Forming K-12 Peer School Groups for Benchmarking: A Dynamic Data Visualization Dashboard for Three Southeastern States

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Background: Understanding progress and adapting successful strategies from one context to another presents a challenge for stakeholders translating data and research into practice. In addition, educators are asked to make decisions based on state accountability data, but the data often appear devoid of context needed to make fully-informed decisions. Recent research has also identified that it is not necessarily appropriate to apply causal impact findings to schools with significantly different populations and contexts (Orr et al., 2019). Benchmarking with peer groups can help connect researchers with practitioners in two ways: 1) contextualizing performance data to the environments in which the schools operate and 2) determining a set of schools for peer networking or for exploring the adoption of practices that have been successful in similar environments.

Benchmarking performance against peers helps to control for factors outside the school's control, such as poverty and rurality, allowing for fairer interpretations of student outcomes. Peer comparison is commonly used in higher education to determine strengths and areas for improvement (Ronco, 2012) and to identify high-performing institutions with similar characteristics (Redlinger, Wiorkowski, & Moses, 2012). In K-12 education, localities such as New York City Public Schools (2017) use peer comparison for accountability purposes on school report cards using a fixed formula that considers demographic factors such as the percentage of economically disadvantaged students. The Georgia Governor's Office of Student Achievement also features a "Schools Like Mine" dashboard to help generate clusters of schools based on comparison criteria (GOSA, 2019).

Peer benchmarking can also support school improvement, with applications ranging from self-assessment to strategic planning (Dew & Nearing, 2004). As "a means to an end and not an end in itself" (Duniway, 2012, p. 27), peer benchmarking is more about process than product. The exercise of benchmarking can drive conversations about how to innovate for improvement rather than making summative judgments. The practice of benchmarking also allows for evaluation through an external and internal lens, identifying the best performers in a peer group while applying a critical lens to internal practices (Chow, 2012), especially through a partnership between practitioners and researchers. The creation of peer groups for benchmarking around locally-relevant questions can also enhance the usability of evidence-based practices from other settings. They can also inform group selection for networked communities of practice to address educational challenges (Bryk, Gomez, & Grunow, 2011; LeMahieu et al., 2017).

Purpose/Setting: This poster presents a dashboard that allows users to determine criteria of selection for "peer" groups and to visualize results across three southeastern states to support the Region 6 OESE Comprehensive Center. Users set weights for background variables of

performance, geography, and demographics and the system outputs interactive data visualization of peer groups. The system benefits education stakeholders by allowing them to contextualize their performance data and identify peer schools to connect with and share instructional practices. It also benefits researchers by allowing dynamic control of parameters for selecting comparison sites for evaluating practices. The digital poster will provide a description and demonstration of the system and aims to disseminate the potential of similar systems to aid peer benchmarking in other contexts.

Setting/Data: The peer comparison dashboard is built completely from publicly available data. The base file draws from the 2016-17 School Universe Survey in the Common Core of Data (CCD) published by NCES. CCD data sets combine with the base file to determine school characteristics including a) economic disadvantage, b) race/ethnicity, c) grade levels, d) school size, e) geographic location and urbanity/rurality, and f) special status (such as Title I or charter schools). The system also draws from data published by state agencies in North Carolina, South Carolina, and Georgia to determine a percentile of overall academic achievement which allows for comparison across states with different accountability measures. Although the system currently encompasses three states, future work could expand the dashboard to include a more regional approach.

Practice: The dashboard allows users to easily identify peer schools based on characteristics that are most relevant to the challenges they are trying to address by dynamically adjusting groups of schools based on user-provided weights. Using a back-end design with code in Python and R and display in Tableau, the dashboard calculates a "closeness" metric between a school of interest and all other schools in the region that serve the same grade levels of students (e.g., elementary, middle, and high schools). Sliders allow users to assign weights for various characteristics to signify the degree to which they want to emphasize different matching criteria.

Shown in Figure 1 (and linked through the figure title), the dashboard is designed for use by education stakeholders to better understand how their schools fit in the larger educational context of the southeastern United States. To overcome the potential drawback to fixed, non-relevant, or opaque criteria for matching, the dashboard offers users the ability to adjust the criteria for comparison to factors most salient for their context to inform school improvement.
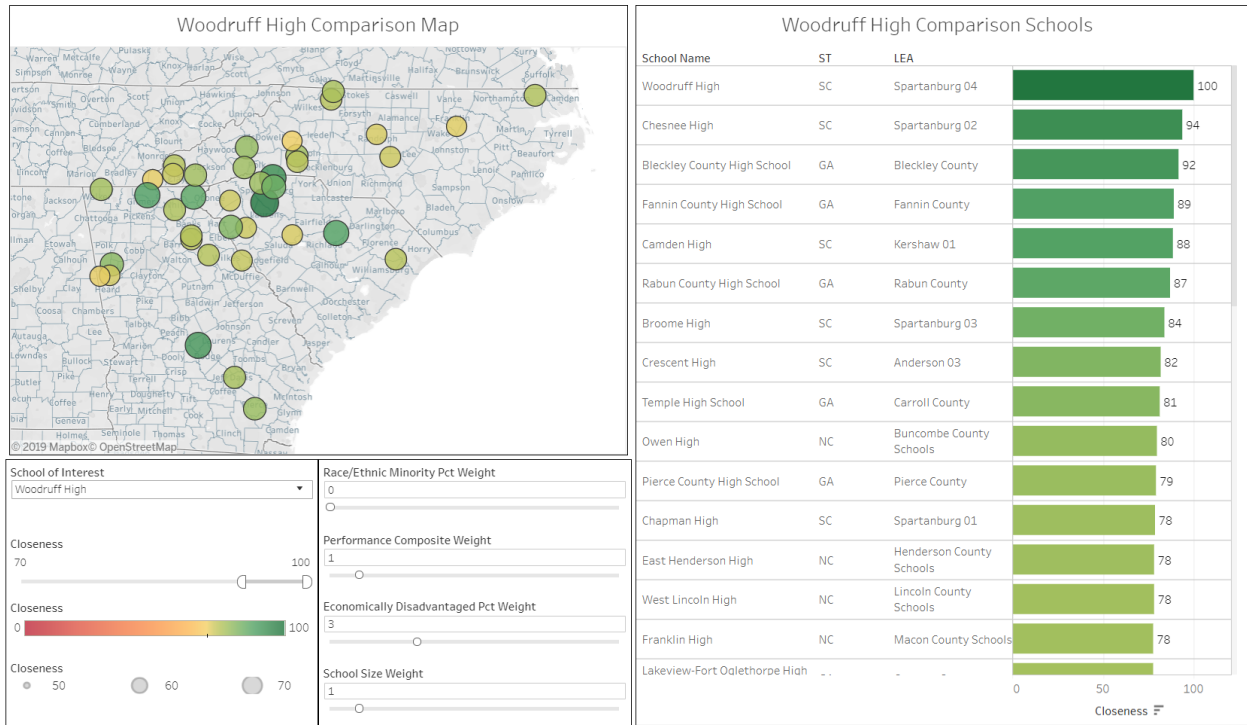
Conclusions: Publicly-available data about schools has potential to inform directions for school improvement. The system built around data visualization makes data interpretable to a broad audience and can drive conversations regarding improvement strategies among diverse groups of stakeholders. The dashboard also provides stakeholders with a starting point to understand their data and suggests educators with whom to form new connections in other parts of their states and regions.

In its current form, this dashboard will support connecting technical assistance to practitioners for the Region 6 Comprehensive Center to contextualize data across states and connect schools with each other to share practices that inform student supports. Upon viewing the data, school and district leaders can develop an idea of peer educators with whom they can connect. The dashboard also supports matching evidence-based practices from research and evaluation to settings aligned with others where the practices were successful. This dashboard offers a prototype example of what is possible; as educators begin to use the system and provide feedback, future work will modify the dashboards to include additional data, more locations, and increased options for comparison parameters.

References

Bryk, A. S., Gomez, L. M., & Grunow, A. (2011). Getting ideas into action: Building networked improvement communities in education. In M. T. Hillman (Ed.), *Frontiers in sociology of education* (pp. 127-162). Springer: Dordrecht.

Chow, T. K. C. (2012). Using institutional survey data to jump-start your benchmarking process. *New Directions for Institutional Research, 156*, 37-45.

Dew, J. R. & Nearing, M. M. (2004). *Continuous quality improvement in education.* Westport, CT: Praeger.

Duniway, R. L. (2012). Benchmarking and enrollment management. *New Directions for Institutional Research, 156*, 25-36.

Georgia Governor's Office of Student Achievement. *Georgia schools like mine dashboard.* Retrieved from https://schoolslikemine.gosa.ga.gov/

LeMahieu, P. G., Grunow, A., Baker, L., Nordstrum, L. E., & Gomez, L. M. (2017). Networked improvement communities: The discipline of improvement science meets the power of networks. *Quality Assurance in Education*, *25*(1), 5-25.

New York City Department of Education. (2017). *School quality reports.* Retrieved from http://schools.nyc.gov/Accountability/tools/report/default.htm

Orr, L. L., Olsen, R. B., Bell, S. H., Schmid, I., Shivji, A., & Stuart, E. A. (2019). Using the results from rigorous multisite evaluations to inform local policy decisions. *Journal of Policy Analysis and Management*, *38*(4), 978-1003.

Redlinger, L. J., Wiorkowski, J. J., & Moses, A. I. (2012). Taming multivariate data: Conceptual and methodological issues. *New Directions for Institutional Research, 156*, 93-108.