

Corequisite Statistics Student Surveys – Quarterly Report
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OVERVIEW OF SAMPLE AND METHODS

Each term of the Highline Corequisite Mathematics Initiative, we administer surveys to MathP 146 students at the end of the term.

OUR CURRENT SAMPLE

MATHP146:	Frequency
KValid A Spr 19	25
B Spr 19	25
C F19	27
D F19	21
H W20	20
I W20	21
J Sp 20	13
K Sp 20	10
L Su 20	17
M F 20	13
Total	162

MathP 146 student responses are compared with a MATH& 146 baseline comprising three sections (n = 77) taught by two different instructors in Fall 2019. A fourth class was surveyed but the sample size was very low, with only 13 student attending on the day the survey was administered. We examined the responses on the 13 present and deduced that they were not representative of Math& 146 generally (see Fall 2019 analysis for details), so these 13 students were left out of the baseline. Instructors for the Math& 146 comparison courses were selected because they were known to be enthusiastic about teaching statistics and were known to incorporate group work and student-led projects. Thus, we felt they would be a good comparison group with the MathP 146 instructors who were committed to building community in their classrooms and contextualizing the course content to build students' perceptions of relevance. The faculty who participated in the fall surveys included two women, two men, two faculty of color, one part-time faculty, one faculty in the tenure process, and two with tenure.

The survey questions were designed around four focal areas: 1) Learning; 2) Support; 3) Contextualization and Relevance; 4) Course Logistics. The final survey questions were rearranged to mix the presentation of focal areas and used a 4-point, forced response Likert scale: 1 – strongly disagree; 2 – disagree somewhat; 3 – agree somewhat; 4 – strongly agreed. Chi square tests of independence were run to assess whether there was an association between responses and type of course taken (MathP or Math&146). A final section of the

survey included student demographics. A copy of the survey is included at the end of this document. Note 1/7/21: We have had low response rates since covid (spr 20, Su 20, F20). Because of this, I have separated out these results in red in the tables below. Also because of this, the comparison of corequisite MathP 146 with Math& 146 is the original analysis conducted in Fall 2019 and have not been updated.

Survey questions		
LEARNING	Results across MathP 146 (n = 139 SpFall2019, W2020) (Sp2020 – n = 23 (2 sec), Su2020 – n = 17, Fall2020 – n= 13 (1 sec))	Comparison to Math& 146 baseline (n = 77, Fall 2019)
Before I took MathP 146, I was confident in my ability to succeed in the course.** **p < .01	21% agreed strongly (30%, 18%, 23%) 28% agreed somewhat (30%, 41%, 29%) 34% disagreed somewhat (22%, 29%, 31%) 16% disagreed strongly (17%, 12%, 8%)	31% agreed strongly 48% agreed somewhat 20% disagreed somewhat 1% disagreed strongly Collapsed to: disagree, agree sw, agree strongly $X^2 (2, 213) = 17.7326, p = .000$
I feel I have mastered the basic concepts and skills covered in this class	55% agree strongly (52%, 71%, 31%) 40% agree somewhat (43%, 29%, 62%) Variability across MathP sections (min = 31% strongly agree; max = 76% strongly agree)	46% agree strongly 46% agree somewhat
I am confident I will pass MathP 146 with a 2.0 or higher	73% agreed strongly (83%, 94%, 54%) 24% agreed somewhat (17%, 6%, 46%) Variability between MathP sections (min = 54%, max = 95% agreed strongly)	64% agreed strongly 33% agreed somewhat
I am glad I chose to take MathP 146 corequisite course (Math& 146 + Math87) or Math& 146* p < .05	77% agreed strongly (91%, 88%, 69%) 20% agreed somewhat (9%, 6%, 31%) Variability between MathP sections (min = 60%, max = 90% agreed strongly)	58% agreed strongly 33% agreed somewhat Collapsed to disagree, agree sw, agree strongly $X^2 (2, 214) = 8.2352, p = .0163$
Overall I am satisfied with this course	72% agreed strongly (78%, 94%, 69%) 21% agreed somewhat (17%, 6%, 31%)	58% strongly agreed 35% agreed somewhat

	Variability between MathP sections (min = 62%, max = 80% agreed strongly)	
Conclusion: MathP students arrive feeling less prepared than Math& 146 students but leave feeling similarly that they have mastered the course objectives	and are more likely to be glad they chose the course.	Very high level of satisfaction in the covid spring 2020 remote sections 1/7/21: A slight shift downward to agree somewhat on many of these variables; but the sample size is really too small to draw any conclusions.

CONTEXTUALIZATION AND RELEVANCE	Results across MathP 146 (n = 139 SpFall2019, W2020) (Sp2020 – n = 23, Su2020 – n = 17, Fall2020 – n= 13)	Comparison to Math& 146 baseline (n = 77, Fall 2019)
<p>What I learned in this class is useful in my daily life**</p> <p>**p < .01</p>	<p>42% agreed strongly (48%, 65%, 23%) 43% agreed somewhat (44%, 29%, 62%) 9% disagreed somewhat (n = 1 in all terms) 6% disagreed strongly (n = 1 or less in all terms)</p> <p>Variability between MathP sections (min = 23%, max = 67% agreed strongly)</p>	<p>17% agreed strongly 46% agreed somewhat 31% disagreed somewhat 7% disagreed strongly</p> <p>$X^2 (3, 216) = 24.9167, p = .000$</p>
<p>In this class, I learned ideas or concepts that connect to my culture or community**</p> <p>**p < .01</p>	<p>35% agreed strongly (48%, 65%, 8%) 43% agreed somewhat (35%, 29%, 69%)</p> <p>Variability between MathP sections (min = 8% agreed strongly to max 65%)</p>	<p>18% agreed strongly 40% agreed somewhat</p> <p>$X^2 (3, 213) = 13.718, p = .003$</p>
<p>What I learned in this class is directly relevant to my program of study**</p> <p>**p < .01</p>	<p>55% agreed strongly (39%, 71%, 39%) 37% agreed somewhat (39%, 24%, 54%)</p> <p>Variability between MathP sections (min = 15%, max = 71% agreed strongly)</p>	<p>30% agreed strongly 44% agreed somewhat</p> <p>Due to low cell count I collapsed to 3 categories: disagree, agree sw, agree strongly $X^2 (2, 164) = 14.5671 p = .001$</p>
<p>The material in this course was interesting to me**</p> <p>**p < .01</p>	<p>66% agreed strongly (61%, 77%, 46%) 26% agreed somewhat (30%, 24%, 46%)</p> <p>Variability between MathP sections (min = 46%, max = 80% agreed strongly)</p>	<p>35% agreed strongly 53% agreed somewhat</p> <p>Due to low cell count I collapsed to 3 categories: disagree, agree sw, agree strongly $X^2 (2, 214) = 19.5388, p = .000$</p>
<p>Conclusion: We are achieving our goal of contextualizing the material as MathP students consistently report higher levels of</p>	<p>However, there is much variability across sections suggesting that we need to redouble efforts around relevance.</p>	<p>1/7/21: Slight shift downward to agree somewhat for Fall 2020 but overall 8% disagreed useful somewhat or strongly out of 190 student (92% agreed interesting.</p>

perception of relevance and interest		
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COURSE SUPPORTS	Results across MathP 146 (n = 139 SpFall2019, W2020) (Sp2020 – n = 23, Su2020 – n = 17, Fall2020 – n = 13)	Comparison to Math& 146 baseline (n = 77, Fall 2019)
<p>This course helped me learn how to study and be more successful in statistics*</p> <p>*$p < .05$</p>	<p>71% agreed strongly (83%, 82%, 62%) 28% agreed somewhat (13%, 18%, 31%)</p> <p>Overall upward trend across the terms: 60-70% in Spring 2019 pilot; 80 and 81% in winter 2020 courses.</p>	<p>55% agreed strongly 39% agreed somewhat</p> <p>Due to low cell count I collapsed into two categories: 1, 2, 3 and 4</p> <p>$X^2 (1, 213) = 5.533, p = .0187$</p>
<p>Students in this class helped each other**</p> <p>**$p < .01$</p>	<p>79% agreed strongly (78%, 53%, 69%) 18% agreed somewhat (17%, 41%, 15%)</p> <p>Variability between MathP sections (min = 53%, max = 90% agreed strongly)</p>	<p>46% agreed strongly 44% agreed somewhat</p> <p>Due to low cell count I collapsed to 3 categories: disagree, agree sw, agree strongly</p> <p>$X^2 (2, 213) = 24.4576, p = .000$</p>
<p>The course materials for this course helped me succeed*</p> <p>*$p < .05$</p>	<p>70% agreed strongly (70%, 82%, 62%) 23% agreed somewhat (26%, 18%, 31%)</p> <p>Variability between MathP sections (min = 50%, max = 82% agreed strongly)</p>	<p>49% agreed strongly 40% agreed somewhat</p> <p>Due to low cell count I collapsed to 3 categories: disagree, agree sw, agree strongly</p> <p>$X^2 (2, 214) = 9.0697, p = .0107$</p>
<p>The extra time in this class was essential to helping me succeed</p>	<p>75% agree strongly (78%, 77%, 69%) 21% agree somewhat (17%, 12%, 31%)</p> <p>Variability across sections (min = 60%, max = 90% strongly agree)</p>	<p>N/A</p>
<p>The workload in this course was unreasonable*</p> <p>*$p < .05$</p>	<p>15% agreed strongly (4%, 0%, 0%) 21% agreed somewhat (13%, 19%, 31%) 32% disagreed somewhat (48%, 38%, 31%) 31% disagreed strongly (35%, 44%, 39%)</p> <p>Variability between MathP sections (min = 3.7%, max = 35% strongly agreed)</p>	<p>8% agreed strongly 8% agreed somewhat 42% disagreed somewhat 42% disagreed strongly</p> <p>$X^2 (3, 212) = 10.558, p = .0140$</p>

<p>I had enough time outside of class to complete the work for this class</p>	<p>55% agreed strongly (48%, 77%, 62%) 30% agreed somewhat (39%, 24%, 16%)</p> <p>Variability between MathP sections (min = 45%, max = 71% agreed strongly)</p>	<p>58% agreed strongly 35% agreed somewhat</p>
<p>Conclusion: MathP are finding the course supports adequate but do report more workload than Math& 146 students but also report that they have enough time to complete the work</p>		

COURSE LOGISTICS	Results across MathP 146 (n = 139 SpFall2019, W2020) (Sp2020 – n = 23, Su2020 – n = 17, Fall2020 – n= 13)	Comparison to Math& 146 baseline (n = 77, Fall 2019)
I recommend the course stays at 10 credits	77% agreed strongly (78%, 82%, 85%) 17% agreed somewhat (22%, 18%, 15%) Variability between MathP sections (min = 60%, max = 90% agreed strongly)	NA
I recommend the course be reduced to 8 credits and meet less often (New Q for Winter 2020, n = 41)	5% agreed strongly (13%, 0%, 0%) 18% agreed somewhat (13%, 0%, 8%) 38% disagreed somewhat (30%, 35%, 15%) 40% disagreed strongly (44%, 65%, 77%) ECE students (Section I class met 5 hours on Saturday) were overrepresented among agree. 9 students agreed (2 strongly and 7 somewhat), 7 of whom were ECE (7/9). Similarly LC students more often said agree.	NA
If the class met less often, I would still be successful (new question for W2020)	20% agreed strongly (14%, 12%, 0%) 37% agreed somewhat (23%, 29%, 31%) 32% disagreed somewhat (36%, 41%, 31%) 12% disagreed strongly (27%, 18%, 39%) ECE students are overrepresented amongst those who agree (17 of the 23/41 who agreed) In the general section W20, 0% strongly agreed and 30% (n = 6) agreed somewhat and 70% disagreed. Possible similar trend for learning community cohort..but is this due to instructor or students?) 4 students in covid fall 2020 agreed somewhat. The sample is too small. Could they be meaning hybrid?	
I had difficulty paying for the class** **p < .01 Due to low cell count, collapsed to 3 categories: disagree strongly, sw, agree (sw or str). X ² (3, 209) = 13.905, p = .003	15% agreed strongly (9%, 12%, 8%) 25% agreed somewhat (30%, 29%, 15%) 18% disagreed somewhat (26%, 12%, 31%) 42% disagreed strongly (35%, 47%, 46%) Variability between MathP sections (min = 4.2%, max = 29% agreed strongly)	4% agreed strongly 18% agreed somewhat 38% disagreed somewhat 40% disagreed strongly

CONCLUSION: We need more data on this issue.	MathP students indicate more difficulty paying; but reducing credits is being influenced by the ECE student responses and their class was not at a standard time. We need another quarter's worth of data.	
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Below is the breakdown by section on these questions given concerns about credit load:
 1 – disagree strongly, 2 – disagree somewhat, 3 – agree somewhat, 4 – agree strongly

Section * 15. beginning W20: If the class met left often, I would still be successful Crosstabulation

		15. beginning W20: If the class met left often, I would still be successful				Total	
		1	2	3	4		
Section	H	Count	4	10	6	0	20
		% within Section	20.0%	50.0%	30.0%	0.0%	100.0%
I		Count	1	3	9	8	21
		% within Section	4.8%	14.3%	42.9%	38.1%	100.0%
J		Count	2	3	5	3	13
		% within Section	15.4%	23.1%	38.5%	23.1%	100.0%
K		Count	4	5	0	0	9
		% within Section	44.4%	55.6%	0.0%	0.0%	100.0%
L – su20		Count	3	7	5	2	17
		% within Section	17.6%	41.2%	29.4%	11.8%	100.0%
M – f20		Count	5	4	4	0	13
		% within Section	38.5%	30.8%	30.8%	0.0%	100.0%
Total		Count	19	32	29	13	93
		% within Section	20.4%	34.4%	31.2%	14.0%	100.0%

Section * 20 (beginning W20). I recommend the course be reduced to 8 credits and meet less often)

Crosstabulation

20 (beginning W20). I recommend the course be reduced to 8 credits and meet less often)

		20 (beginning W20). I recommend the course be reduced to 8 credits and meet less often)				Total	
		1	2	3	4		
Section	H	Count	11	7	2	0	20
		% within Section	55.0%	35.0%	10.0%	0.0%	100.0%
I		Count	5	8	5	2	20
		% within Section	25.0%	40.0%	25.0%	10.0%	100.0%
J		Count	4	4	3	2	13
		% within Section	30.8%	30.8%	23.1%	15.4%	100.0%
K		Count	6	3	0	1	10
		% within Section	60.0%	30.0%	0.0%	10.0%	100.0%
L – su20		Count	11	6	0	0	17
		% within Section	64.7%	35.3%	0.0%	0.0%	100.0%
M – F20		Count	10	2	1	0	13
		% within Section	76.9%	15.4%	7.7%	0.0%	100.0%
Total		Count	47	30	11	5	93
		% within Section	50.5%	32.3%	11.8%	5.4%	100.0%

Section * 8. I recommend the course stay at 10 credits (not asked of Math& 146)

Crosstabulation

8. I recommend the course stay at 10 credits (not asked of Math& 146)

						Total
		1	2	3	4	
Section A	Count	1	0	4	20	25
	% within Section	4.0%	0.0%	16.0%	80.0%	100.0%
Section B	Count	1	2	6	16	25
	% within Section	4.0%	8.0%	24.0%	64.0%	100.0%
Section C	Count	1	2	3	21	27
	% within Section	3.7%	7.4%	11.1%	77.8%	100.0%
Section D	Count	0	1	1	18	20
	% within Section	0.0%	5.0%	5.0%	90.0%	100.0%
Section H	Count	0	0	2	18	20
	% within Section	0.0%	0.0%	10.0%	90.0%	100.0%
Section I	Count	0	1	7	12	20
	% within Section	0.0%	5.0%	35.0%	60.0%	100.0%
Section J	Count	0	0	3	10	13
	% within Section	0.0%	0.0%	23.1%	76.9%	100.0%
Section K	Count	0	0	2	8	10
	% within Section	0.0%	0.0%	20.0%	80.0%	100.0%
Section L	Count	0	0	3	14	17
	% within Section	0.0%	0.0%	17.6%	82.4%	100.0%
Section M	Count	0	0	2	11	13
	% within Section	0.0%	0.0%	15.4%	84.6%	100.0%
Total	Count	3	6	33	148	190
	% within Section	1.6%	3.2%	17.4%	77.9%	100.0%

Section * 13. I had difficulty paying for the class Crosstabulation

13. I had difficulty paying for the class

		1	2	3	4	Total
Section A	Count	11	5	7	1	24
	% within Section	45.8%	20.8%	29.2%	4.2%	100.0%
Section B	Count	12	2	6	5	25
	% within Section	48.0%	8.0%	24.0%	20.0%	100.0%
Section C	Count	10	7	6	4	27

	% within Section	37.0%	25.9%	22.2%	14.8%	100.0%
D	Count	10	2	6	2	20
	% within Section	50.0%	10.0%	30.0%	10.0%	100.0%
H	Count	6	5	4	3	18
	% within Section	33.3%	27.8%	22.2%	16.7%	100.0%
I	Count	6	3	4	5	18
	% within Section	33.3%	16.7%	22.2%	27.8%	100.0%
J	Count	5	2	4	2	13
	% within Section	38.5%	15.4%	30.8%	15.4%	100.0%
K	Count	3	4	3	0	10
	% within Section	30.0%	40.0%	30.0%	0.0%	100.0%
L	Count	8	2	5	2	17
	% within Section	47.1%	11.8%	29.4%	11.8%	100.0%
M	Count	6	4	2	1	13
	% within Section	46.2%	30.8%	15.4%	7.7%	100.0%
Total	Count	77	36	47	25	185
	% within Section	41.6%	19.5%	25.4%	13.5%	100.0%

STUDENT DEMOGRAPHICS	Results across MathP 146 (n = 139 SpFall2019, W2020) (Sp2020 – n = 23, Su2020 – n = 17, Fall2020 – n= 13)	
Have you taken a college math course before	18% Yes (26%, 29%, 31%)	33% Yes
How long ago did you take your last math class?	53% in the past year (65%, 29%, 46%) 15% in the past two years (4%, 6%, 8%) 33% it's been more than two years (26%, 59%, 38%)	63% in the past year 12% in the past two years 25% it's been more than two years
Where did you take your last math class?	42% Highline (52%, 35%, 38%) 38% High school (39%, 18%, 38%)	27% Highline 53% High school
How many quarters have you been at Highline?	48% 3 or less (39%, 53%, 46%) 24% 4 to 6 (35%, 6%, 8%) 9% 7 to 9 (9%, 12%, 15%) 9% 10 to 12 (9%, 18%, 15%)	53% 3 or less 23% 4 to 6 14% 7 to 9 4% 10 to 12

	8% more than 12 (10%, 6%, 15%)	
Approximate age	4% 15 – 17 (4%, 0%, 7%) 22% 18-19 (17%, 12%, 15%) 31% 20-24 (22%, 6%, 8%) 18% 25-29 (4%, 29%, 31%) 10% 30-34 (26%, 29%, 8%) 6% 35-39 (4%, 0%, 8%) 9% 40 or above (22% n = 5, 18%, 23%)	26% 15-17 29% 18-19 25% 20-24 8% 25-29 11% 30-34 0% 35-39 1% 40 or above
How many credits did you enroll in this term?	30% less than 12 (30%, 71%, 38%) 70% 12 or more (70%, 29%, 62%)	32% less than 12 68% 12 or more
Self-identified race/ethnicity	11% “white” only (9%, n = 2, 6%, 8%)	26% “white” only
Self-identified gender	75% female (74%, 65%, 62%)	69% female
CONCLUSION: MathP students tend to be older, and less likely to have taken last math in HS.		

HCMI SURVEY

The purpose of this survey is to obtain information that will help improve instruction and delivery of MathP 146. This survey is anonymous and your responses will not be shared individually with your instructor. The information you provide will remain strictly confidential and will not identify you in any way, shape or form.

For the following questions, circle only one response and do not place marks between responses.

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly
1. I feel I have mastered the basic concepts and skills covered in this course	4	3	2	1
2. The topics in this course are useful to me in my top career choice (NOT REMOVED)	4	3	2	1
3. The extra time in this course was essential to helping me succeed	4	3	2	1
4. Before I took MathP 146, I was confident in my ability to succeed in the course.	4	3	2	1
5. This course helped me learn how to study and be more successful in statistics	4	3	2	1
6. What I learned in this class is useful in my daily life	4	3	2	1
7. I am glad I chose to take MathP 146 corequisite course (Math& 146 + Math87)	4	3	2	1
8. I recommend the course stays at 10 credits	4	3	2	1
9. The workload in this course was unreasonable	4	3	2	1
10. In this class, I learned ideas or concepts that connect to my culture or community	4	3	2	1
11. I had enough time outside of class to complete the work for this class	4	3	2	1
12. The course materials for this course helped me succeed	4	3	2	1
13. I had difficulty paying for the class	4	3	2	1

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly
14. I am confident I will pass MathP 146 with a 2.0 or higher	4	3	2	1
15. If the class met less often, I would still be successful	4	3	2	1
16. Students in this class helped each other	4	3	2	1
17. The material in this course was interesting to me	4	3	2	1
18. What I learned in this class is directly relevant to my program of study	4	3	2	1
19. Overall I am satisfied with this course	4	3	2	1
20. I recommend the course be reduced to 8 credits and meet less often	4	3	2	1

Optional Questions: **We appreciate your willingness to provide us with this additional information**

- Have you ever taken a college-level math course in the past? Yes No Unsure
If yes, what was the name of the class? _____
- How long ago did you take your **last math class** prior to MathP 146? (circle one)
In the past year In the past two years It's been more than two years
- Where did you take that class? (Circle one)
Highline High School Other (Please Explain)_____
- What was the name of the **last math class** you took before MathP 146? _____
- How many quarters have you been at Highline? (circle one)
3 or less 4-6 7-9 10-12 More than 12
- Approximate Age (circle one) 15-17 18-19 20-24 25-29 30-34 35-39 40 or above
- How many credits did you enroll in this quarter? (circle one): less than 12 credits 12 or more credits
- How do you self-identify in terms of race/ethnicity? _____
- How do you self-identify in terms of gender? _____
- What advice would you offer to another student who was considering taking a corequisite MathP 146 (Math 87 + Math& 146 combined) math course? (Please provide any additional comments)