A MULTILEVEL ANALYSIS OF THE STUDENTS' SUCCESS IN THE 1ST YEAR OF AN ENGINEERING PROGRAMME: A CASE STUDY

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Summary

➢ Framework

➢ Goals

➢ Secondary Schools *Clustering*

➢ From high school to higher education

➢ Conclusions and Next Step

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Framework

Access to the public higher education in Portugal:

- National contest

- selection of applicants based on the grade of secondary education and exams

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Framework

Data

Methodology

Literature
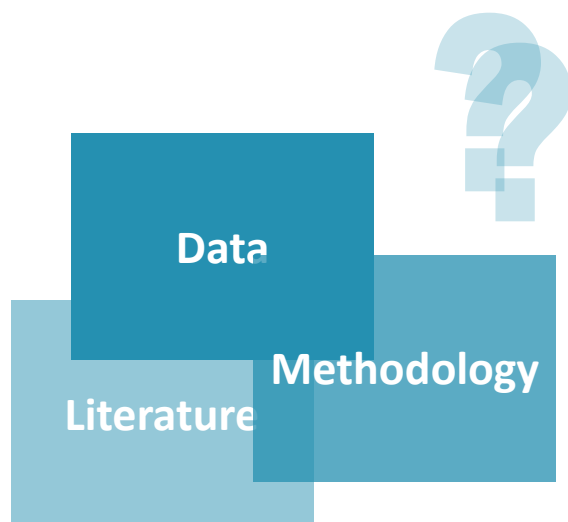
Can academic achievement in higher education be partially explained by previous academic path, particularly by the secondary school where the student did his/her studies?
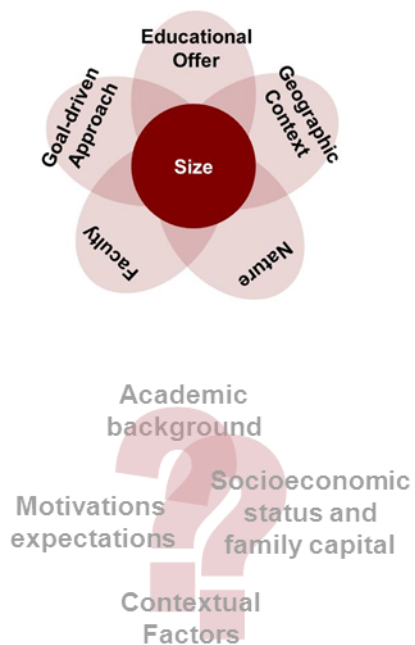
Can academic achievement in higher education be exclusively explained by the student's intrinsic characteristics?
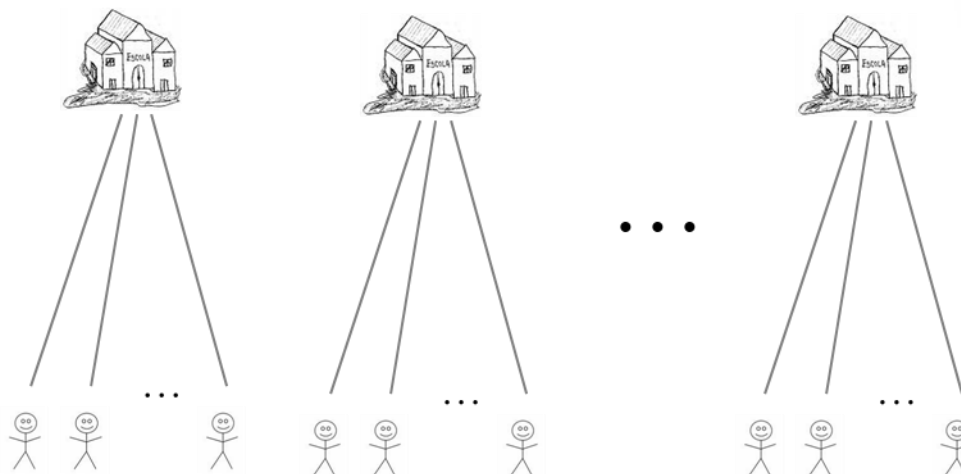
Is it possible to model the student's school performance based on a set of pre-set dimensions, so as to develop early support programmes for potential failure?
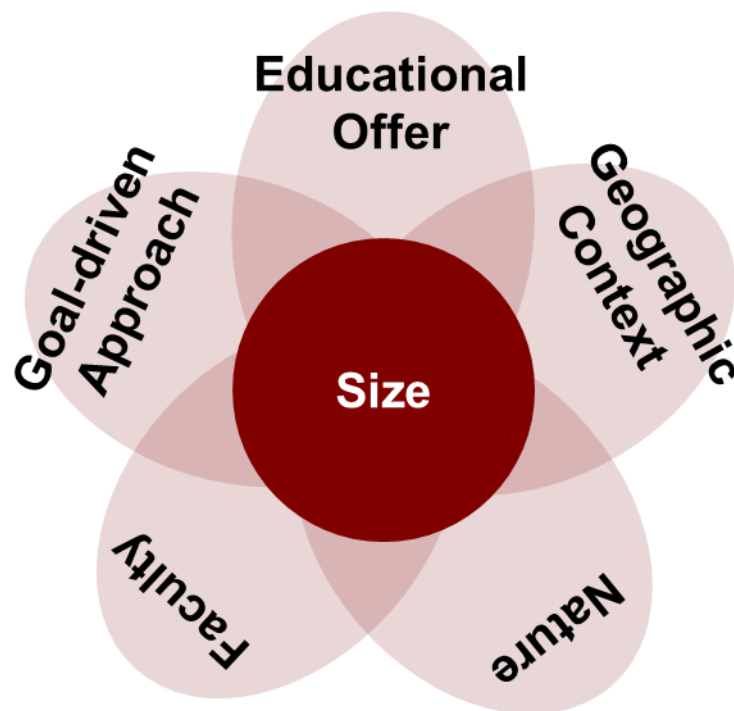
Goals

Level 2
(Schools)

Level 1
(Students)

Secondary Schools Clustering

Dimensions under analysis

Educational Offer
Goal-driven Approach
Geographic Context
Size
Faculty
Nature

Methodology: *finite mixture models*

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Secondary Schools Clustering

Results

π_s	Nature	Geographic Context	Goal-driven Approach (Math Results)	Faculty (% Teachers under 40 years old)	Educational Offer (% Students in general programmes)	Size (number of students)	
26%	Pub.	Urb.	~	~	~	~	→ **Urban Public School**
24%	Pub.	Urb.	↑	↓	↓	↑↑	→ **Large Urban Public School**
23%	Pub.	Semi-Urb./Rur.	↓	↑↑	~	↓	→ **Public School in Hinterland Area**
12%	Pub.	Urb.	↑↑	↓	↑	~	→ **Proficient Urban Public School**
10%	Priv.	Urb.	↑↑	↑	↑↑	↓↓	→ **Proficient Urban Private School**
5%	Pub./Priv.	Urb.	~	~	↓↓	↓	→ **Technical-Vocational School**

Profiles

From high school to higher education

Measuring Student Sucess
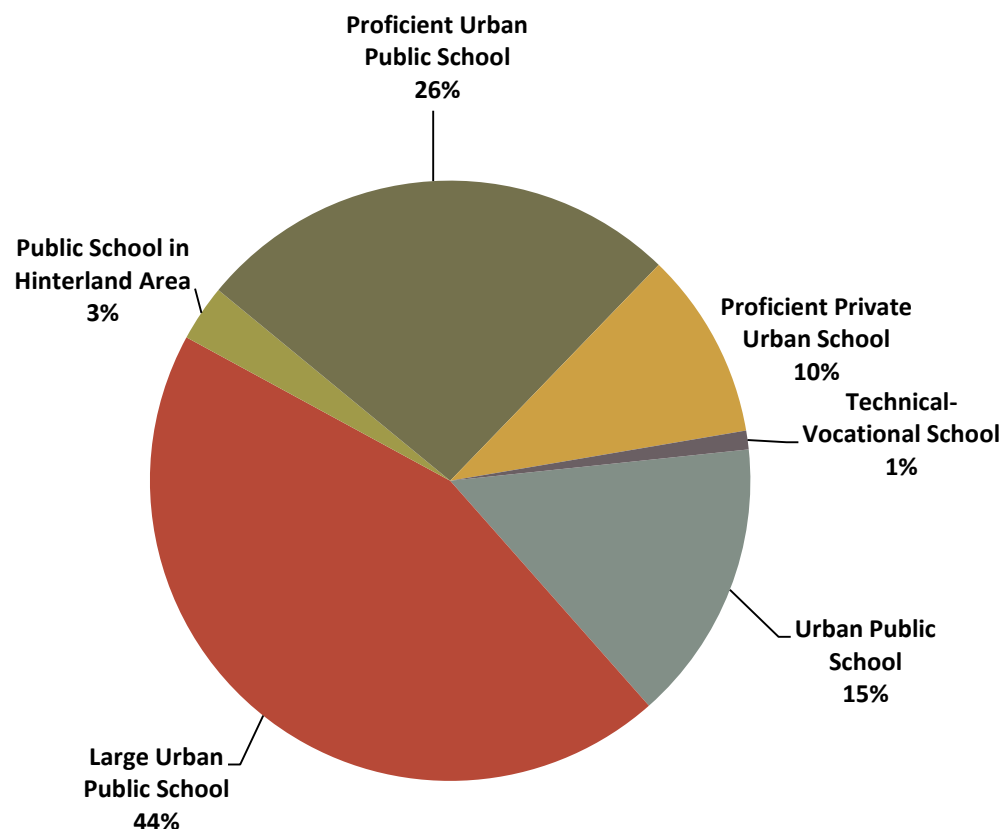
Number of approvals in Number of enrolments **(Y)**

Dimensions under analysis
(Student Level)

Academic background

Motivations expectations

Socioeconomic status and family capital

Contextual Factors

(X)

Methodology: *Binomial Multilevel Models*

From high school to higher education

Secondary Schools of sample students

Proficient Urban Public School 26%

Public School in Hinterland Area 3%

Proficient Private Urban School 10%

Technical-Vocational School 1%

Urban Public School 15%

Large Urban Public School 44%

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From high school to higher education

Results

No heterogeneity observed between schools

Academic Background

- Secondary education grade: + 40%
- Physics in Secondary education : + 72%

Socioeconomic status and family capital

- Girls: + 10%
- Level of household incomes < national average: + 8%

Motivations and expectations

- Place of entrance ≠ 1st: -16%
- Student commitment: -9%
- Early choices of degree: + 22%

Contextually

- Away from residence: - 17%
- + 1h in each travel: - 10%

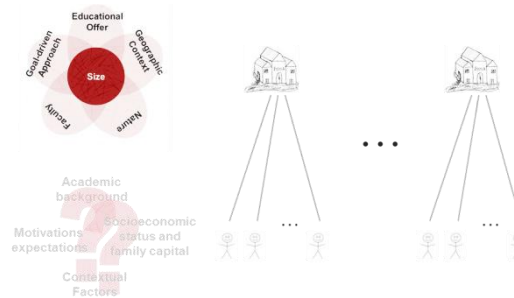*Parent education level and admission stage did not reveal significance*

Conclusions

The sample studied does not reveal differences in the effects of school

All dimensions studied were relevant to explain academic success

The previous academic path is the strongest factor contributing to the student's academic success

Next Step

To analyze the academic context in higher education

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