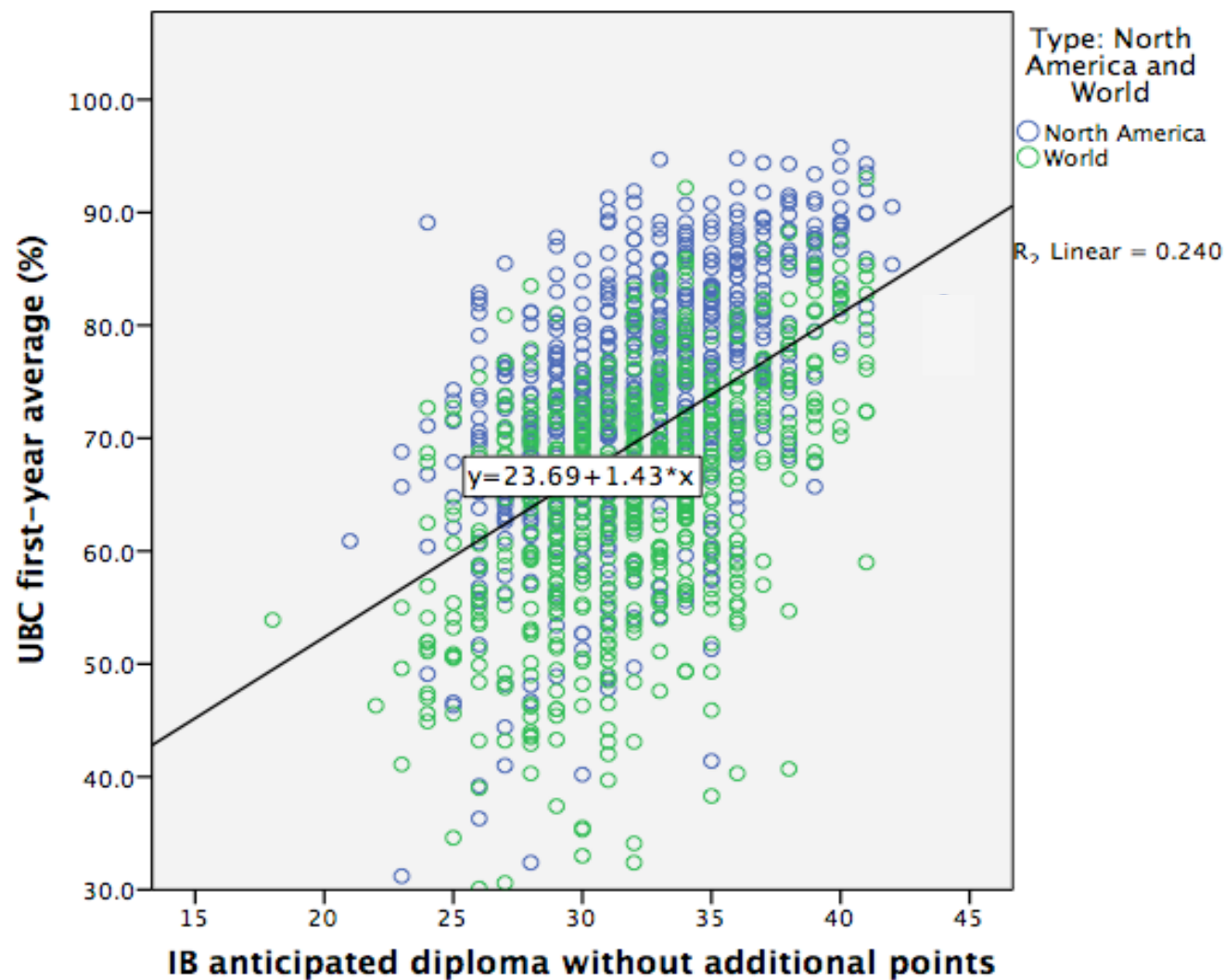
IB Diploma Points	BC12 Admission Average (%)		IB Diploma Points	BC12 Admission Average (%)
24	67 (C+)		34	93
25	70 (B-)		35	94
26	73 (B)		36	95
27	76 (B+)		37	96
28	80 (A-)		38	97
29	84 (A -)		39	98
30	87 (A)		40	98
31	90		41	99
32	91		42 - 45	99.9
33	92			

BC12 grades are good predictors of first year success



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# 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
- $(a * \text{anticipated IB Diploma points}) + b = 1^{\text{st}} \text{ year UBC}$
- $(x * \text{BC12 Spring admission avg.}) + y = 1^{\text{st}} \text{ year UBC}$
- If predicted first year performance is the same...

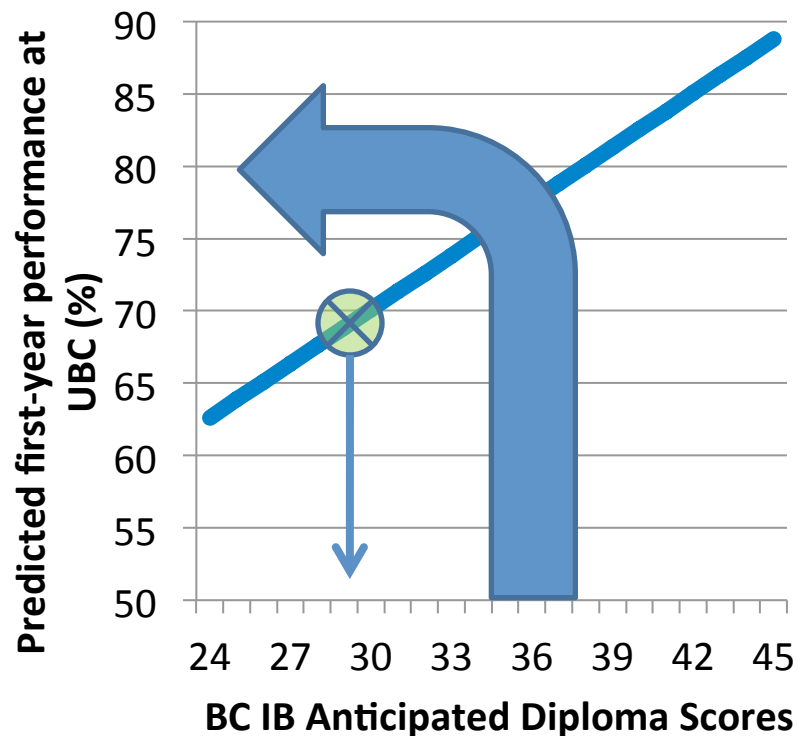


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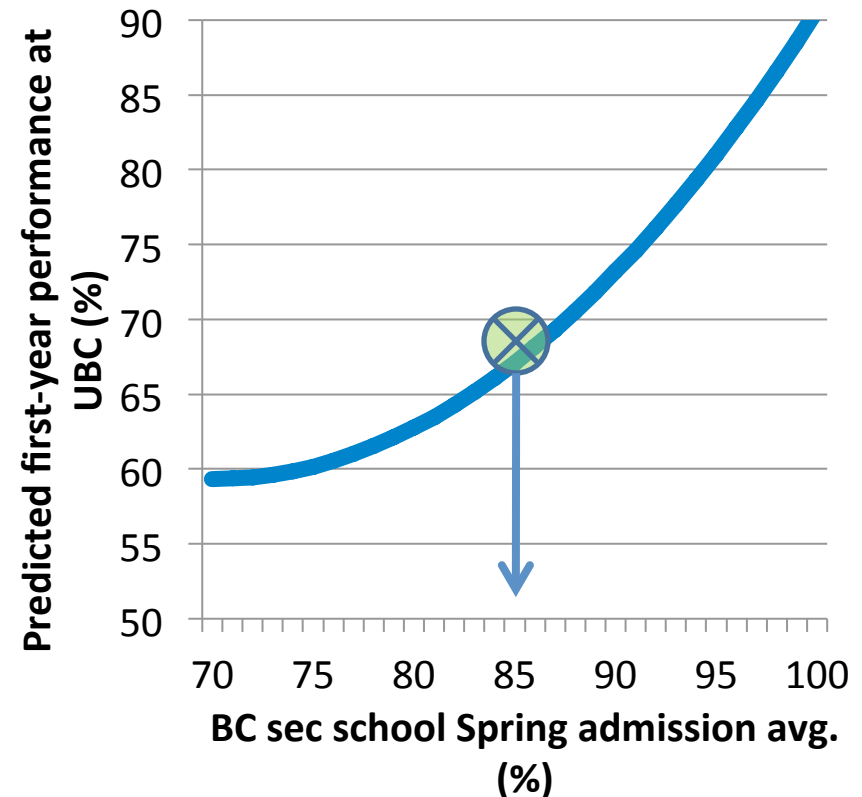
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# Predicting first-performance at UBC, 2003 - 2006

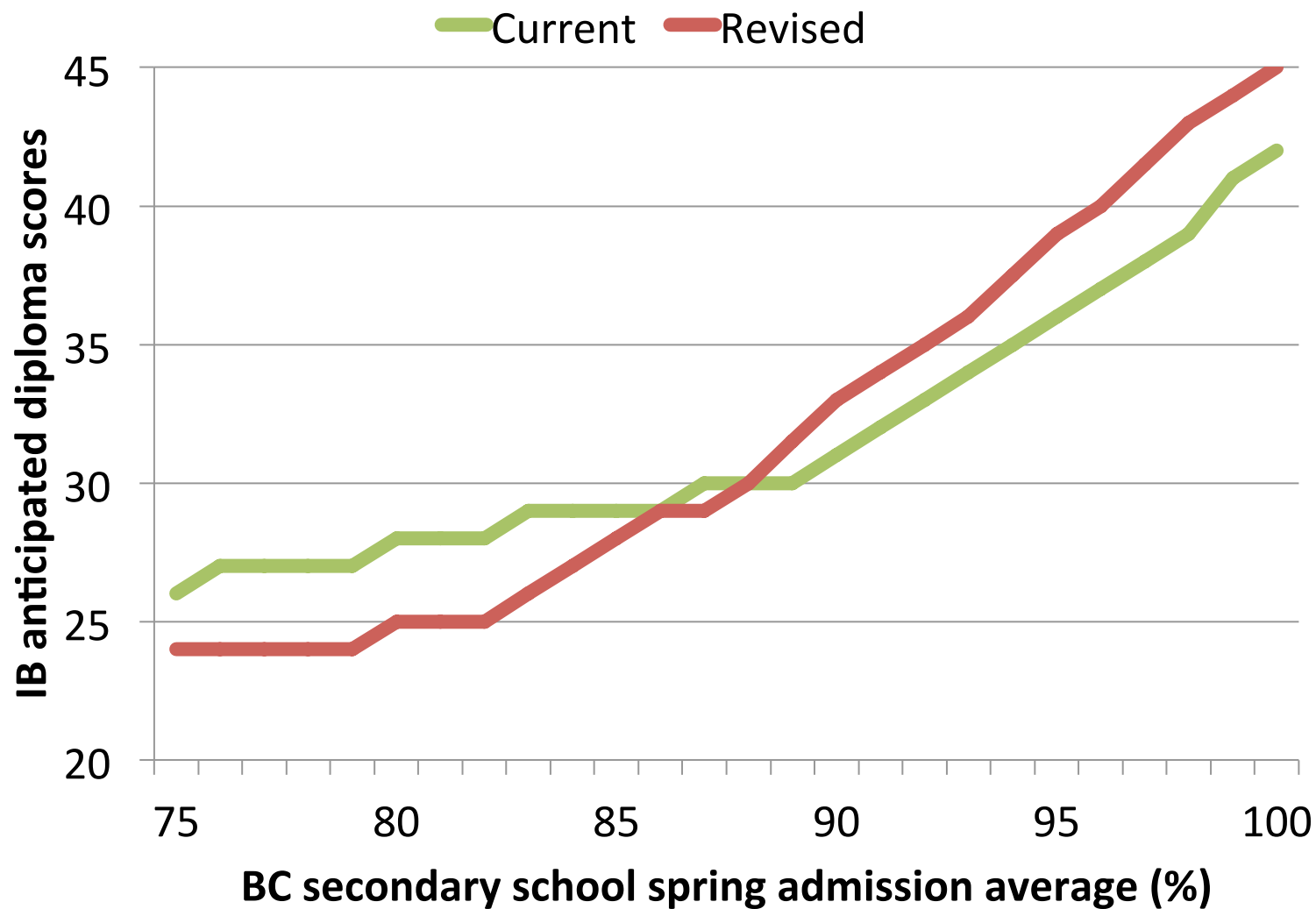
## Anticipated IB Diploma grades



## Spring BC 12 admission averages



# Revised IB-to-BC12 equivalency



# Revised: IB Diploma scores calibrated to %

old scale:

13	24	25			26			27			28			29			30			31			32	33	34	35	36	37	38	39	40	41	42	43	44	45
%	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100		

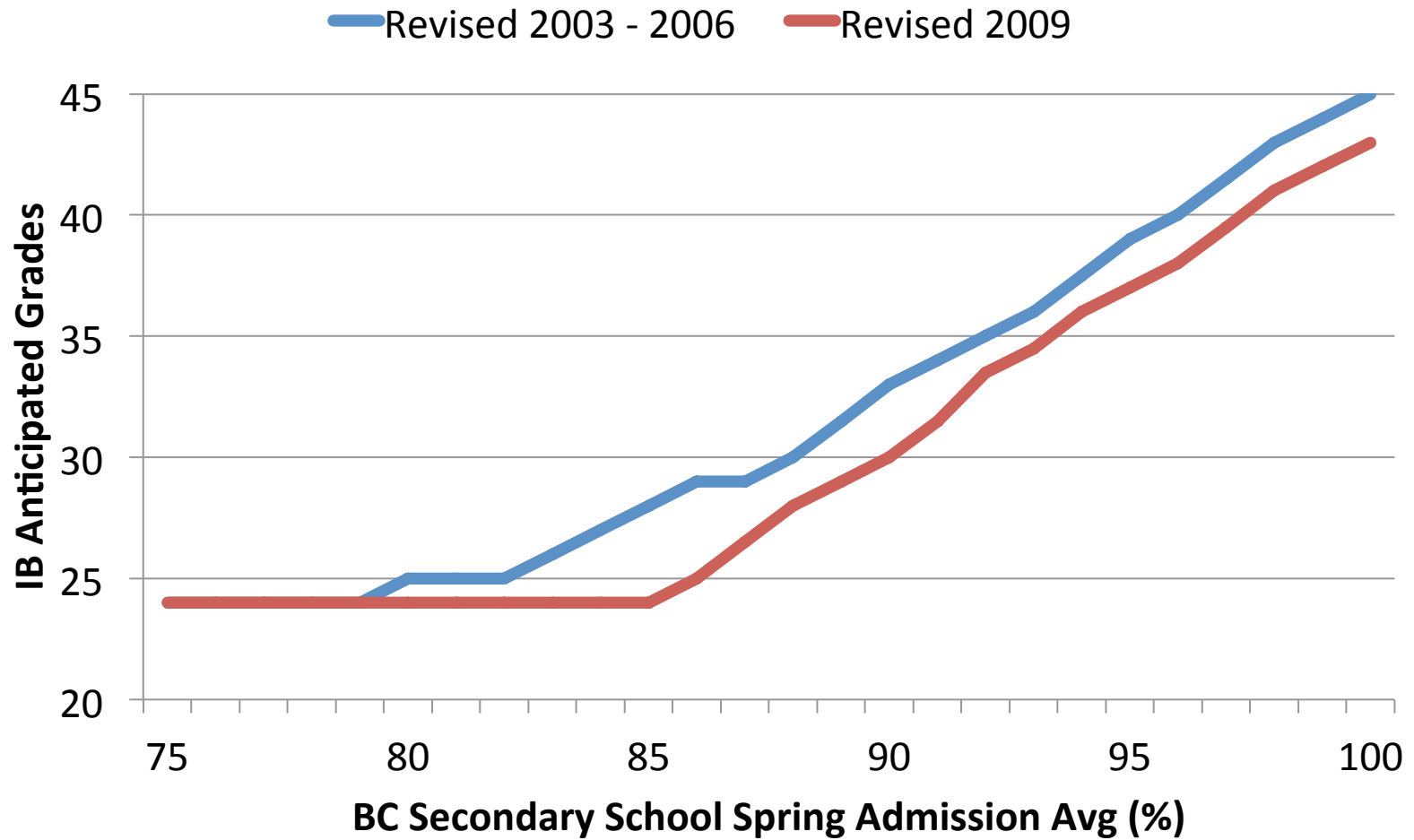
C+ to A range

New/revised scale:

IB	24	25			26	27	28	29		30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
%	79	80	81	82	83	84	85	86	87	88	89		90	91	92	93	94		95	96	97		98	99	100

B+ to A range

# Following up: 2009 vs. 2007





## 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



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# Revised Study: 2011 and 2012



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## Research questions

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



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# Anticipated point scores

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

- *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



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# 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
- 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...



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# 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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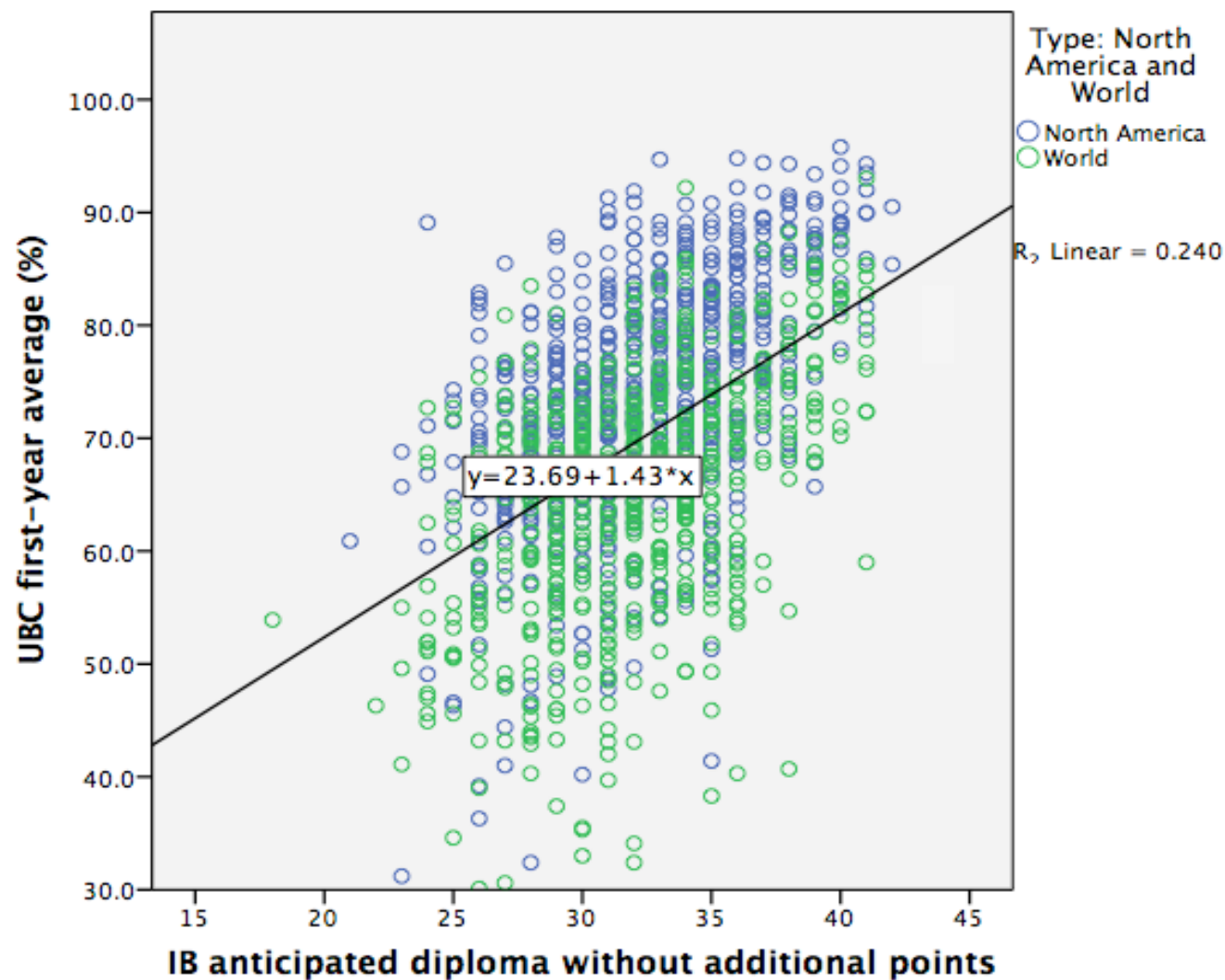
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# Conclusions

- 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?



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# Feedback and Discussion

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