The specialty of Anesthesiology has always been a data intensive one. With the adoption of new paradigms and technologies, the potential to utilize data and algorithms in the care of patients and management of resources continues to expand. Lagging behind the explosion of data availability is an understanding of the tools, techniques and sharing of insights and understanding of data analysis. This abstract serves to present a platform that is readily available to build learning modules and clinically applicable data analysis tools for use in the management of patients, operations, or resource allocation and use in Anesthesiology.

The use of data to make informed decisions, monitor quality, effectively distribute resources, improve financial impacts, and enhance the overall care of patients holds great potential, however, requires an understanding of the quality of the data, predictive limitations of the algorithms, sharing of knowledge extracted and validity of the analysis obtained. There is no shortage of access to data; nationwide database projects such as the Agency for Healthcare Research and Quality1, UK NHS Digital2, Multi-center Perioperative Outcomes Group (MPOG)3, The Anesthesia Quality Institute (AQI) Outcomes Registry4, other healthcare data repositories, hospital EHR systems, clinical monitoring devices, an expanding potential for personal data monitoring systems to be incorporated into clinical decision making, and expanding internet/digital medial technologies where data can be used in innovative ways to enhance the care we deliver.

There is no question data holds great potential, but to realize this potential, we must develop, educate and validate the tools and analytical models/algorithms along with sharing the results with others. Jupyter5 is relatively unknown tool to many healthcare providers, but is having a large impact in the field of data science. It was developed out of the iPython Project as a web-based tool for scientific computing and interactive data exploration. Currently, the Jupyter Notebook project supports more than 40 programming languages and supports a robust community of academic and industry data scientists. The web-based, platform independent application allows for the development of self-contained data notebooks that can be easily shared. The interactive and expansive nature of the platform brings great potential for the development, testing and sharing of educational modules, quality dashboards, and real-time decision tools to both understand and extract value from health data. Many researchers are using these notebooks to supplement their research publications, sharing the analysis and data with others who are interested in reproducing their results.

This project presents the power and utility of using the open-source Jupyter Notebook platform in anesthesiology. Its introduction is to raise awareness of the potential for development of data tools
and algorithms in Anesthesiology and to share and collaborate on their use in clinical and operational facets of our specialty.


