

Shared Learning Without Waiting for Shared Data: Using Federated Analytics for Health Care Research Across Multiple Institutions and Countries

James Signorovitch — 3 MIN READ

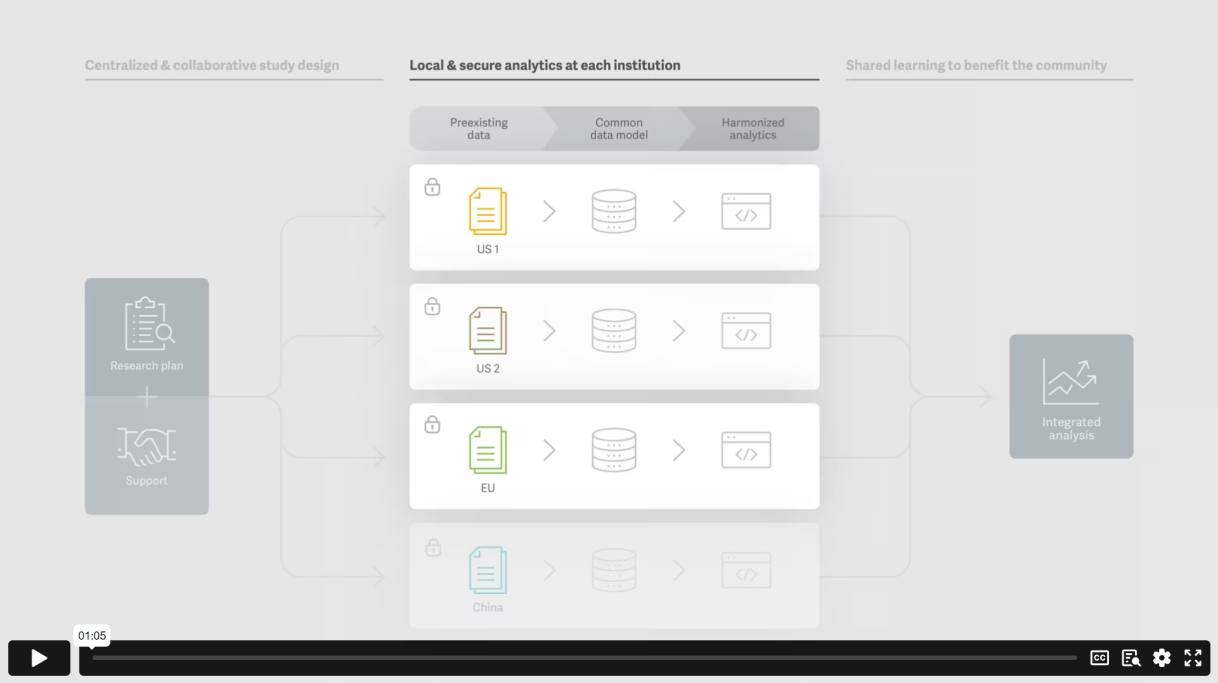
Federated analytics platforms can unlock collaborative learning from critical data that is otherwise siloed across institutions. This is especially important for rare diseases when critical research requires data from larger populations than are found in any single data source.

Roadblocks and hurdles are very common in rare disease research. Most clinical centers simply don't have enough patients to address important research questions, while institutional barriers and country-specific data privacy requirements can make it difficult, if not impossible, to share patient data among different research teams.

Collaboration between Analysis Group and the nonprofit Amyloidosis Research Consortium (ARC) led to the development of an innovative federated analytics platform that helped overcome these kinds of real-world barriers.

How Do Federated Analytics Work?

Just as in political science and computing, in clinical research a "federation" is made up of independent operating entities that agree to defer selected responsibilities to a centralized organization while largely retaining their own local authority. See an animated description of the approach below.



Learning from Past Trials to Deliver Effective Therapies Sooner

Clinical trials generate important learnings that can be used to optimize future drug development. For AL amyloidosis research, however, the research question could only be answered by combining harmonized analyses across multiple, discrete randomized trials.

The knowledge generated through the federated analytics approach may then be applied subsequently to enable smaller, faster trials.

The approach allows research teams to become much nimbler, as additional analyses can be implemented rapidly by delivering new or updated analytical code to the spokes.

In addition, the modular structure of the platform allows new data to be incorporated as they become available and new trials to be added on a rolling basis. Our long-term vision is that all randomized trials in amyloidosis will be included collaboratively in this system.

Building on Collaboration

Federated analytics allowed us to learn from disparate data in a harmonized and coordinated way without requiring that the data leave institutions or cross international borders.

Collaboration and the willingness of the different institutions to participate were critical for this effort. Federated analytics can make the collaboration broader and more efficient, but it requires commitment from everyone to making sure that patient data from trials are used to benefit the patient community.

Fortunately, this was the case in our AL amyloidosis research. Going forward, we are hopeful that the system can be used to address additional research goals raised by collaborators in AL amyloidosis, as well as be adapted for research into other rare disease areas. ■