WESTERN SYDNEY
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From where do our students come?

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Mathematics Education Support Hub (MESH)

Western Sydney University

WESTERN SYDNEY UNIVERSITY

MESH

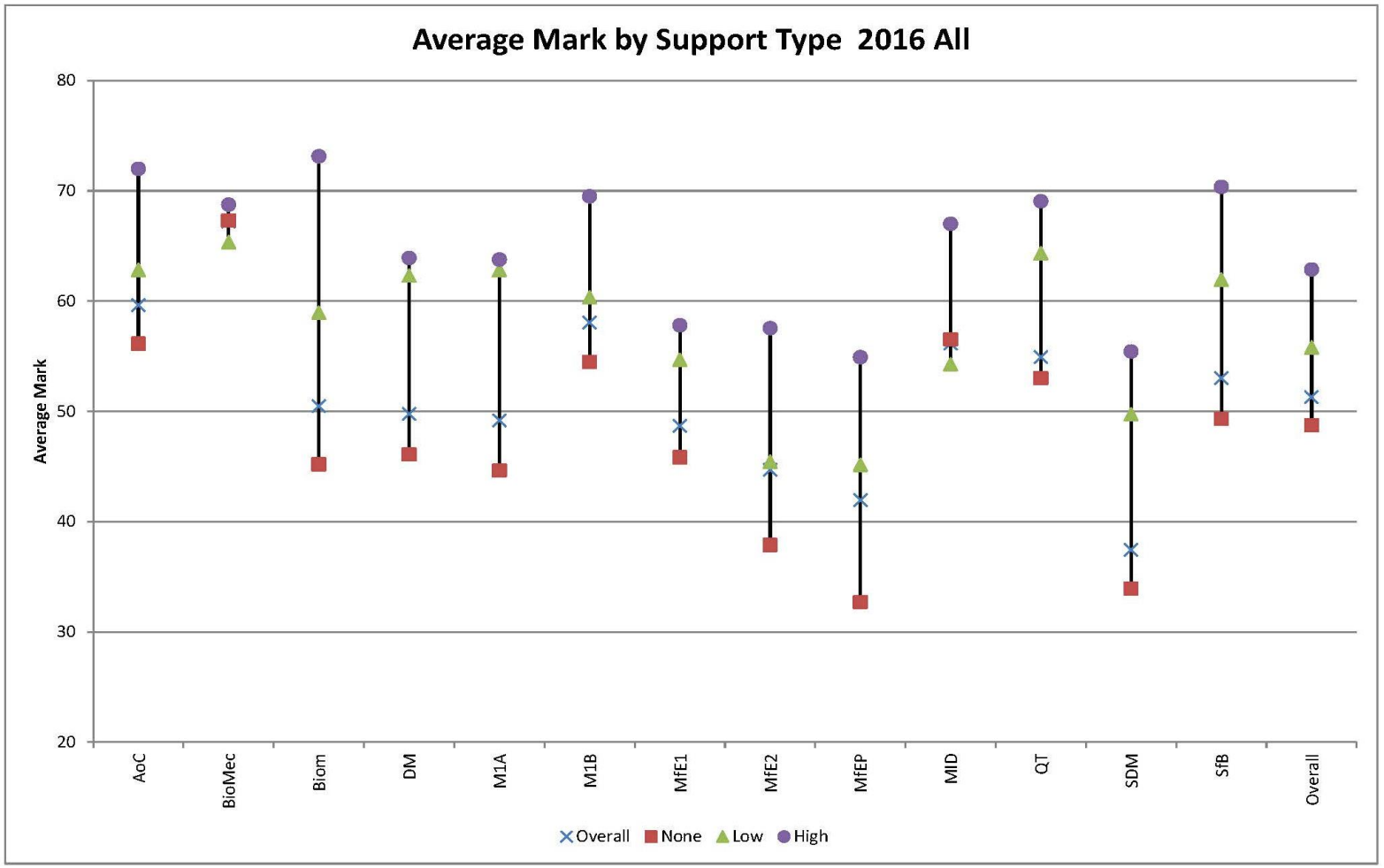
Provides numeracy, mathematics and statistics support to students of Western Sydney University.

Face to face provision on six campuses includes:

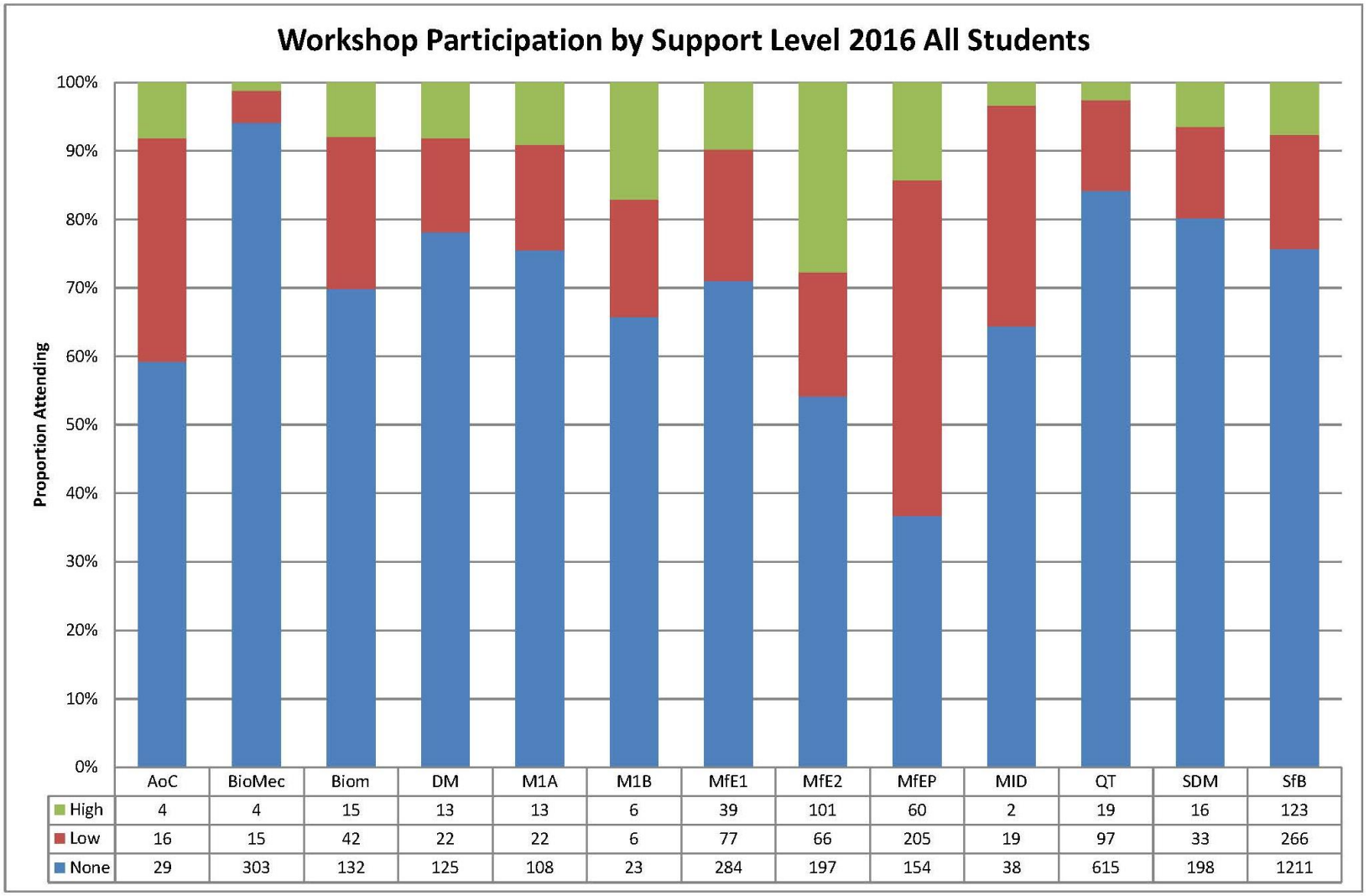
- **Unit (subject) specific workshops, fourteen units in 2016**
- **Library roving**

MESH workshop - student performance

Research conducted by MESH indicates that as the level of MESH workshop support increases, the student average mark increases.



Proportion of students attending workshops in 2016



	AoC	BioMec	Biom	DM	M1A	M1B	MfE1	MfE2	MfEP	MID	QT	SDM	SfB
High	4	4	15	13	13	6	39	101	60	2	19	16	123
Low	16	15	42	22	22	6	77	66	205	19	97	33	266
None	29	303	132	125	108	23	284	197	154	38	615	198	1211

Mathematics background of students

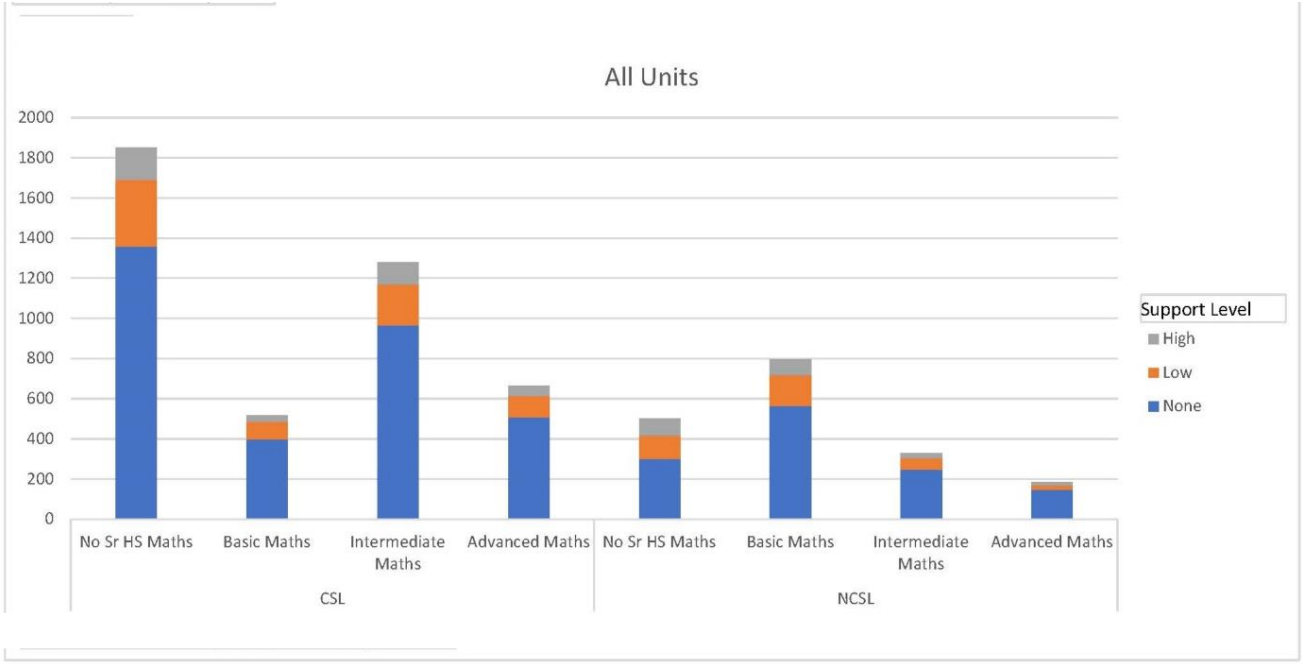
in the subjects where MESH workshops are conducted

	High School Maths Level				
Year and Support Level	**None**	**Basic Maths**	**Int Maths**	**Advanced Maths**	**Grand Total**
2015					
None	34.47%	26.43%	25.75%	13.35%	100.00%
Low	41.42%	25.13%	21.77%	11.68%	100.00%
High	53.29%	21.26%	18.26%	7.19%	100.00%
2015 Total	**37.10%**	**25.79%**	**24.53%**	**12.57%**	**100.00%**
2016					
None	49.39%	14.98%	23.56%	12.08%	100.00%
Low	54.82%	15.29%	21.49%	8.40%	100.00%
High	50.61%	13.94%	23.03%	12.42%	100.00%
2016 Total	**50.50%**	**14.95%**	**23.13%**	**11.42%**	**100.00%**
2017 (Autumn Semester Only)					
None	54.13%	11.19%	22.38%	12.30%	100.00%
Low	57.89%	12.17%	20.07%	9.87%	100.00%
High	53.59%	16.02%	21.55%	8.84%	100.00%
2017 Total	**54.68%**	**11.80%**	**21.93%**	**11.59%**	**100.00%**

Are the No Sr HS Maths group driven by mature entry students?

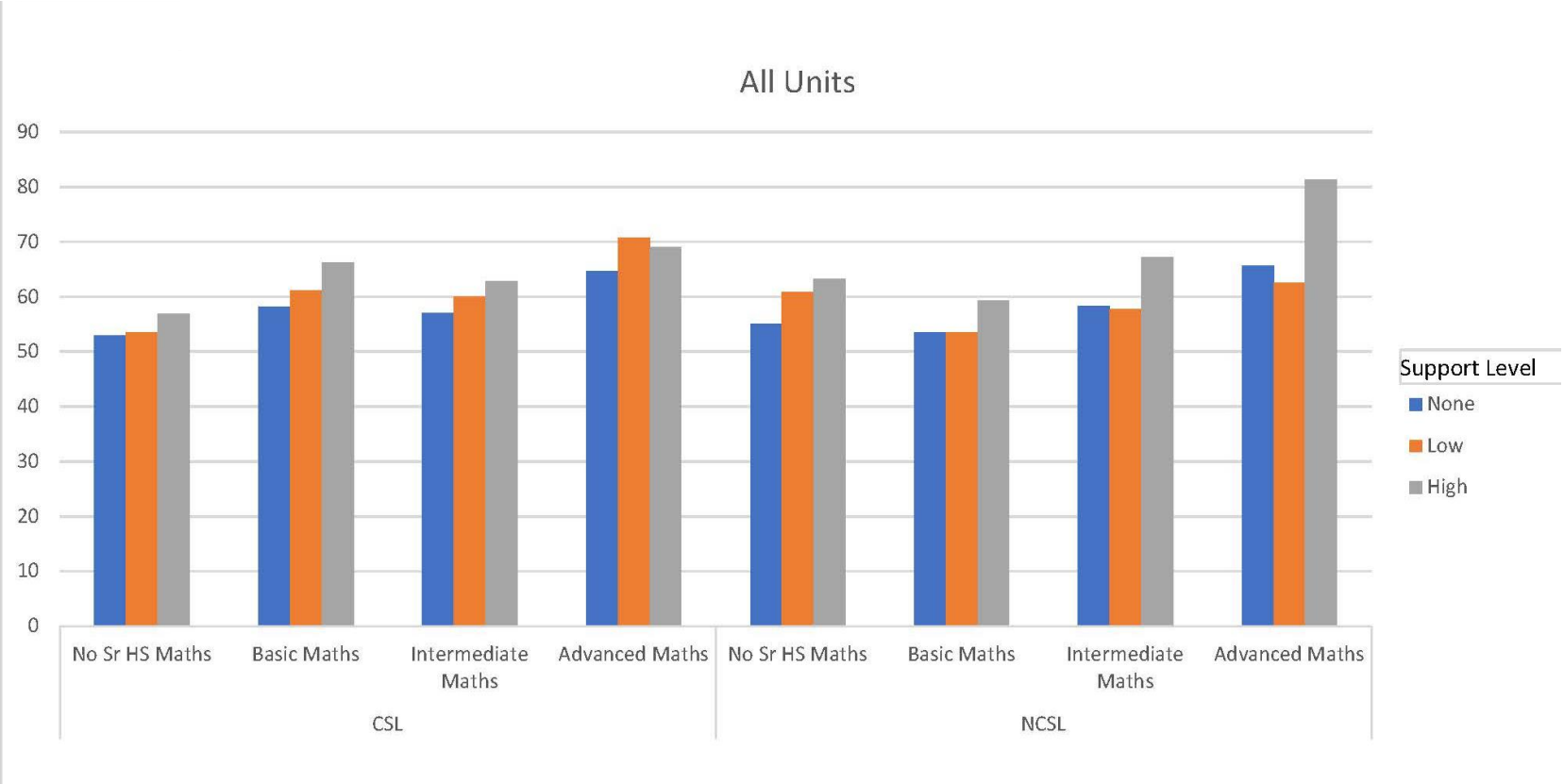
Number of students by

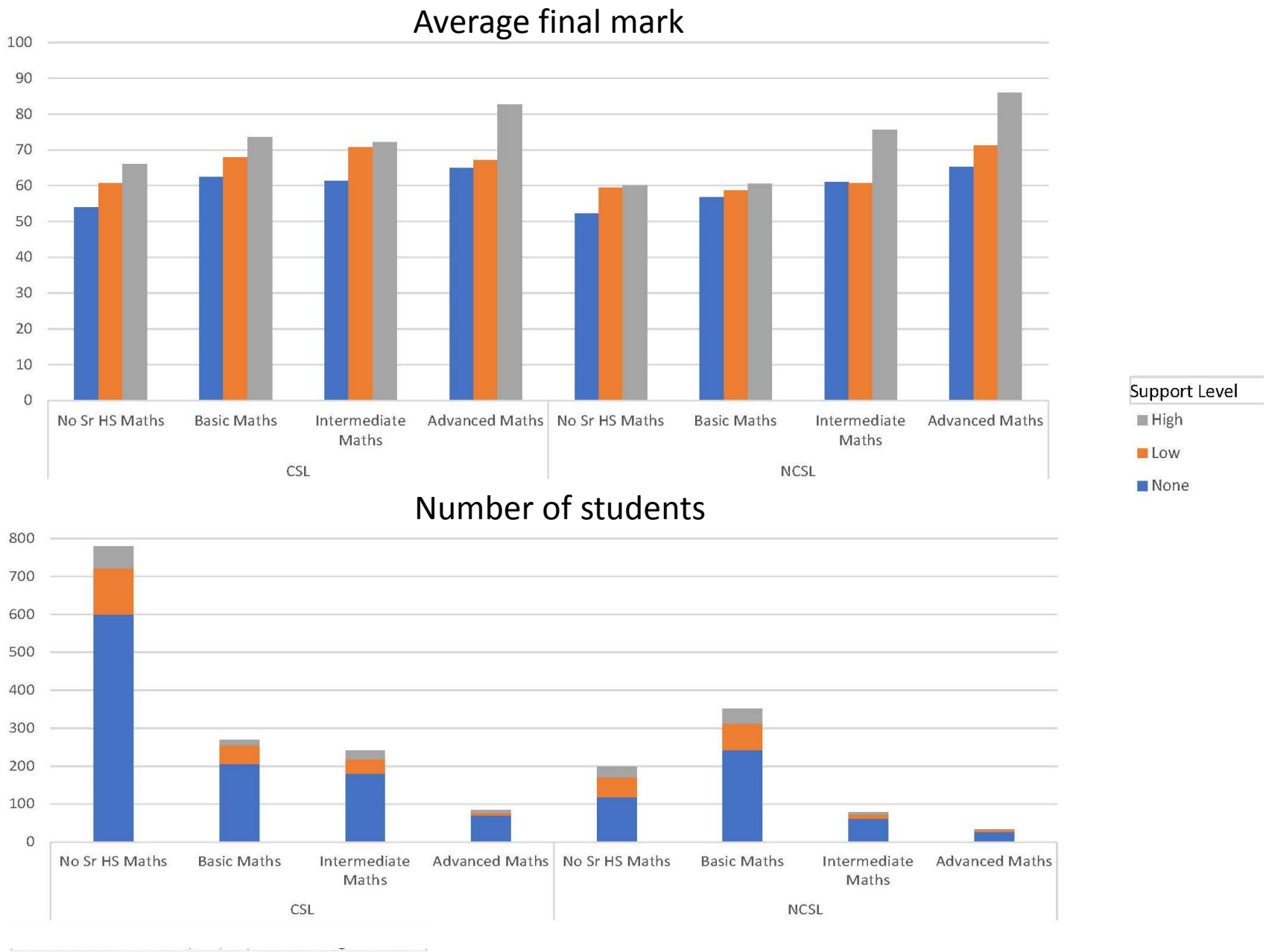
- Mathematics background
- current or non-current school leaver
- MESH workshop support level



Average final exam marks of students by

- Mathematics background
- current or non-current school leaver
- MESH workshop support level

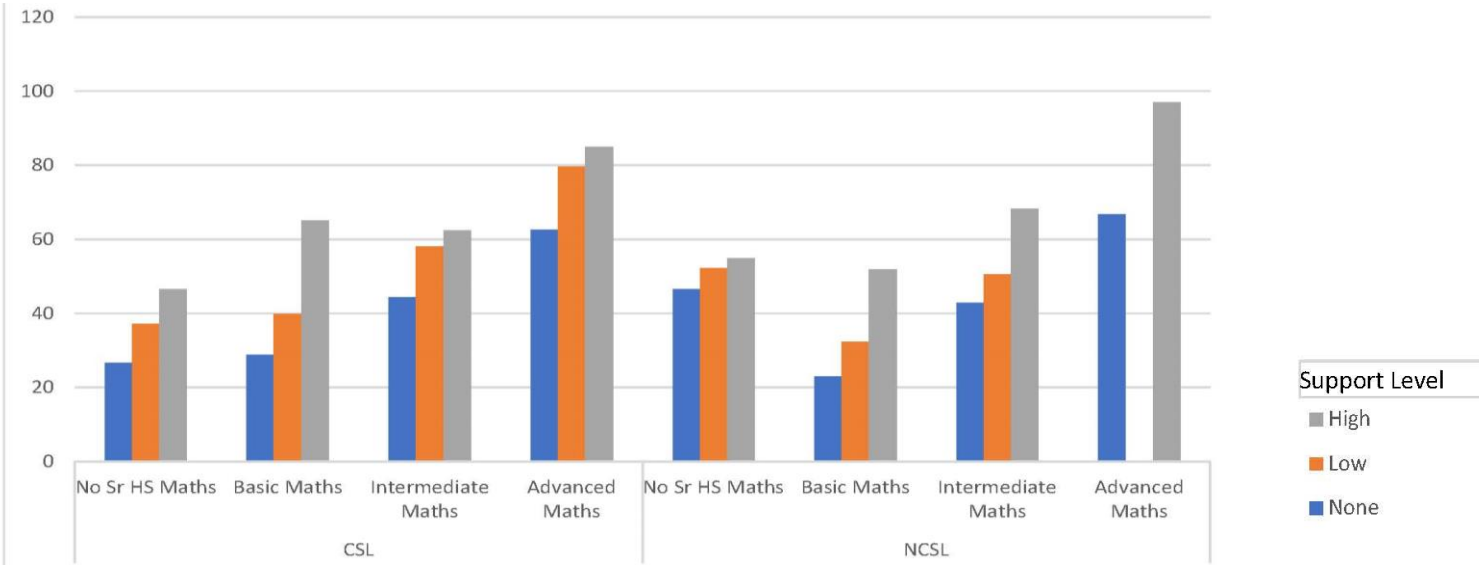



Average final mark
100
90
80
70
60
50
40
30
20
10
0
No Sr HS Maths
Basic Maths
Intermediate Maths
Advanced Maths
CSL
NCSL
Support Level
High
Low
None
Number of students
800
700
600
500
400
300
200
100
0

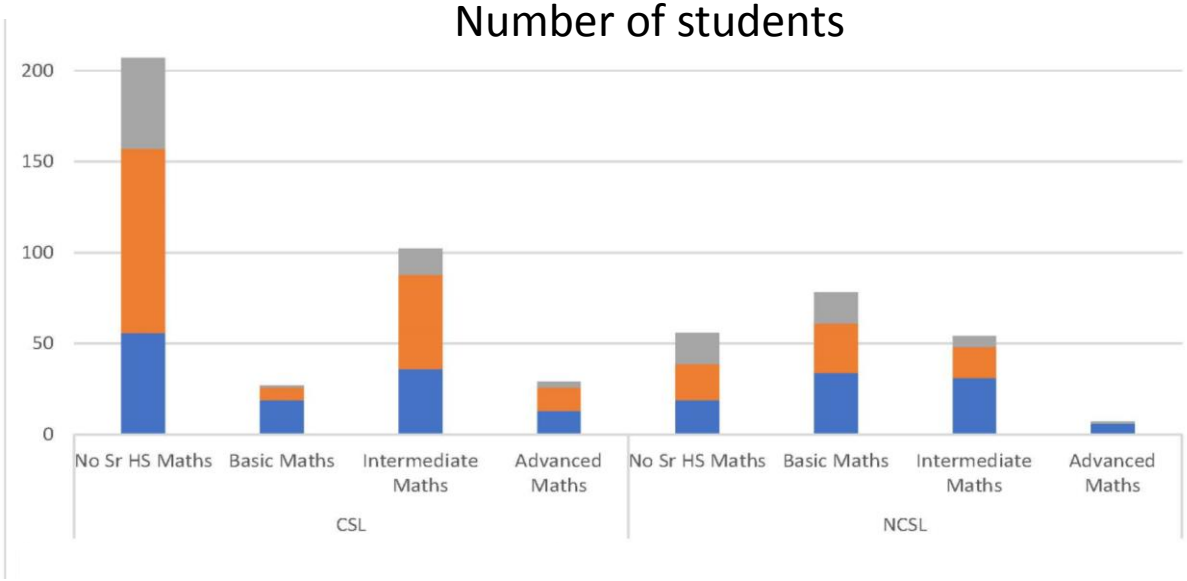
The Engineering suite

Mathematics for Engineers Preliminary

Average final mark

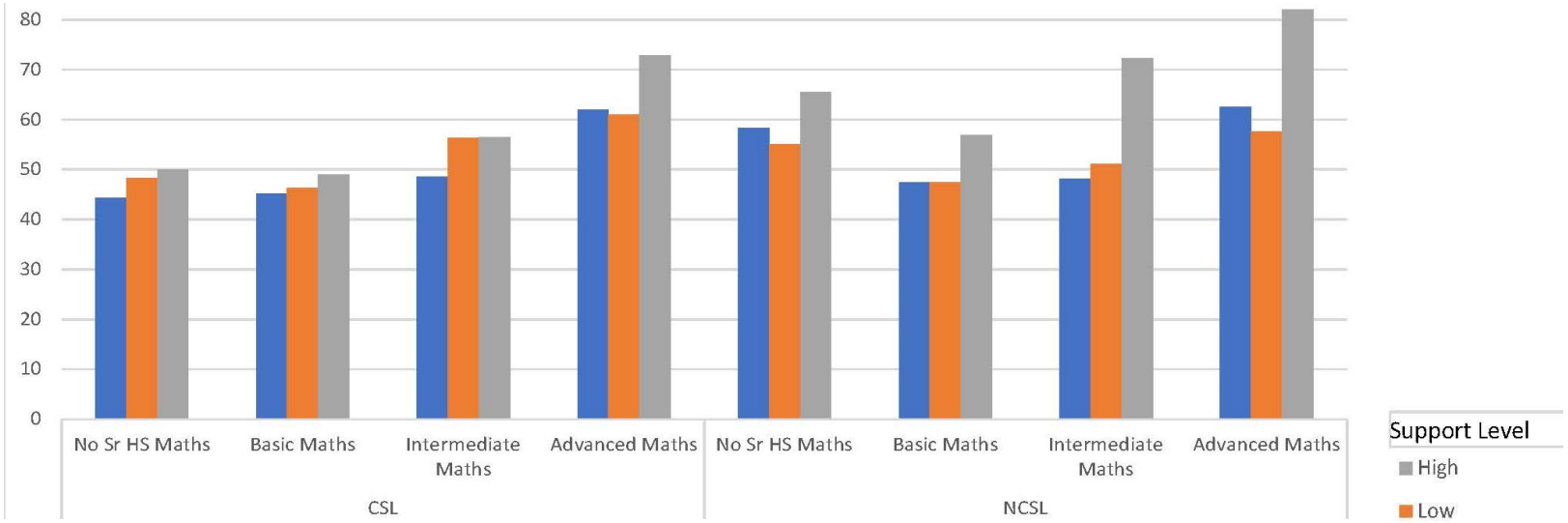


Number of students

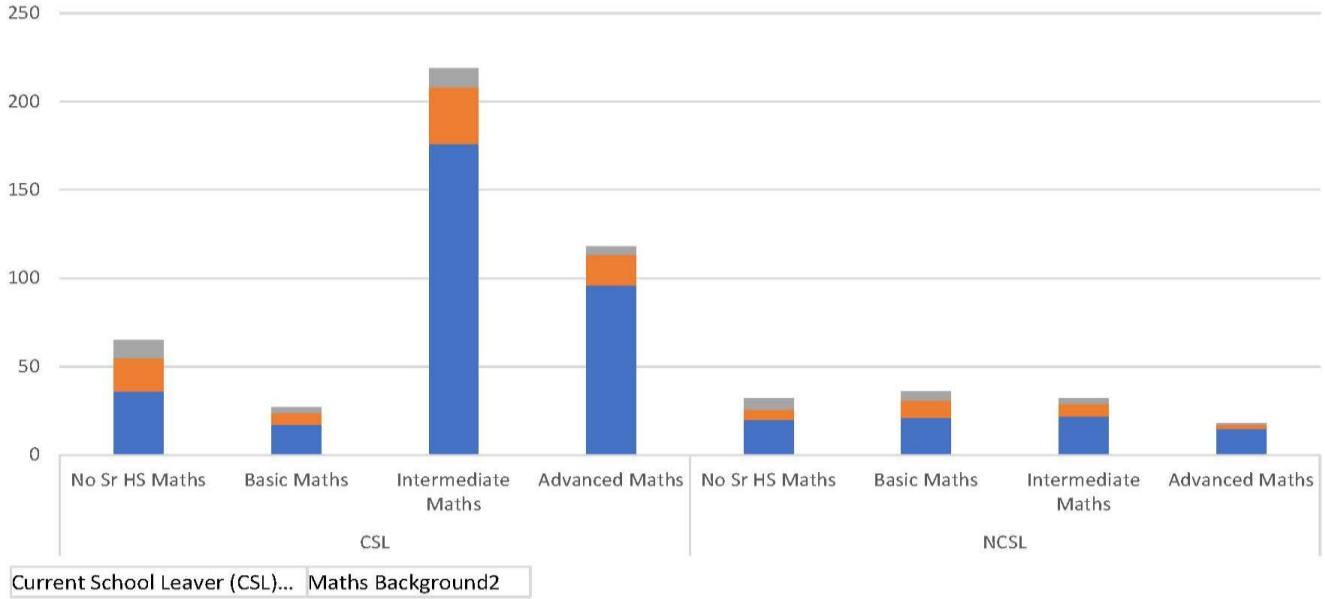


Mathematics for Engineers 1

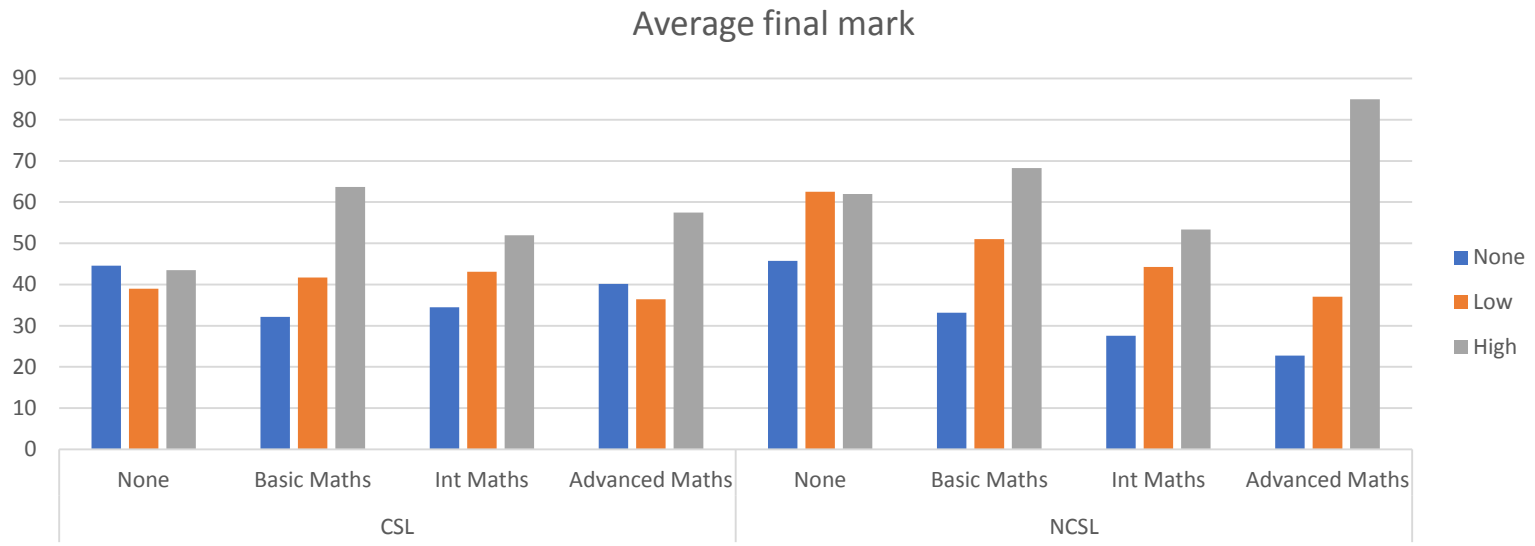
Average final mark

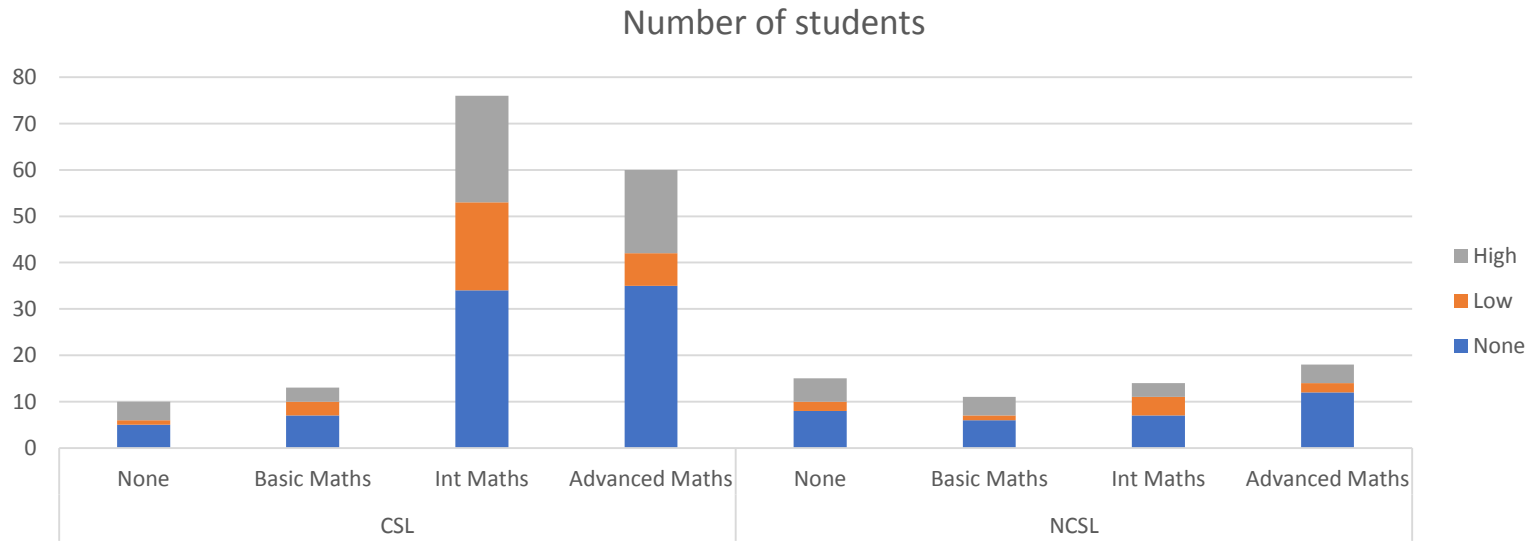


Number of students



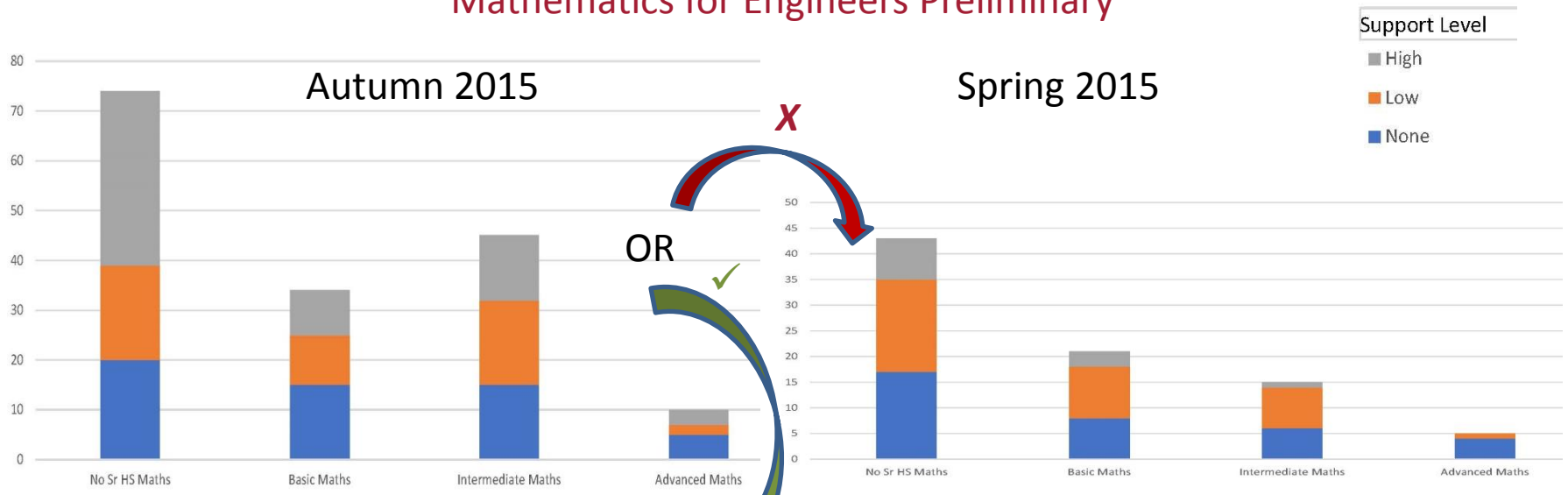
Mathematics for Engineers 2





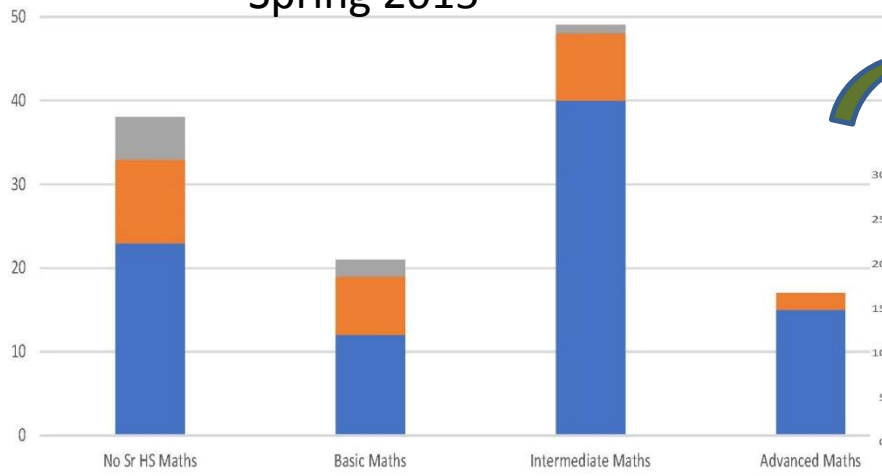
Progression (or not) through engineering mathematics subjects

Mathematics for Engineers Preliminary



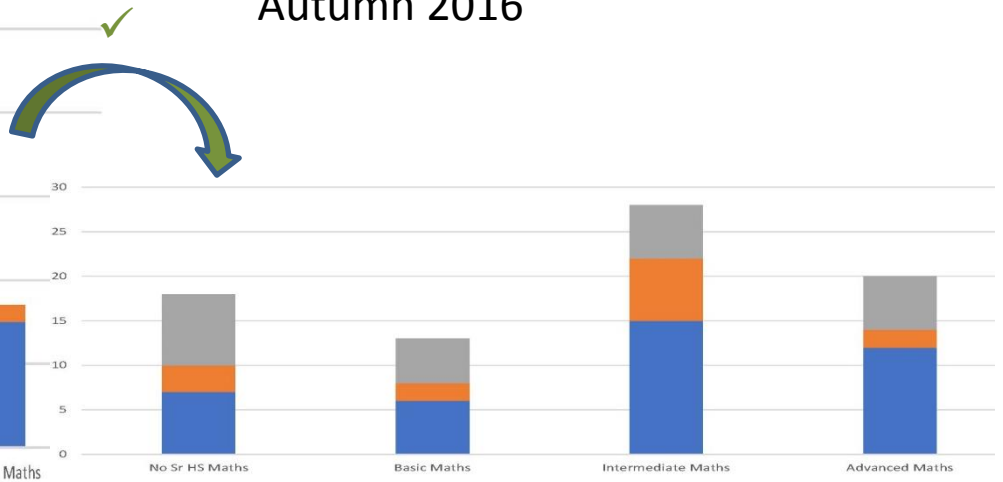
Mathematics for Engineers 1

Spring 2015



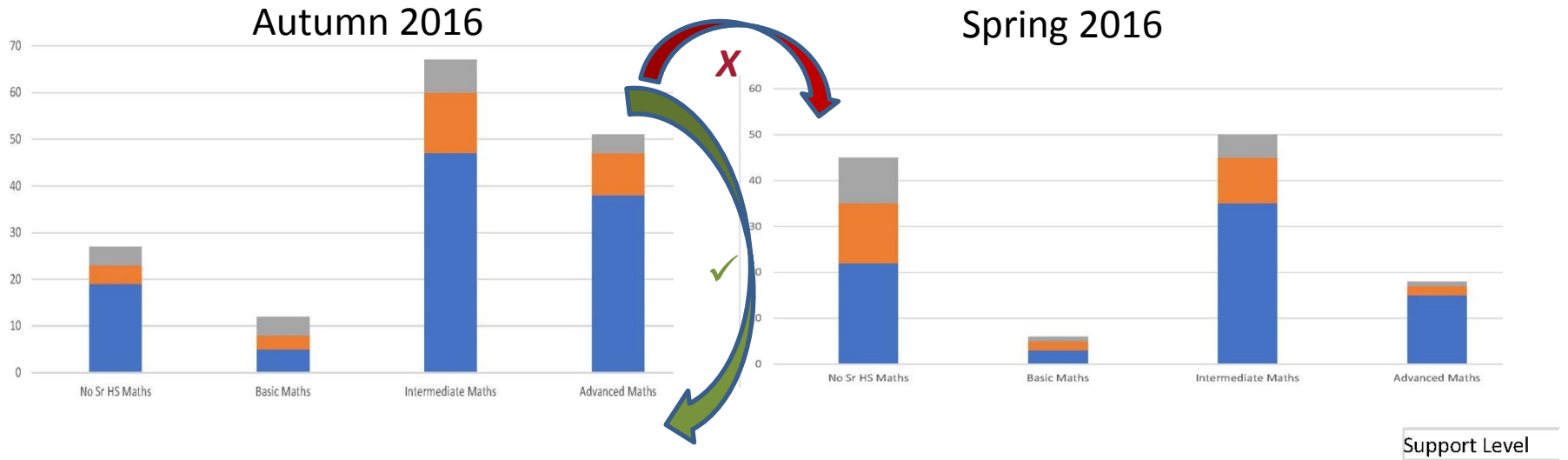
Mathematics for Engineers 2

Autumn 2016

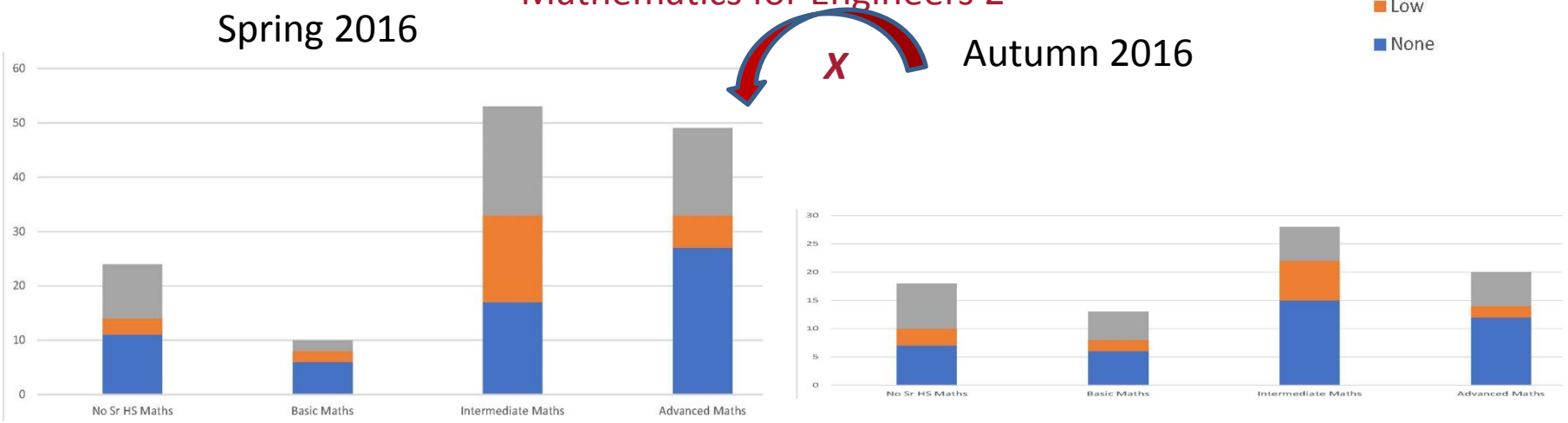


Progression (or not) through engineering mathematics subjects

Mathematics for Engineers 1



Mathematics for Engineers 2



Conclusions

- **The overall profile of the current school leavers and non current school leavers in the business and engineering subjects is not in line with our assumptions.**
  - The mathematics background for current school leavers is predominantly, no senior high school mathematics.
  - The mathematics background for non current school leavers is mostly, basic senior high school mathematics.
- **As expected, from previous research, students who attended a high level of workshop support, on average, obtained a higher grade than those who did not attend MESH workshops or only used low level support.**

Conclusions

- **The profile of students studying statistics for business**
  - The cohort is made up of predominantly current school leavers with no senior mathematics.
  - For students with no senior high school mathematics or basic senior high school mathematics - NCSL, on average, did not perform as well as CSL.
  - Despite the high proportion of students with no senior high school mathematics, on average, all mathematical background groups achieved a final mark more than 50%.
  - Students attending MESH workshops, on average, achieved a higher final mark than those who did not attend.

Conclusions

- **The profile of students studying engineering mathematics units**
  - The high proportion of current school leavers with no senior high school mathematics is repeated in the initial engineering mathematics subject, Mathematics for Engineers Preliminary. In fact this is group make up 53.5% of the cohort
  - On average none of this group achieve 50%, although the final marks for students who attended MESH workshops are higher than those who did not attend.
  - The second largest group in the cohort are current school leavers with an intermediate school maths background,
    - On average only students, in this group, who made use of support, achieved more than 50%
  - THIS IS AN ISSUE

Future Directions

- **What can we do to improve the chances of success for students, entering engineering, with no senior high school mathematics ?**
- **How can this data be used to generate better models for student retention (at least for students studying a maths/stats unit)?**