



Adult learners v traditional learners - insights from a large scale survey of Mathematics Learning Support in Irish HEIs.

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Large scale multi-institutional survey on Mathematics Support Services

- 2009/2010: Creation and pilot of survey
- Feb 2011: Dissemination of survey
 - Emailed to rep in each college
 - Hand out survey, post to committee
 - All analysis handled by committee
- 2011/2012: Data entry and analysis
 - Results inputted into SPSS, Grounded Theory used to analyse Qualitative Data.
- 2013: Report synthesis

Large scale multi-institutional survey on Mathematics Support Services

- 9 institutions took part
 - 5 universities, 4 institutes of technology
 - Uni: DCU, NUIG, NUIM, UCD, UL
 - IOT: Blanchardstown, Carlow, Tallaght, Tralee
- 1633 first years completed questionnaires

Methodology

- An evaluation of students' opinions on MLS with a view to establishing evidence for the benefits of MLS on an institutional, national and international basis.
- A **pilot questionnaire** was created (based on existing questionnaires), distributed and reviewed in 2009-10.
- The finalized questionnaire was circulated to all individuals and institutions involved in the provision of MLS in Higher Education Institutions (HEIs) in Ireland, e.g. there are 7 universities and 13 Institutes of Technology (IOTs) in the Republic of Ireland
- Questionnaires were returned from 9 (5 & 4) HEIs. They were distributed during the 2nd semester of 2010-11 to 1st year service maths students.

The Questionnaire

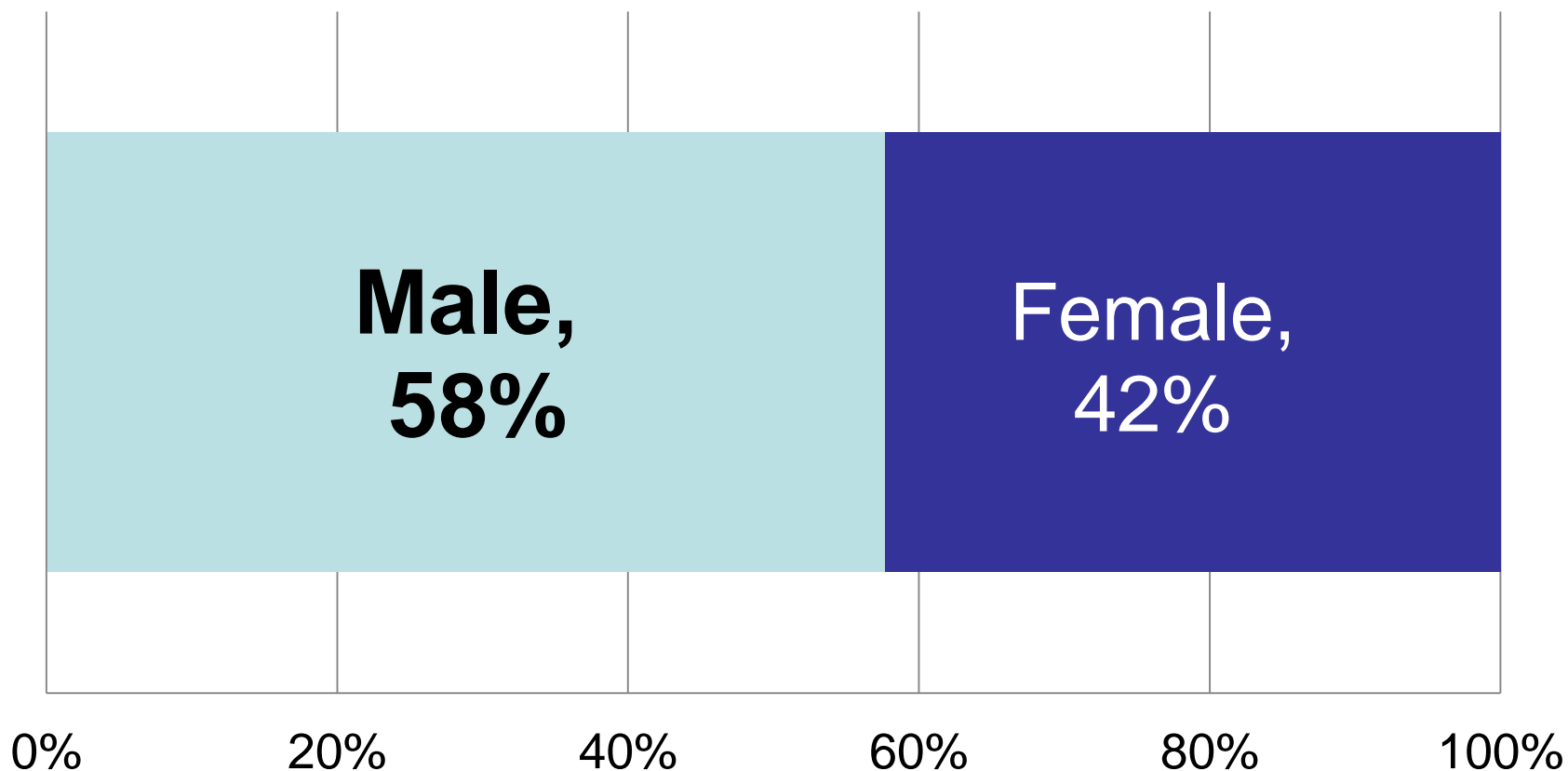
- Anonymous and paper-based;
- 17 questions in total, with a variety of multiple-choice, five-point Likert-scale, and open-ended questions.

The Questionnaire - 3 sections

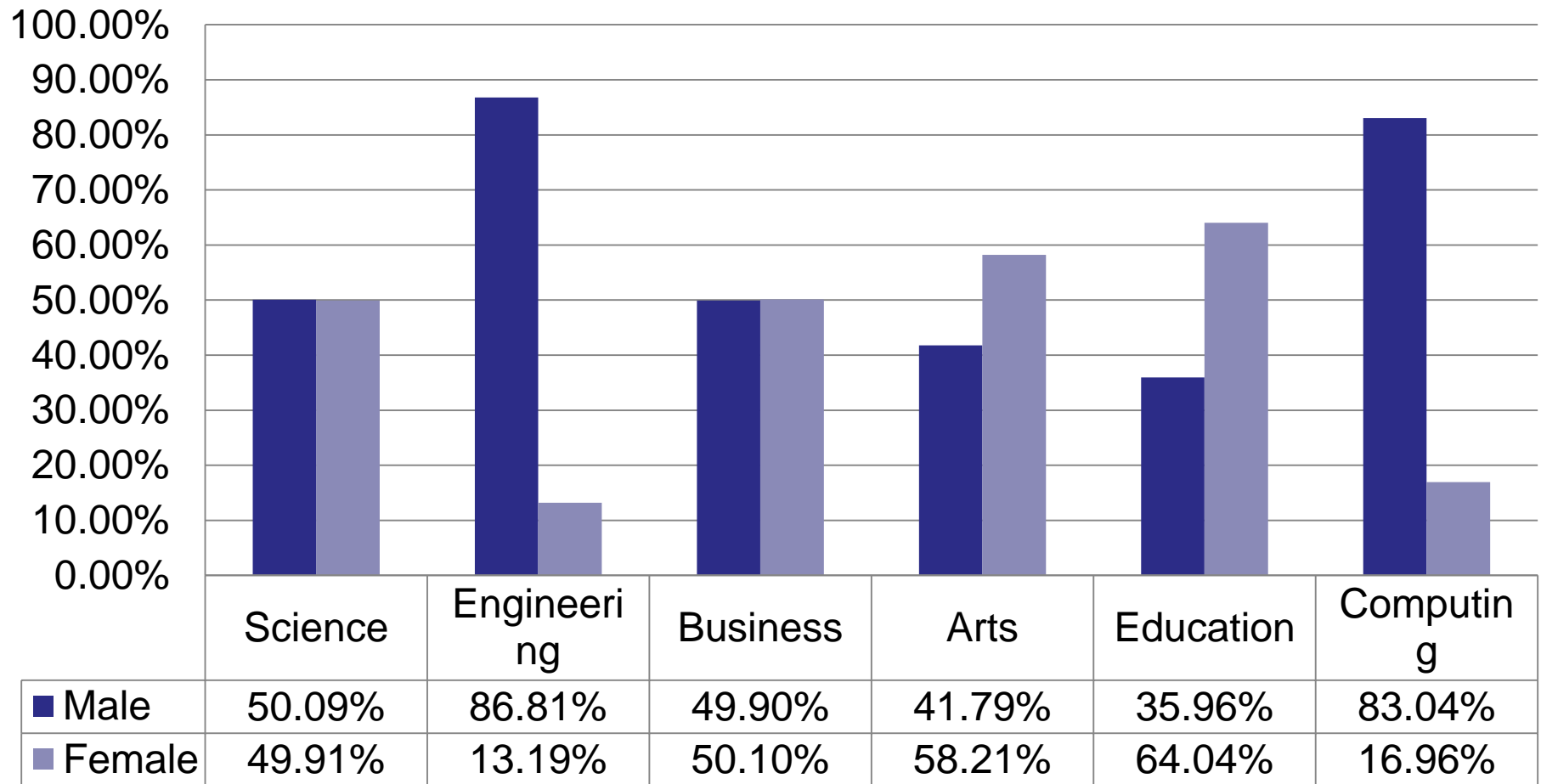
- Section A: (Everyone)
 - Gather information regarding the respondents' background,
- Section B (For users of MLS)
 - Ascertain their levels of satisfaction with the services provided
 - Investigate their perception of the impact that MLS had on their mathematics education
- Section C: (For non-users of MLS)
 - Investigate the reasons why these students did not engage with the MLS available.
 - What might encourage them to use MLS

Profile of Respondents

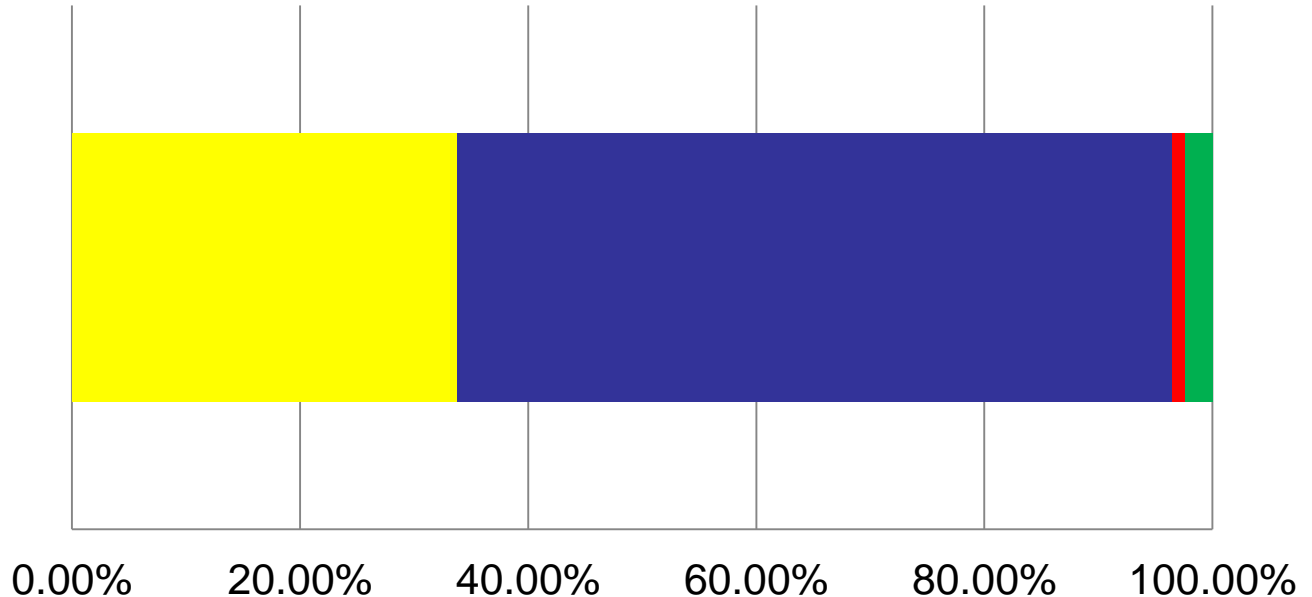
Gender of survey respondents



Breakdown of survey respondents by discipline area and gender.



Leaving Certificate mathematics level of respondents (n=1601)



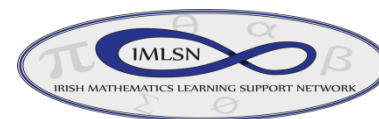
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Higher Level LC	33.79%
Ordinary Level LC	62.71%
Foundation Level LC	1.12%
Other	2.37%

Focused Study of Mature Students

- Definitions:
 - ‘Mature Students’ or ‘Adult Learners’
 - a student that is 23 years of age or older on 1st January of the year of registration to third level education
 - Traditional learners
 - learners who are under 23 years old and who are therefore engaging in their third level studies soon after completing their second level education
- Abbreviations:
 - MLS: Maths Learning Supports.

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Literature Review

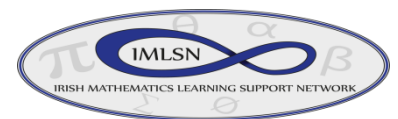
- **Diverse Cohort**
 - not studied mathematics for a long time
 - may not have sat the Leaving Certificate examination at all
- **Challenges facing Mature Students**
 - under-preparation
 - maths anxiety and lack confidence in their mathematical abilities : fear of the subject
- **Motivational advantage**
 - highly motivated reason for studying
 - autonomous and reflective learners

Questions

1. What are the motivational factors of Mature Students who seek MLS?
2. Why do some Mature Students of mathematics not seek MLS?

PROFILE OF MATURE STUDENTS IN THE SURVEY

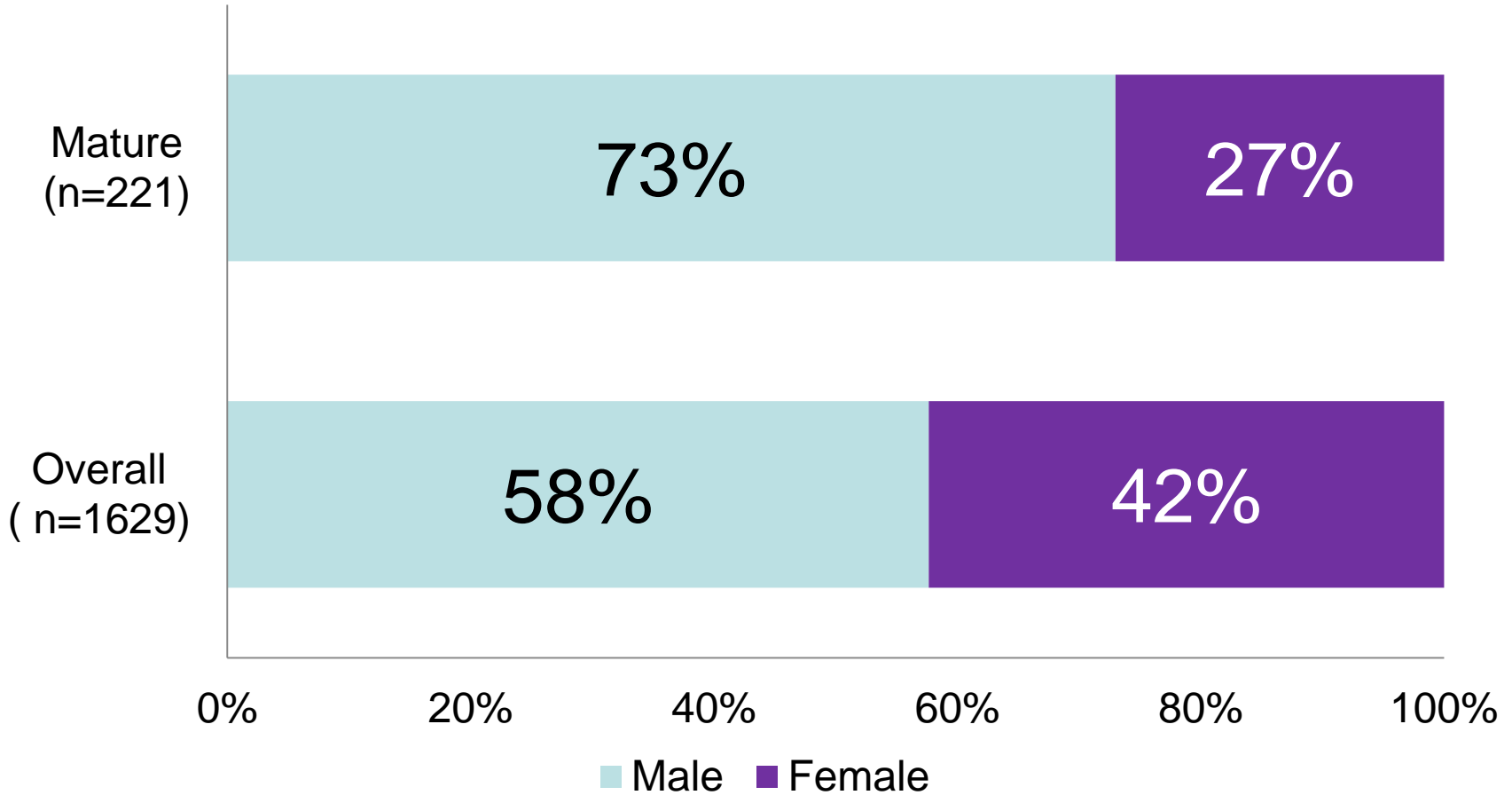
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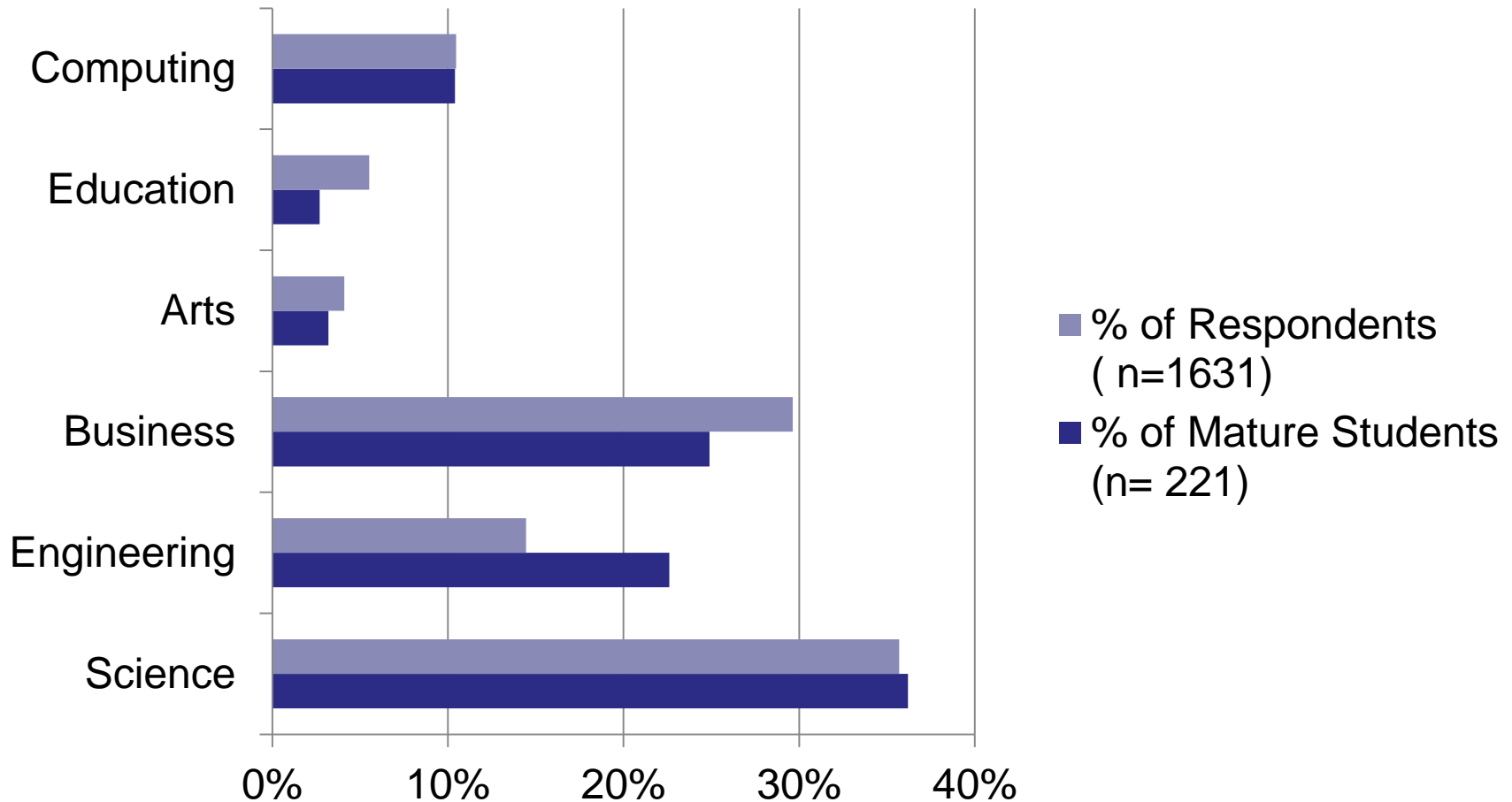
Survey -Mature Students

- 221 mature student respondents
- 13.53% of the overall respondents
- 91% of mature students were on fulltime courses

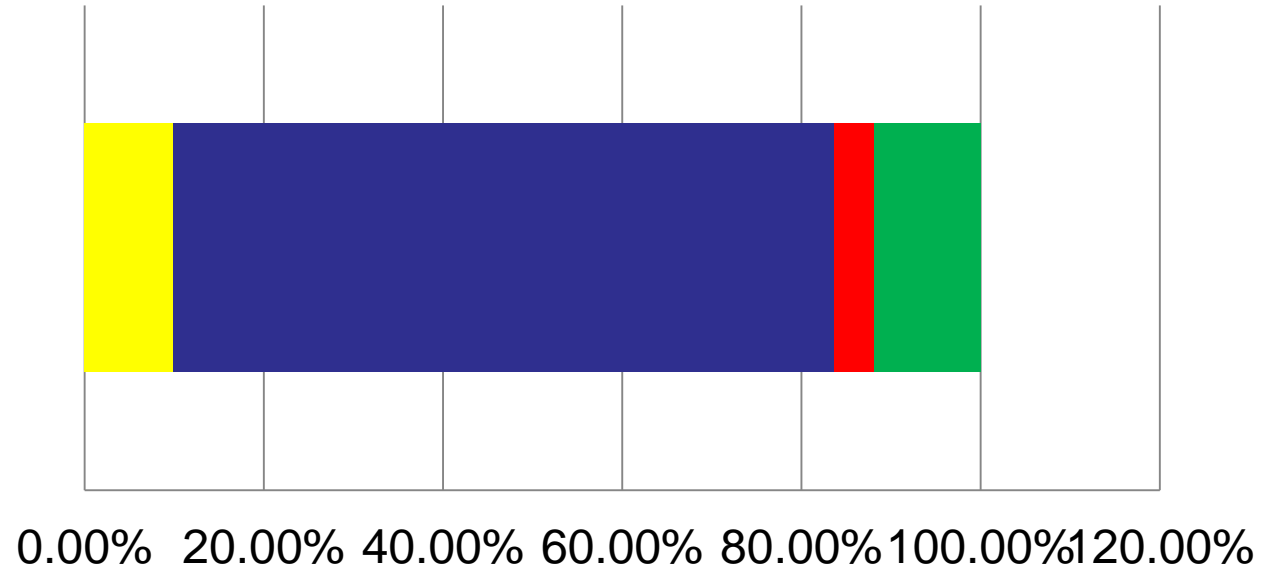
Gender



Degree Programmes of Mature Students and of overall survey respondents.

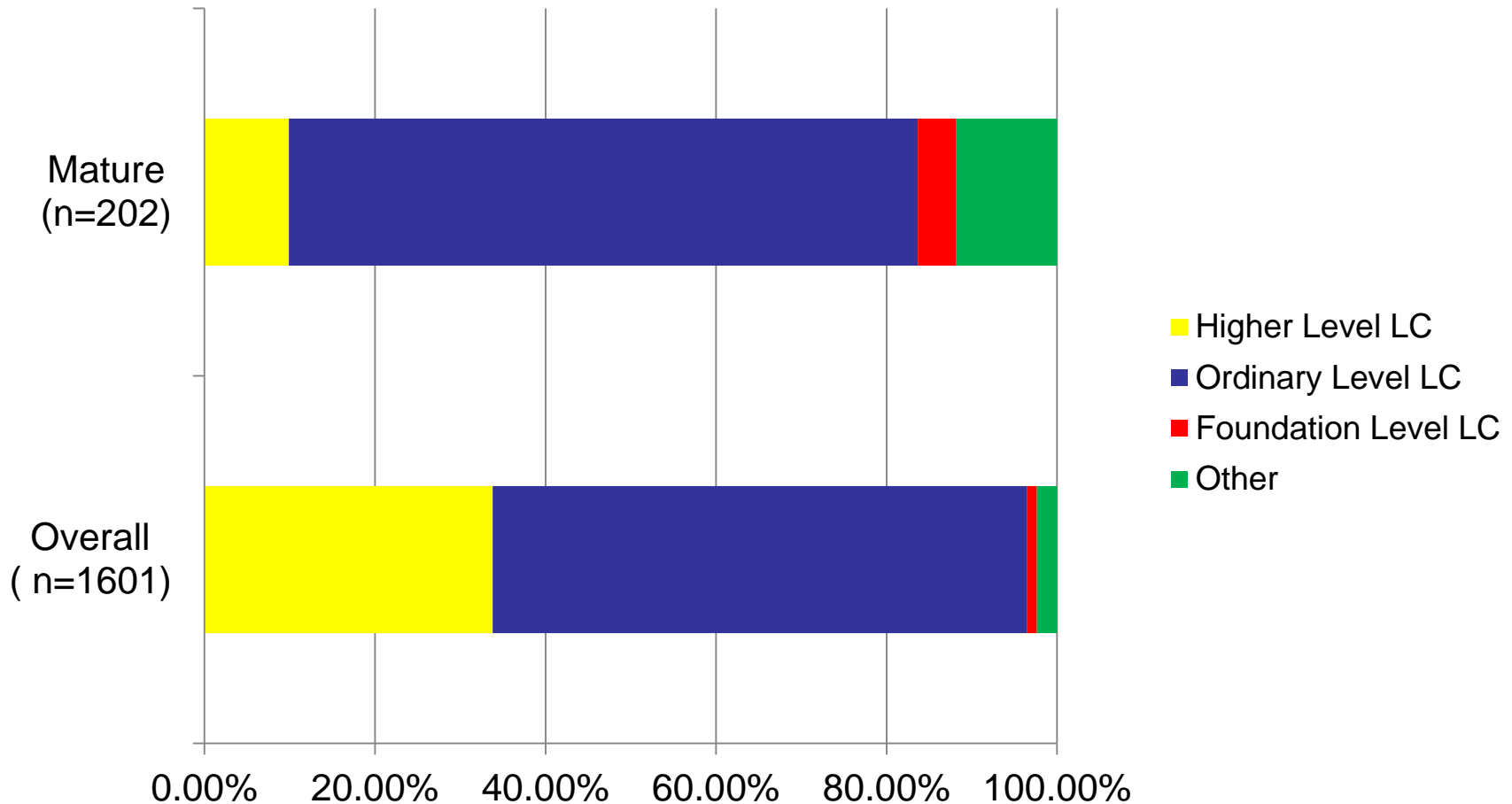


Leaving Certificate levels of Mature Students



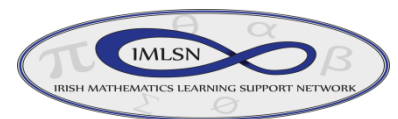
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■ Higher Level LC	9.90%
■ Ordinary Level LC	73.76%
■ Foundation Level LC	4.46%
■ Other	11.88%

Comparison of Mathematical attainment prior to entry.



USERS OF MLS

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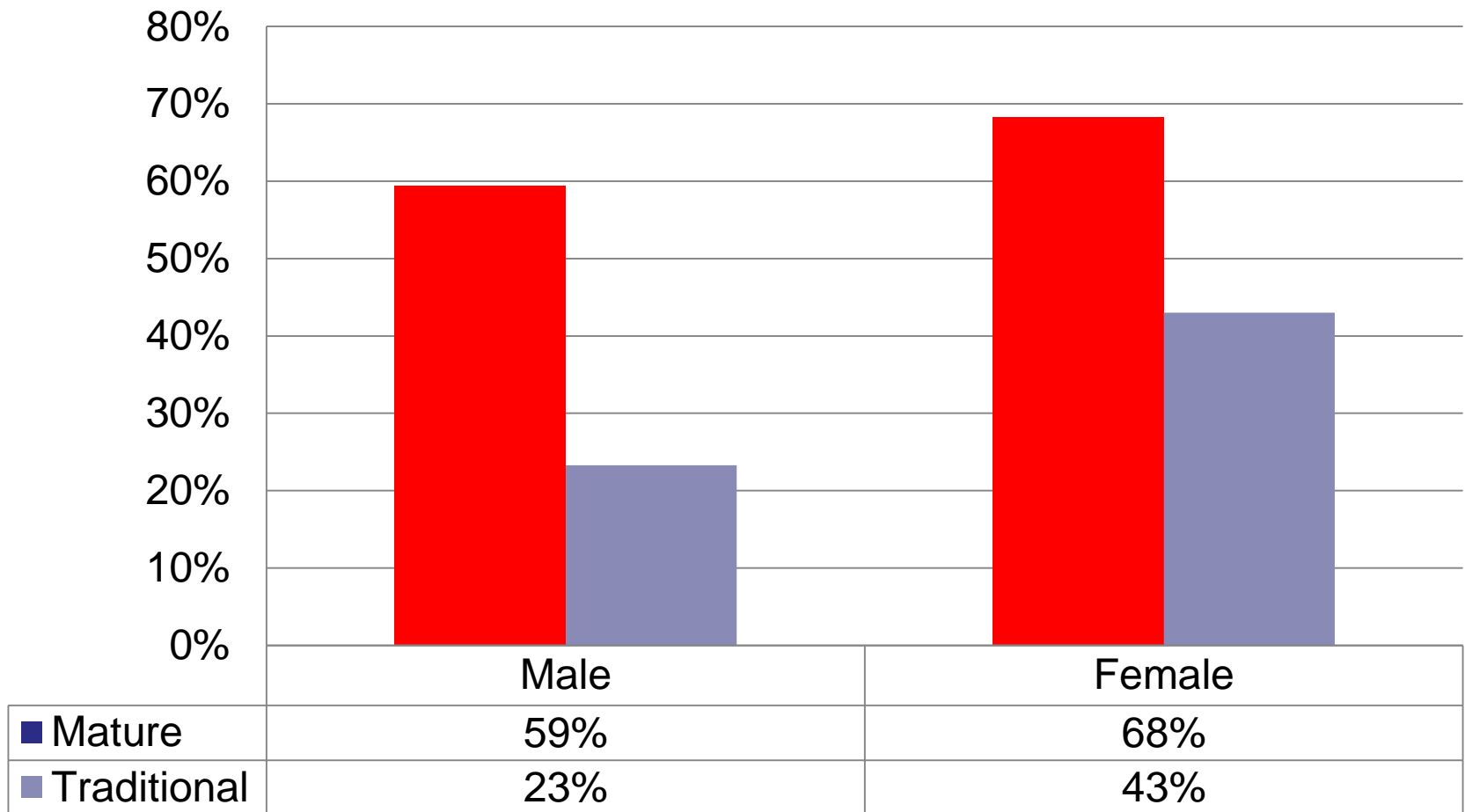
Mature Students and Use of MLS

	Used MLS	Did not avail of MLS	
		Did not need help	Other Reasons
Mature students (n=221)	61.5%	17%	21.5%
Overall population (n =1633)	32.2%	33.3%	34.5%

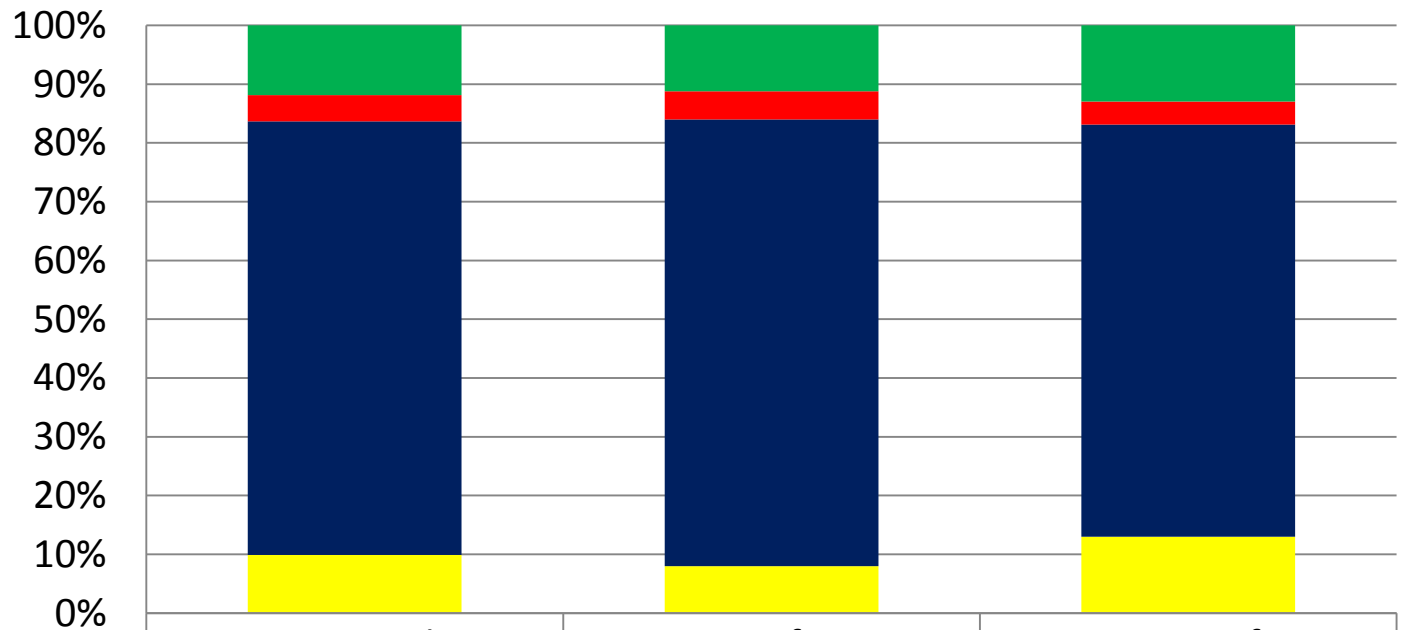


Statistical significant association between type of students and use of MLS ($p < 0.001$ Chi-Square test)

Mature V Traditional students use of MLS by gender

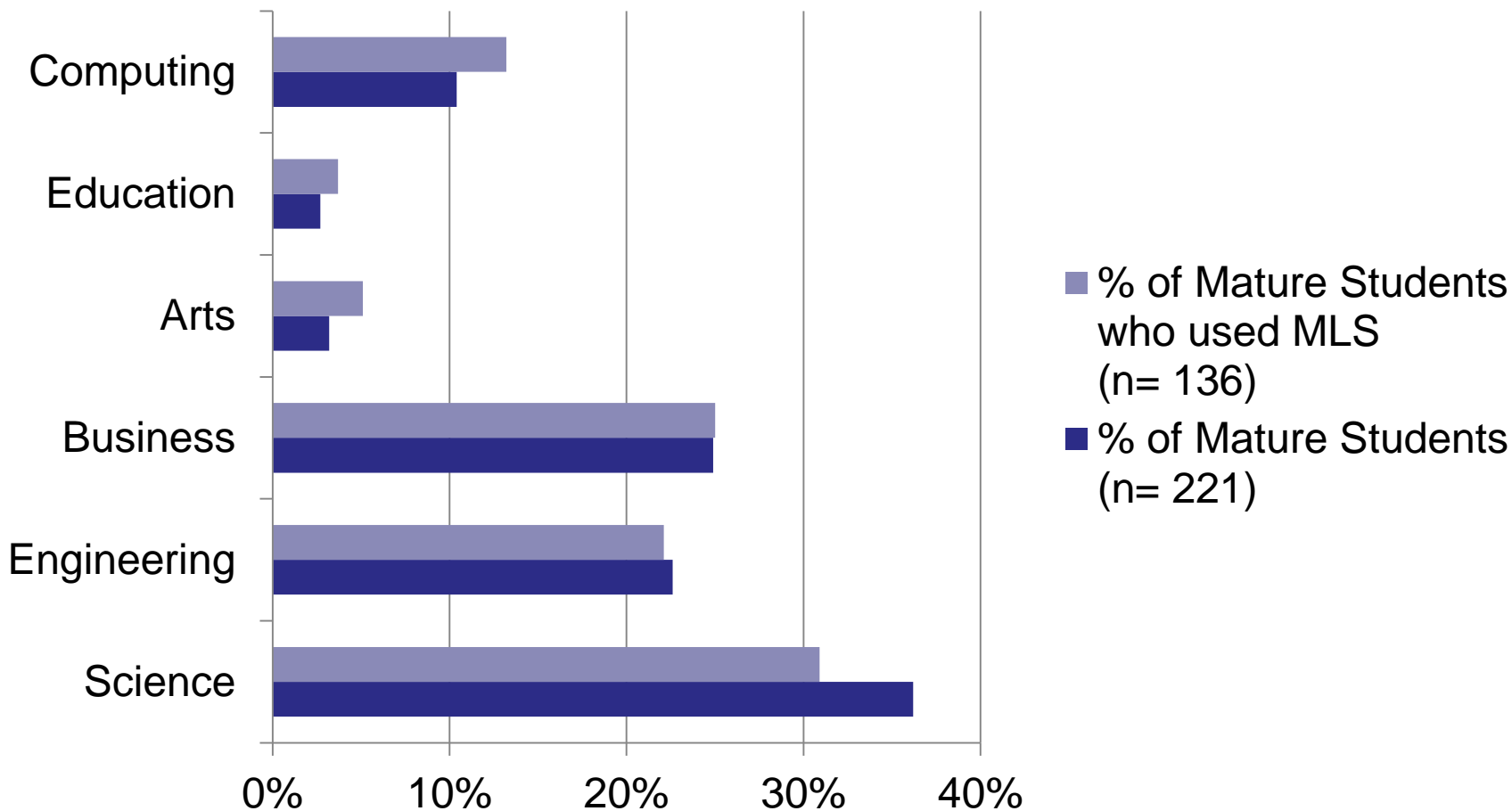


Comparison of Mathematics Leaving Certificate level of mature Students users and non-users of MLS. (n=202)



	Surveyed	Users of MLS	Non-Users of MLS
Other	12%	11%	13%
Foundation Level LC	4%	5%	4%
Ordinary Level LC	74%	76%	70%
Higher Level LC	10%	8%	13%

Degree Programme choice of all Mature Students and Mature Student users



Mature Student reasons for first using MLS

Categories of comments	Frequency of comments (n=122)
Assignments/Exams: Looking for help with specific aspect of coursework assessment during the semester (upcoming test, assignment) or attending for revision or prep for end of term exams	14%
Extra help	39%
Improve Understanding: Positive comments about attending to try to improve or gain better understanding	6%
Mathematics Difficult	3%
Background/Ability: Comment about being away from Maths for a while prior to entry (from mature students) or comment suggesting poor confidence in maths ability	20%
Struggling	9%
Time went: Comment about time the students went but with no further information about why they used MLS	11%

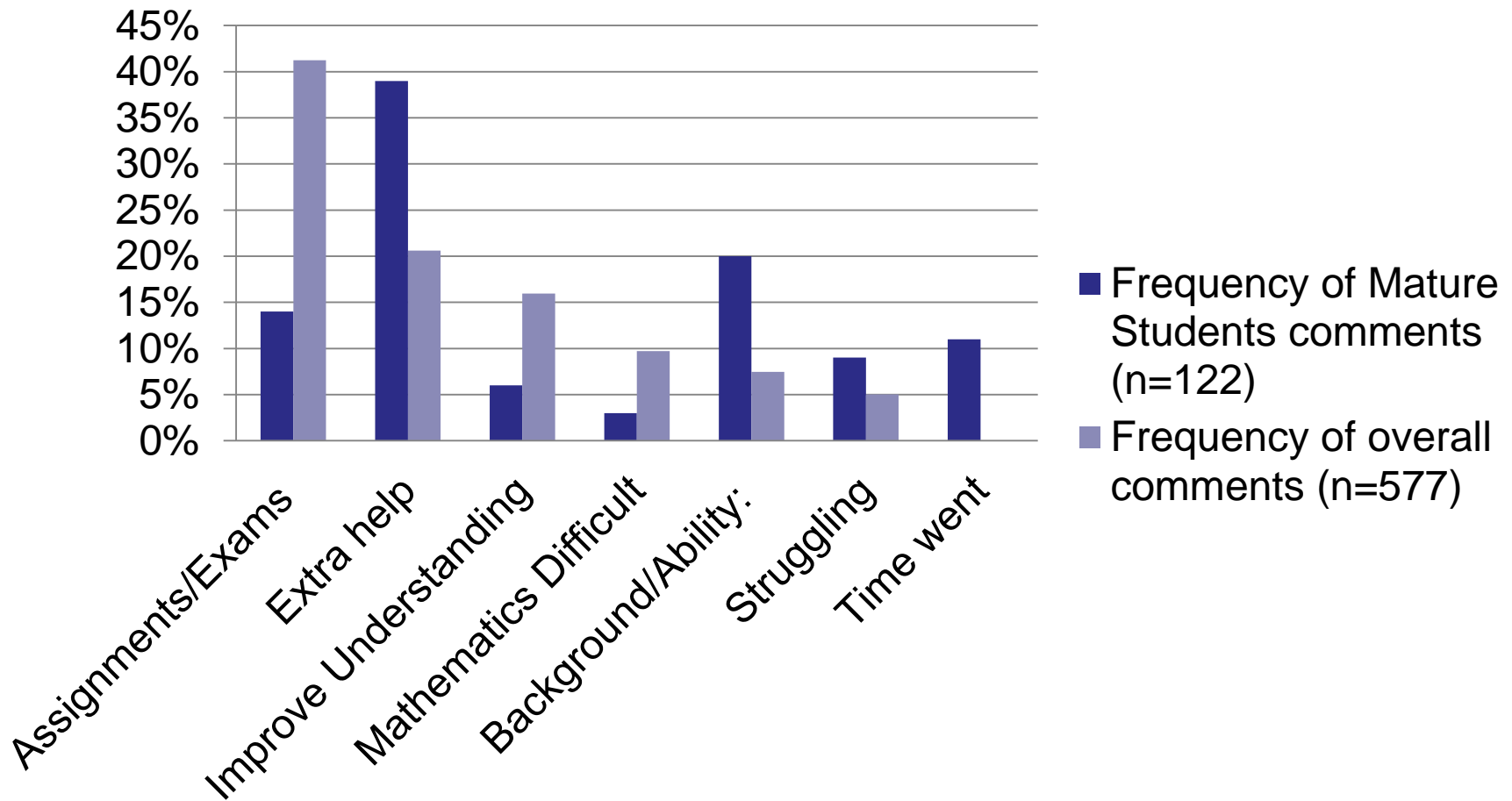
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Reasons for first using MLS:

comparison of Mature Student reasons and overall responses



Reasons for first using MLS:

comparison of Mature Student reasons and overall responses

Categories of comments	Frequency of Mature Students comments (n=122)	Frequency of overall comments (n=577)
Assignments/Exams:	14%	41%
Extra help	39%	21%
Improve Understanding:	6%	16%
Mathematics Difficult	3%	10%
Background/Ability:	20%	7%
Struggling	9%	5%
Time went:	11%	

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Reasons for first using MLS:

comparison of Mature Student reasons and overall responses

- more likely to comment that:
 - look for help as they have a long time away or suggesting poor confidence in their mathematical ability
 - seek general extra help
 - are struggling

- less likely to comment that:
 - seek help specifically to get help with specific coursework assessment or revision for tests
 - attend MLS to improve or gain better understanding
 - state they find Mathematics difficult

RATING OF MLS SERVICES BY MATURE STUDENT USERS OF MLS

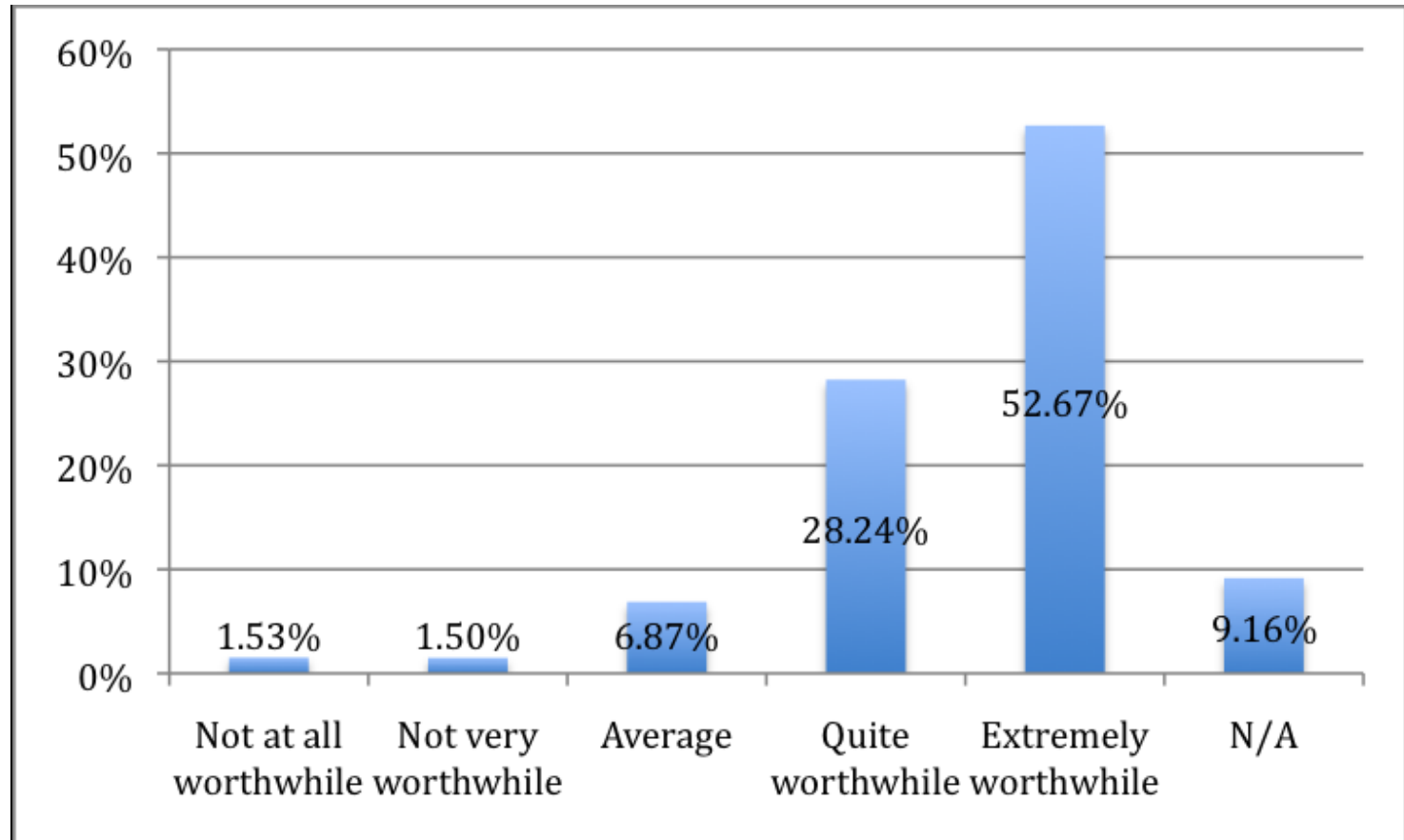
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MLS services and HEIs in which they were available.

Support available	Number of the 9 HEIs offering each service	No. of respondents availing of the services.
Drop-In Centre	9	519
ICT enabled Support	8	268
Topical or Exam Revision Workshops	6	232
Support Tutorials	3	101

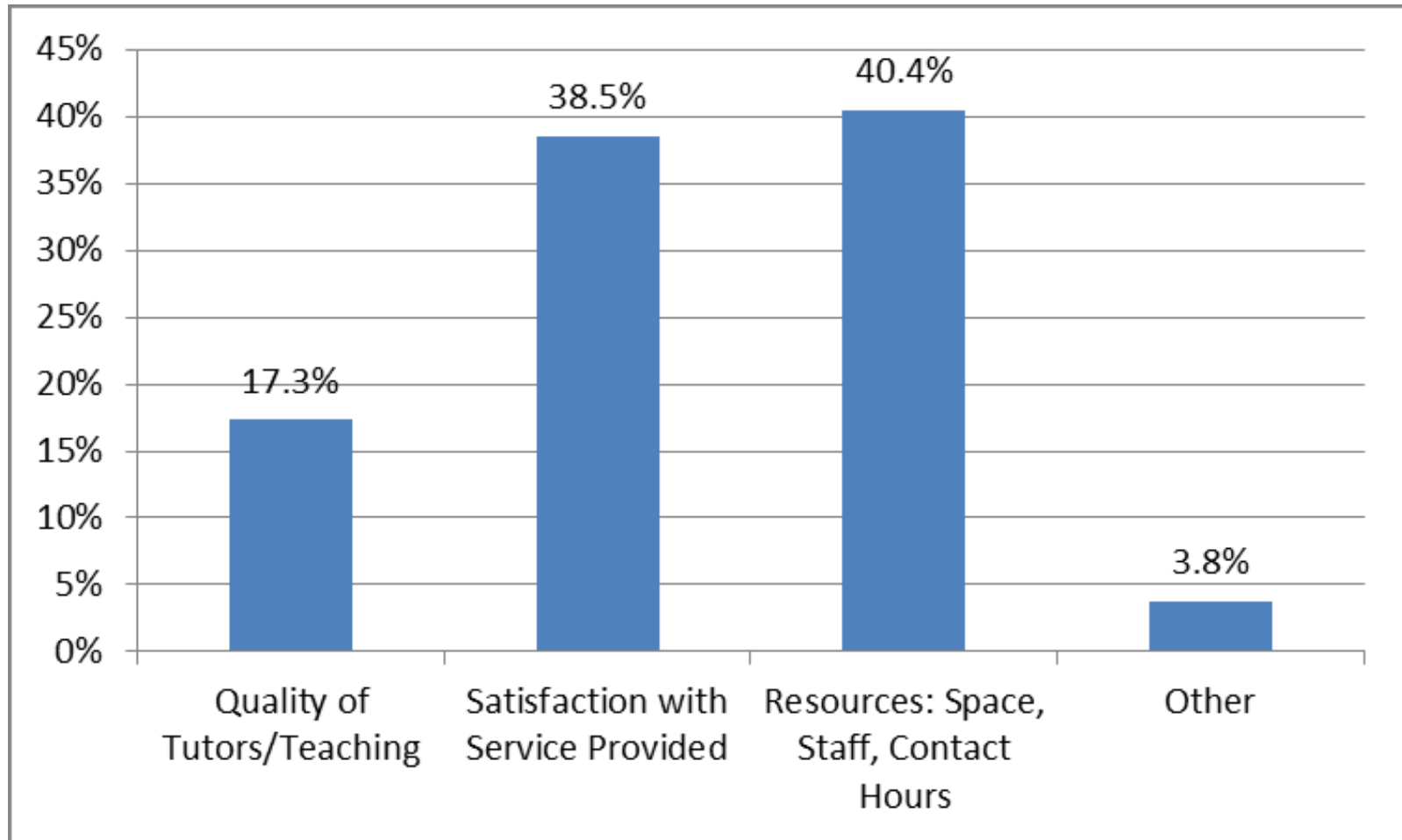
Rating of Drop-in Centres by Mature Students (n=131 out of total of 136 mature users)



Rating of MLS by Mature Students (ctd)

- ICT enabled Support
 - **61%** of the 66 Mature Students who stated that they used online support rated the service as worthwhile
- Support Tutorials
 - **90%** of the 50 Mature Students who attended support tutorials rated them as worthwhile

Comments of Drop-in Centres by Mature Students (n=57)



Impact on Mature Students' Mathematics Education

- Impact on mathematical confidence
- Impact on mathematical performance
- Impact on coping with mathematical demands of course
- Impact on students considering dropping out

Impact on mathematical confidence

- 124 Mature Students responded
- 67% of these stated the impact as helpful or extremely helpful,
 - Compares to 56% when all student responses were considered
- 21 additional comments were made to this question, 20 of which were positive.

Impact on mathematical performance

- 115 Mature Students responded
- 65% of these stated that it had quite an impact or had a large impact,
 - Compares to 56% when all student responses were considered
- 21 additional comments were made to this question, 16 of which were positive.

Impact on coping with mathematical demands of course

- 119 Mature Students responded
- **72%** of these indicated that MLS had been ‘Quite Helpful’ or ‘Has been a huge help’,
 - Compares to **65%** when all student responses were considered.
- **14** comments additional comments this question, **12** of which were positive.

Impact on students considering dropping out

- Q11: 128 of the 136 Mature Students answered this question with **25 (19.5%)** stating that they did consider dropping out because of difficulties with mathematics.
- This is a similar proportion to that of the overall student population

Impact on students considering dropping out

- Q12: asked if MLS had been a factor in them not dropping out.
- 22 of the eligible 25 students answered
- 17 (77%) of these stated that MLS was an influencing factor in their decision not to
 - Compares to a 62.7% response rate in overall population
- ALSO 8 students left comments in q11 stating that they never considered dropping out because of MLS being available to them

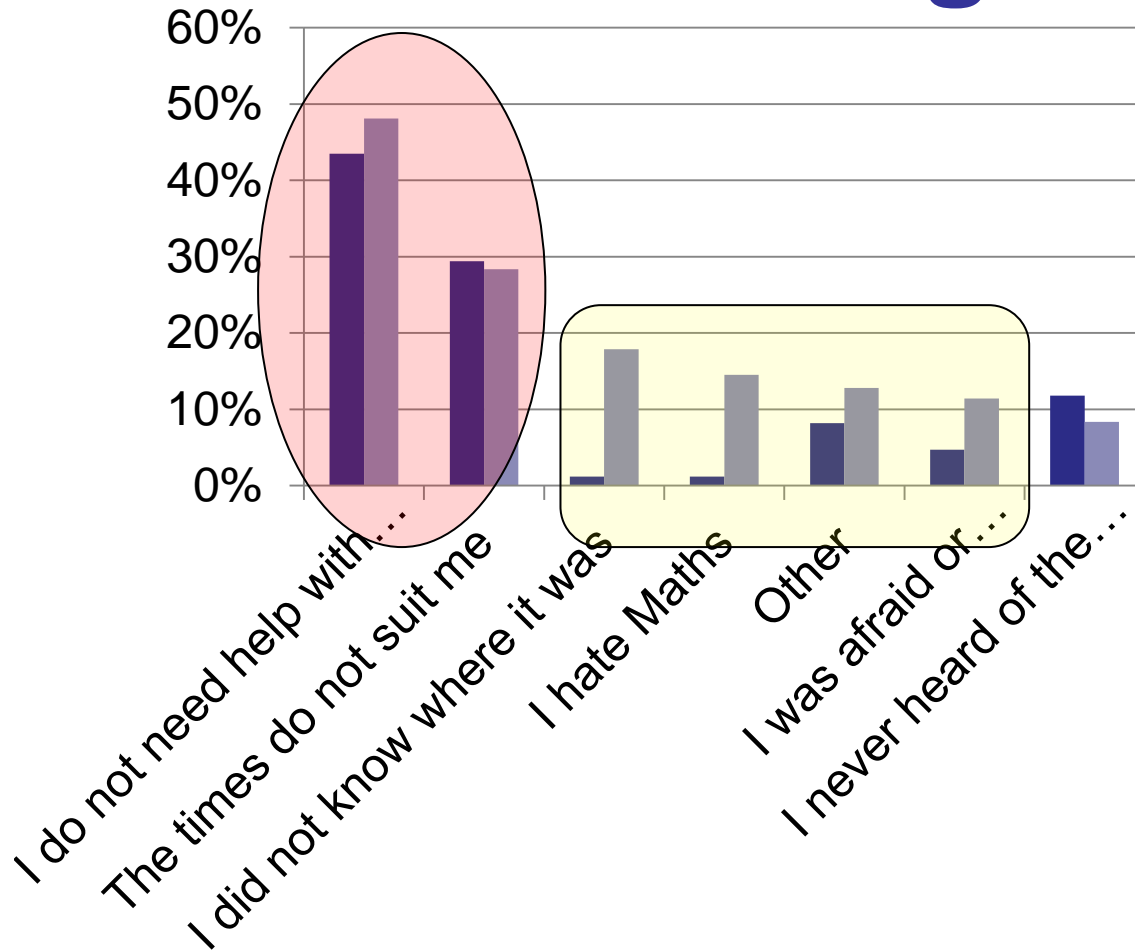
- 25 (20% of respondents) said they considered dropping out of their studies for mathematics-related reasons, and 17 of these said that MLS had been a factor in them not dropping out.
 - *‘Greatly. It has given me the confidence to turn maths as my worst subject into one of my best’.*
 - *‘Encouraged me to trust that my worries were normal and that practice would improve me’.*
- 8 left comments stating that they never considered dropping out *because* of the mathematics support that was available to them.
 - *‘Never felt the need because of the support provided’.*
 - *‘No, but did worry about failing maths before using these facilities’.*

NON USERS OF MLS

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Mature Student reasons for not availing of MLS



- % of Mature Students who did not avail of MLS (n=85)
- % of all students who did not avail of MLS (n=1041)

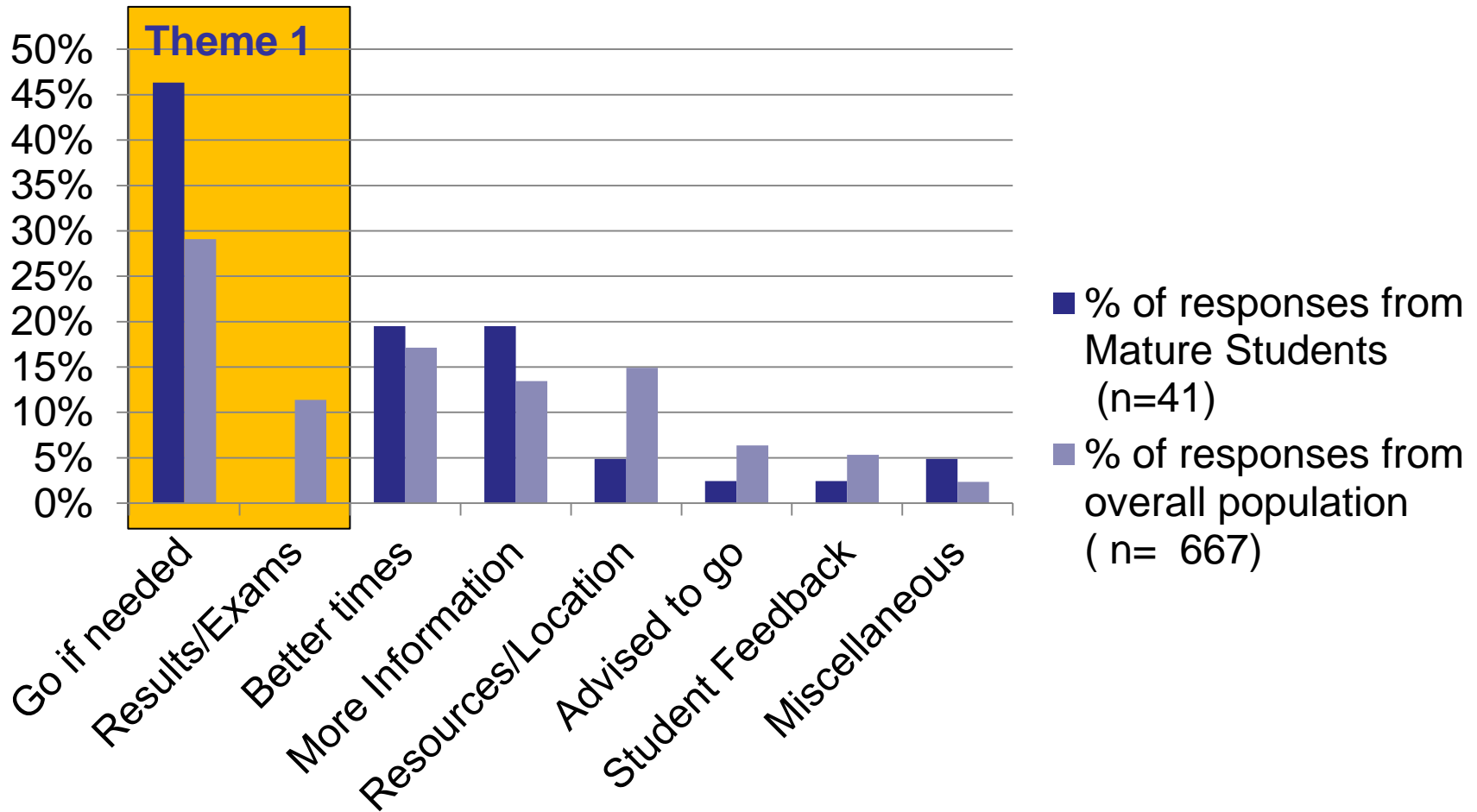
Mature Student reasons for not availing of MLS

Category of response	% of Mature Students who did not avail of MLS (n = 85)	% of all students who did not avail of MLS (n =1041)
I do not need help with Maths	44%	48%
The times do not suit me	29%	28%
I did not know where it was	1%	18%
I hate Maths	1%	15%
Other	8%	13%
I was afraid or embarrassed to go	5%	11%
I never heard of the MSC	12%	8%

What would encourage Mature student non-users of MLS

- Theme 1) Would attend if needed help,
 - “If I was struggling I would go”,
 - “If the maths gets harder I will go”,
 - “If I needed help with maths”.
- Theme 2) Comments on MLS structures,
 - “Better/More opening hours”,
 - “Flexible times”,
 - “Better location”,
 - “More advertisement”, “Greater awareness of resources available”,
 - “Encouragement from lecturers”,
 - “Information on how they can help me”.

What would encourage Mature student non-users of MLS



What would encourage Mature student non-users of MLS

Theme	Category	% of responses from Mature Students (n = 41)	% of responses from overall population (n = 667)
1	Go if needed	46%	29%
1	Results/Exams	0%	11%
2	Better times	20%	17%
2	More Information	20%	13%
2	Resources/Location	5%	15%
2	Advised to go	2%	6%
2	Student Feedback	2%	5%
	Miscellaneous	5%	2%

Conclsions: Questions Recap

1. What are the motivational factors of Mature Students who seek MLS?
2. Why do some Mature Students of mathematics not seek MLS?

What are the motivational factors of Mature Students who seek MLS?

- more likely than traditional students to mention :
 - having been a long time away from education;
 - poor confidence in their mathematical ability;
 - seeking general extra help;
 - struggling with mathematics
- much less likely than traditional students to mention
 - to get help with specific coursework assessment or as revision for tests
 - to improve or gain better understanding;
 - to state they find Mathematics difficult

Motivational factors of Mature Students who seek MLS

- fear of mathematics or a lack of background knowledge inspires these students to seek support rather than shy away from it
- Resonates with previous research:
 - “while Mature Students may carry ‘intellectual baggage’, they are generally self-directed and making the decision to return to education implies a motivation for change and growth.” Safford (1994, p50)

Why do some Mature Students of mathematics not seek MLS?

- Did not need to (43.5%)
 - *“Good service for students – just didn’t need to avail of it”;*
 - *“I do not need it at present”;*
 - *“I would definitely find time to attend if I needed to”.*
- Unsuitability of times (29.4%)
 - *“I always seems to have lectures or labs on around the times the MLC is open so I don’t get a chance to go”*
 - *“I think if it was available on Saturdays it would be used more”.*

- In contrast to other studies [Grehan et al. (2011, p79) Symonds et al. (2008)] only 4 Mature Students (4.7% of non-users) stated that they were afraid or embarrassed to go

Recall of Literature Review

- **Diverse Cohort**
 - not studied mathematics for a long time
 - may not have sat the Leaving Certificate examination at all
- **Challenges facing Mature Students**
 - under-preparation
 - maths anxiety and lack confidence in their mathematical abilities : fear of the subject
- **Motivational advantage**
 - highly motivated reason for studying
 - autonomous and reflective learners

Conclusions and implications

- Mature students avail of MLS more than traditional students
- Mature students have
 - different needs
 - different motivations
- Mature students value drop-in clinics the most.
- Times not suiting is a key issue for non-users.

Increasing in proportions in future years

Key for tutor training

Human interaction key

Practical issue needs addressing

Thank you

- Analysis and write-up of full report just completed
 - Full details to be published in coming year
- Any questions?