Title: Retrospective Study on Academic Outcomes of MBBCh Students by Admission Categories at Wits University (2016-2021)

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Background and Context

- Overview of MBBCh Programme
- Revised Admission Policy (NBT and NSC grade 12)
  - NBT = criterion assessment
  - NSC = Normative assessment
- **Admission Categories**
  - Top 40
  - Top Rural
  - Top Quintile 1-2
  - Top Black and Coloured
- Allocation of Places
  - 40% reserved for top performing students (Top 40 category).
  - Remaining 60% reserved for top performing students in the other three categories (each with 20%)

Literature review: Selection tests

- The purpose of using the selection tests is to identify students who will face fewer transitioning challenges when they begin their medical education [1].
- The hypothesis for using selection tests allows for ranking students based on their potential to succeed in medicine and become good doctors [2].
- The NBT and NSC have shown compatibility in predicting academic success in the first year of medical education and physiotherapy [3,4].
- No study has been conducted to address the predictive capacity of the selection tests in high-risk subjects in medical education in South African universities.

Literature review: South African education landscape

- There are significant disparities in the quality of education offered across the school quintiles[5–7]
- Dual schooling systems[8]
  - Produces university entrants and graduates
  - Limited reading, writing, and numeracy skills
- There is a negative correlation between enrolment and throughput, with more dropouts observed among African and Coloured students[9]
- The throughout patters suggest that students need more additional years to complete their studies[10]

Research questions

- What are the implications for admission policies based on students' performance in high-risks modules?

- What are the implications for teaching and learning, assessment and support in the context of diversity?

Aims

- The goal of this study was to understand the link between admission categories and academic performance in high-risk second year modules, including Anatomy, Molecular Medicine, and Physiology, among MBBCh students registered between 2016 to 2021.

Objectives

- Assess the association between different admission categories and student progression outcomes in high-risk modules such as Anatomy Molecular Medicine, and Physiology.

- To compare mean differences in students' performance in Anatomy, Molecular Medicine, and Physiology based on admission categories.

Methodology

- Design
  - Quantitative retrospective design
- Data source
  - Wits Business Intelligence Service
  - Demographic and academic data
- Sample
  - MBBCh students (2016-2021 cohorts)
    - Anatomy N=1439
    - Molecular Medicine N=1423
    - Physiology N=1393
- Ethics
  - Human Research Ethics Committee
  - Ethics no: M220561

Data analysis

Chi-square

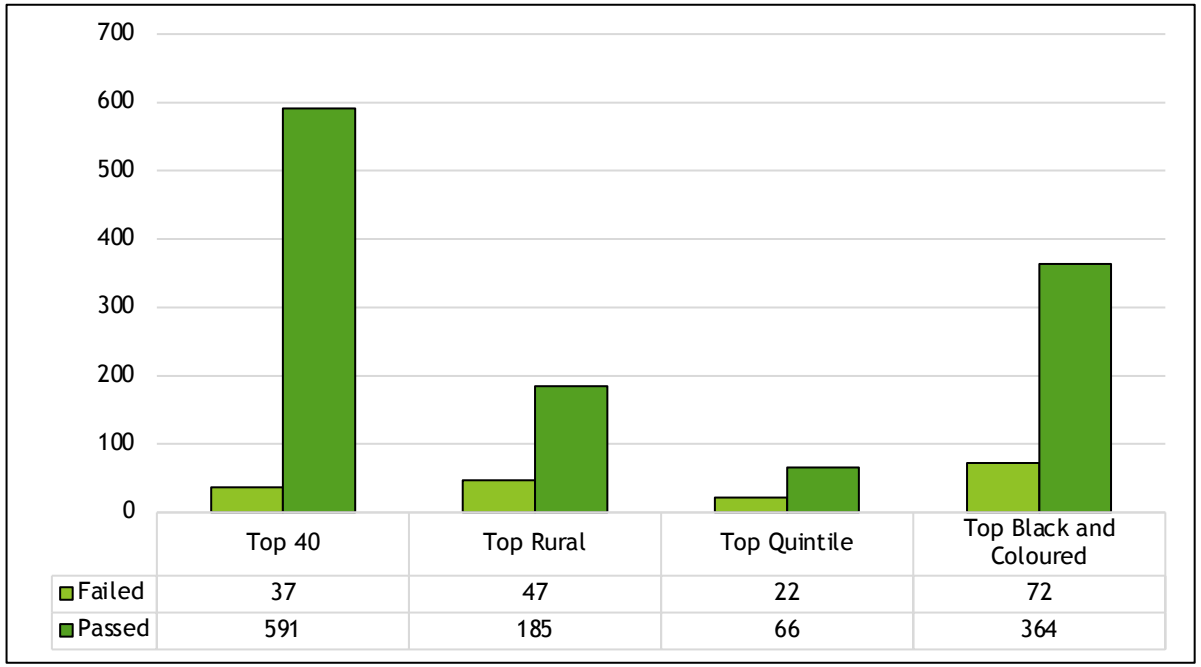
Used to assess the association between admission categories and progression outcomes [5,6]

One-Way Between Groups ANOVA

Performed to explore mean differences in students' academic outcomes [7]

Anatomy results

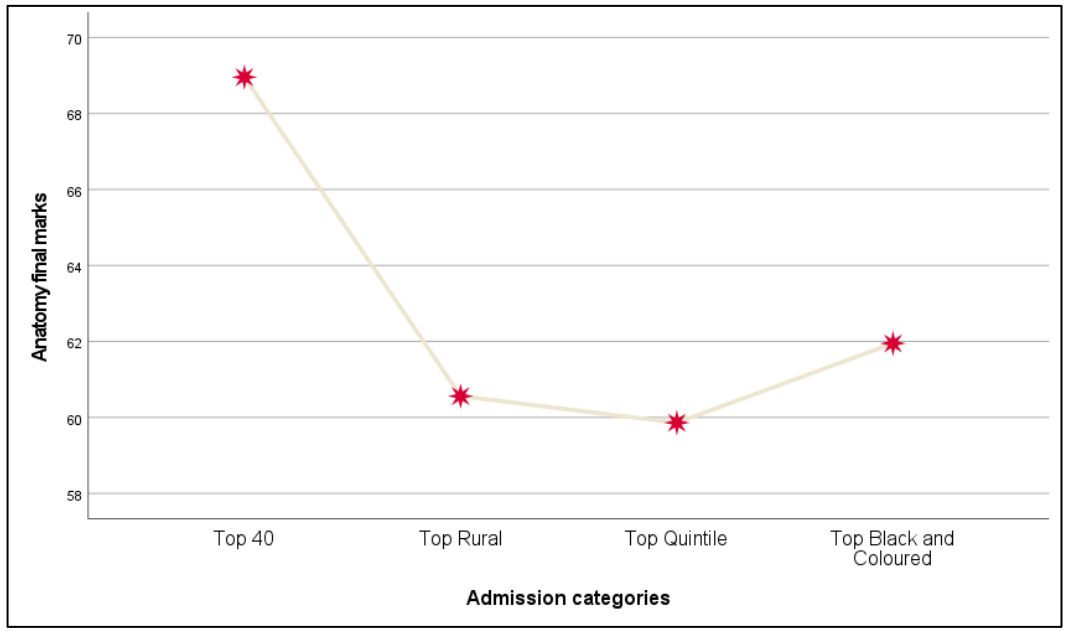
The results revealed a statistically significant association between admission categories and performance in Anatomy, $\chi^2 = 55.307$, $p < 0.001$. Among these students n=628, 94.1% (591) passed, while the remaining 5.9% (n=37) failed.



Anatomy results

- The ANOVA analysis results show that there are statistically significant differences in students marks in Anatomy based on different admission categories $F = 3, 1202 = 58.893$, $p < 0.001$.

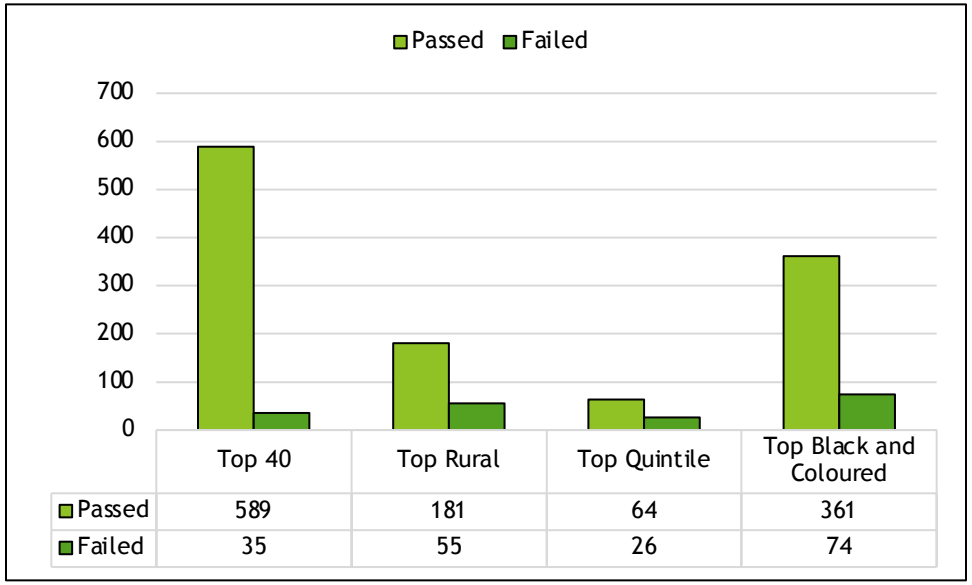
- The average marks of students in the Top 40 admission category ($M = 68.96$) were significantly higher compared to those in the Top Rural (M = 60.56), Top Quintile 1&2 ($M = 59.86$), and Top Black and Coloured ($M = 61.95$) categories.



Molecular Medicine results

- The chi-square test assessing the association between admission categories and students marks in Molecular Medicine was statistically significant ($\chi^2 = 74.478$, $p < 0.001$).

- Within the Top 40 category, it was seen that 94.4% (n=589) passed, while 5.6% (n=35) failed. In the Top Rural category 76.7% (n=181) passed while 23.3% (n=55) experienced academic challenges. The students in the Top Black and Coloured category (n= 435), 83.0% (n=361) passed and 17.0% (n=74) failed.

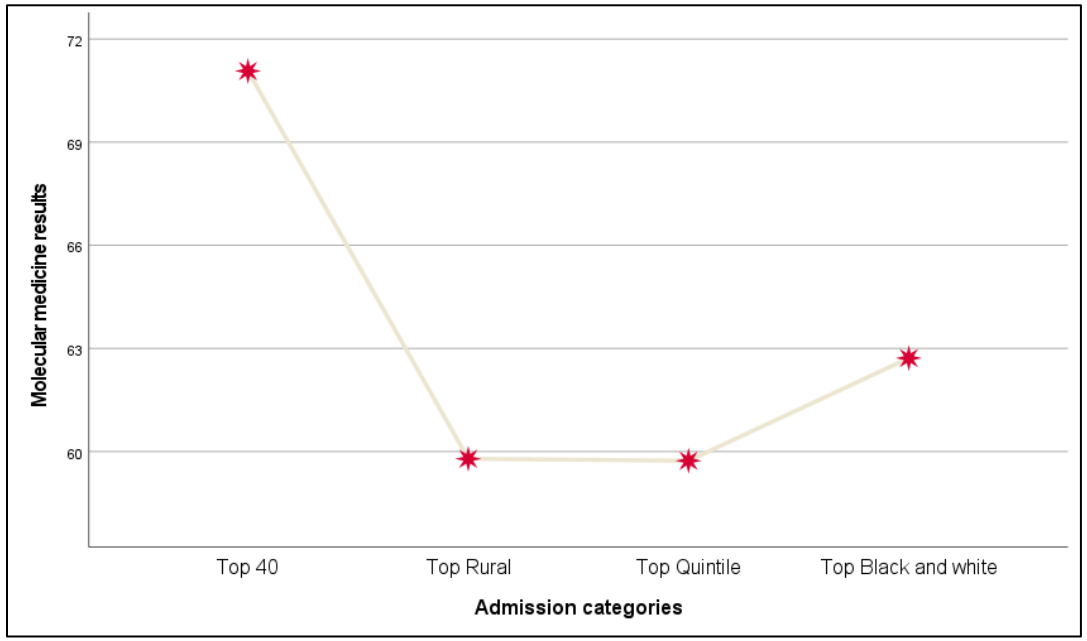


	Top 40	Top Rural	Top Quintile	Top Black and Coloured
Passed	589	181	64	361
Failed	35	55	26	74

Molecular Medicine results

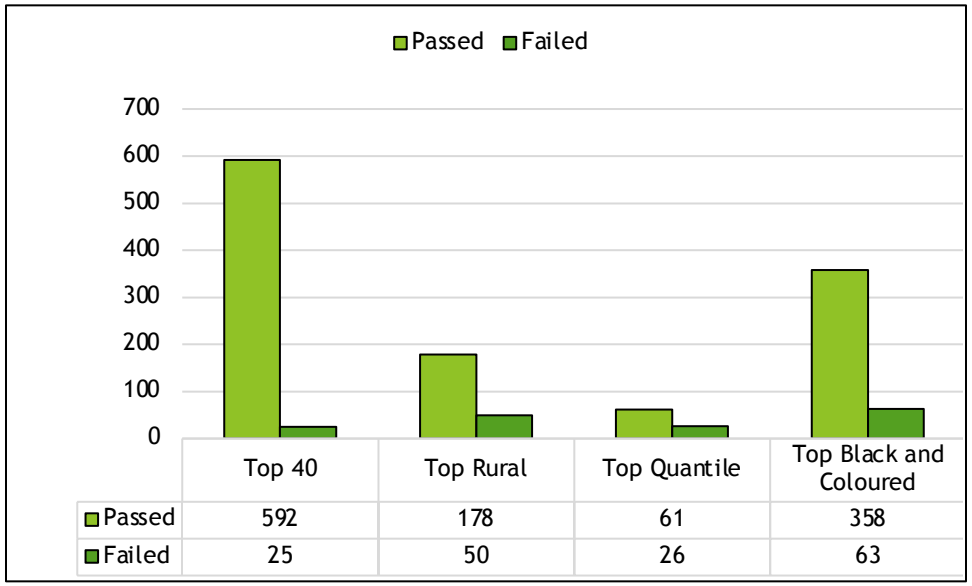
- The ANOVA results showed significant differences in Molecular Medicine average marks based on students' admission categories $F(3, 1191) = 100.556$, $p < 0.001$.

- The post hoc comparisons showed that the Top 40 students had a significantly higher mean score compared to all other categories with a mean difference ranging from 8.351 to 11.281, $p < 001$.



Physiology results

- The results indicate a strong and significant association between the two admission categories and Physiology progression outcome, $\chi^2 = 87.28$, $p < 0.001$.
- The students in the "Top 40" categories achieved a 95.9% (592), while a smaller percentage did not pass 4.1% (n=25).
- In contrast, the students in the "Top Rural" had a pass rate of 78.1% (n=178) and a failure rate of 21.9% (n=50).

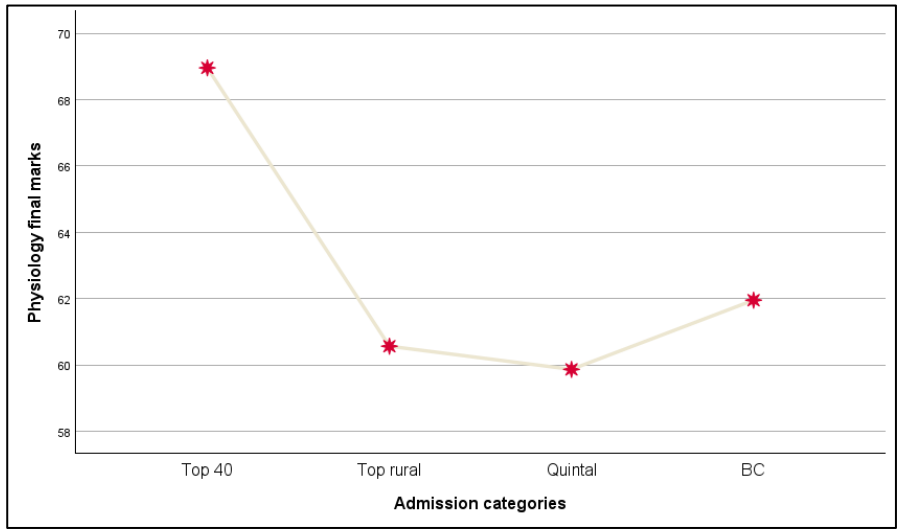


	Top 40	Top Rural	Top Quantile	Top Black and Coloured
Passed	592	178	61	358
Failed	25	50	26	63

Physiology Medicine results

- The ANOVA was performed to evaluate the presence of statistically significant variations in the Physiology mean marks by admission categories. The results were statistically significant, $F(3, 1202) = 58{,}893$, $p < 0.001$.

- The results indicate that students admitted in the Top 40 category achieved the highest mean final mark ($M = 68.96$), which was substantially greater than the mean scores of students in the Top Rural ($M = 60{,}56$), Top Quintile ($M = 59.86$), and Top Black and Coloured ($M = 61.95$) categories and was statistically significant, p <.005.



Discussion: Implications for admission policies

The different academic outcomes based on admission category are not surprising considering the well-known inequality of education provision in South African school quintiles [9]

- The lowest outcomes experienced by students from Top Quintile 1 & 2, Top Rural and top BC points to the need to adjust these categories in a spirit of social justice.
- Increase the composite index in these categories
- Using the students NBT results to determine the level of support they need
- More research is required to understand the influence of other variables

Revised admissions criteria was meant to widen participation to under-represented population groups (Top Rural and Top Quintile 1 & 2) with a target of 40% of enrolment, this study shows total enrolment was below target in each subject.

Discussion: Implications for teaching and learning, assessment and support

- The institutions should guarantee fairness in both opportunities and academic outcomes for all students[16]
- Educators need to be cognisant of the fact that they are teaching in the context of diversity
- The students lower academic outcomes may be suggestive of the persistent negative effects of low socio-economic family backgrounds on academic performance.
- Besides family socio-economic background, the low academic outcomes of students from equity groups (especially Top Quintile 1& 2 and Top Rural) may be reflective of the general university experience of students from low socio-economic backgrounds, congruent with findings reported in other studies[14,15]

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Thank you