Exploring Student Uses of Summative Data Dashboards"

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BACKGROUND

- Data dashboards are a promising technology that are becoming more accessible to create and use in medical education.[1]
- Medical students create an abundance of data during their didactic learning experiences, but only have access to individual test performance and grades in each course versus a longitudinal view of their performance across courses and academic years.

OBJECTIVE

To create an interactive dashboard of student performance in the medical knowledge competency spanning years one and two of medical school, gather student engagement feedback, and determine how students use the dashboard to guide their learning.

METHODS

- Every multiple-choice question answered by students on summative exams (~2,500) was tagged to four domains based on the USMLE content outline: competency, discipline (i.e., anatomy or physiology), system (i.e., renal or respiratory), and processes (normal or abnormal).
- An individualized data dashboard was created for each student using their own data, allowing them to gain unique insights about their learning over time.
- Survey feedback was collected from the initial pilot of second-year medical students in the spring of 2020.
- Qualitative interviews with ten second-year medical students were conducted in the fall of 2020.
- Insights from qualitative and quantitative data collection provided opportunities to improve the data dashboard, and several features were added or changed in the fall of 2020.
- The next iteration of the dashboard launched in October 2020.

RESULTS

- 56% of students accessed their dashboard during the spring 2020 pilot.
- Students used the dashboard for a number of reasons, including assessing areas of improvement, comparing performance to class average, and studying for Step 1.
- 54% of students who accessed the dashboard thought it was at least a little useful in studying for Step 1 and 42% of students reviewed their data with an advisor.
- Qualitative interview data suggest a strong interest in a data dashboard.
- Suggested improvements from qualitative data included simplifying the landing page, focusing the data on the systems and discipline domains (Figures 1 and 2), being able to track scores over time (Figure 3), using clear and well-defined terminology, and calling out data sets with small sample sizes.

Figure 1: Student data dashboard with essentials core performance organized by discipline
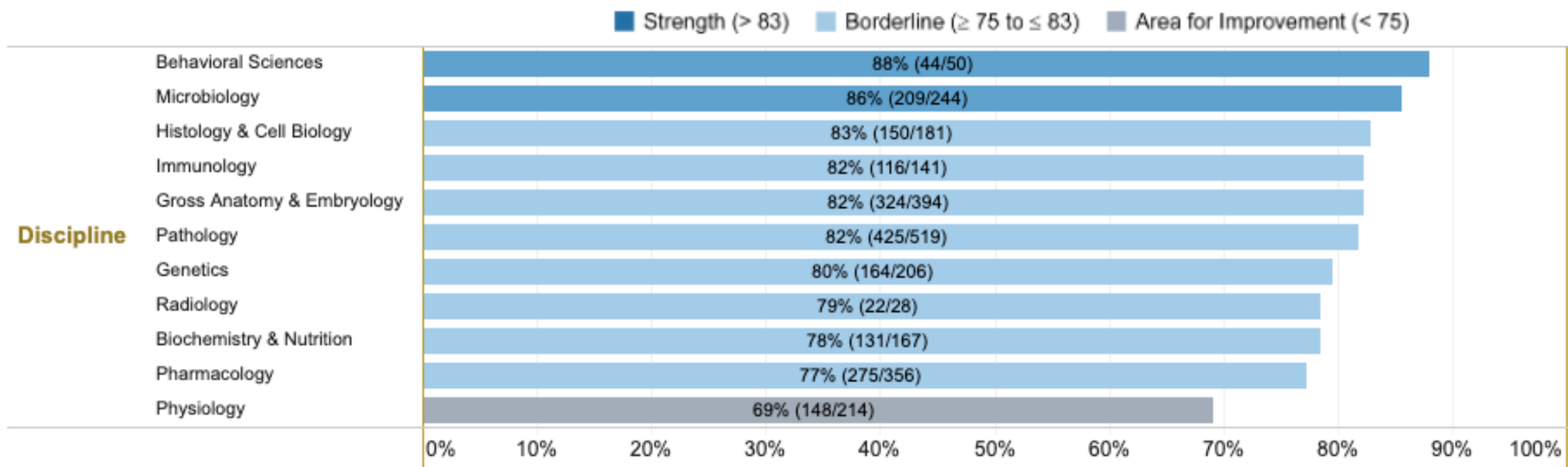

Figure 2: Student data dashboard filtered by borderline performance (75%-83%) by system
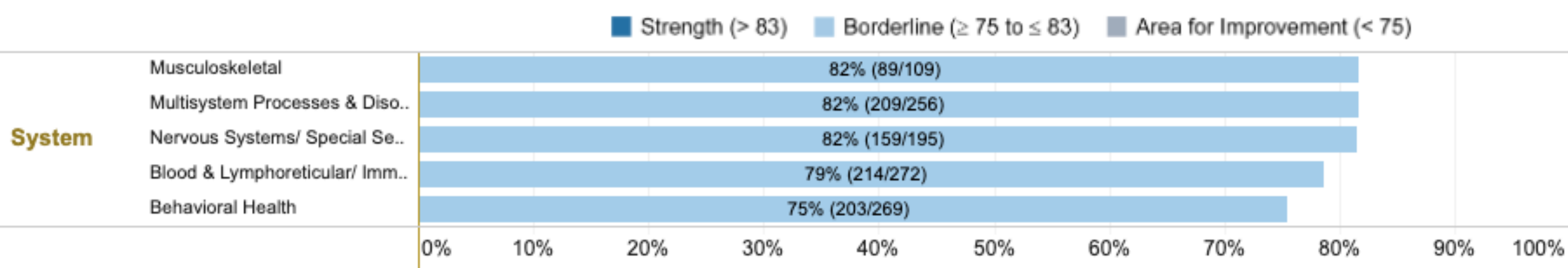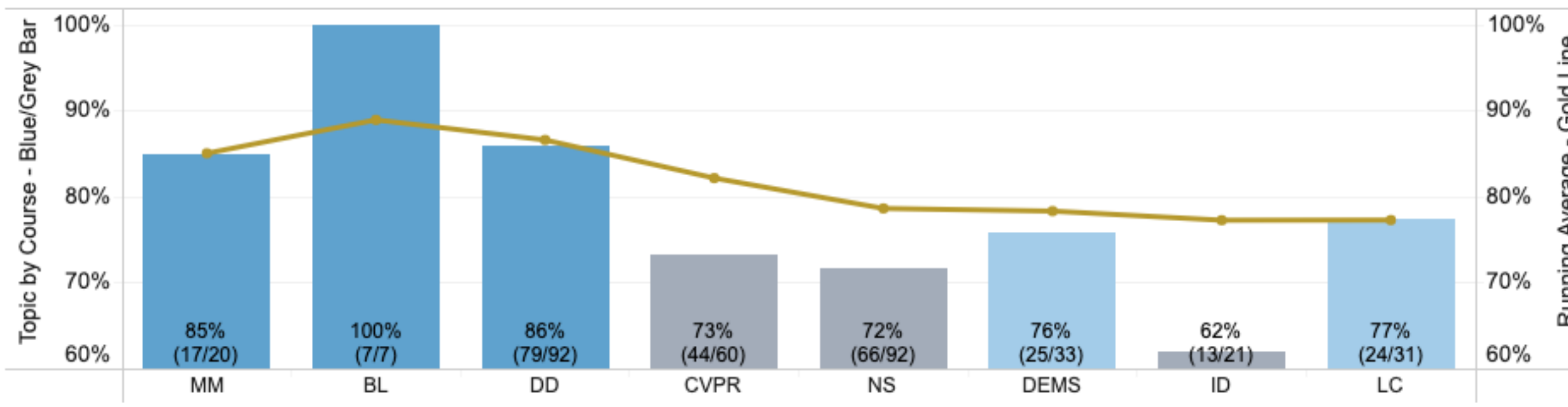

Figure 3: Performance over time in a specific discipline (ex. Pharmacology)

Additional Data Dashboard Features

- Students can sort their data by system or discipline, and filter data by strengths, areas of improvement, and borderline scores.
- Students have instant access to every exam grade in every course, as well as guides for how to use the dashboard.

DISCUSSION

- Understanding student use and value of the data dashboard has demonstrated potential to improve learning, though the data has been limited by a lack of student usage.
- Future iterations of the work will involve additional student feedback and features that will make the dashboard easier to use and more valuable in terms of the information it provides.
- Potential benefits of the data dashboard include timely performance feedback[2] and data to inform decision-making.[3]
- Further research is required to determine whether data dashboards drive impact by informing and initiating changes in student learning behaviors.[4]

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