Rt-Collabathon: An Epidemic Rt estimate Collaborative

The Epistorm Innovation Center hosted the 2024 Epistorm Rt-Estimate Collabathon in Boston, bringing together experts from government, industry, academia, and NGOs to address a critical public health challenge: real-time estimation of epidemic growth rates. The multi-day event, supported by the CDC's CFA Insight Net initiative, focused on enhancing tools for calculating Rt, the reproduction number, which is crucial for epidemic forecasting.

Approximately 50 participants, including representatives from the California Department of Public Health, Biosecurity by Ginkgo, and 12 research centers and universities from the US, Canada, and the UK, gathered to explore solutions to challenges such as low case counts, data inconsistencies, and the development of innovative real-time estimation tools. This collaborative effort aims to advance the field of epidemic modeling, driving progress toward improved preparedness and response to future health crises.

Participants supported continued collaboration through project-specific channels, regular progress updates, and white papers. They also emphasized the importance of engaging junior researchers and creating accessible training resources to grow the community.

Key outcomes

Community Building and Collaboration: The collabathon emphasized collaboration over competition, focusing on building a sustainable user and developer community. Next steps include supporting ongoing tool development and expanding the user base.

Evaluation and Standards Roadmap: Participants highlighted the need for standardized input/output formats for better tool comparison and performance evaluation, despite challenges posed by different Rt estimation techniques. A working group was formed to design benchmarks and diagnostic tools for improving method reliability, even in low-data environments.

Tool Innovation: Discussions led to the development of a new software tool, SummRt, which harmonizes and compares different Rt estimation approaches. Brainstorming also generated ideas for a "matchmaker" script to guide users in selecting the best estimation tool and possibly integrating a chatbot for broader accessibility.

Addressing Practical Challenges: Participants identified gaps like noisy data and reporting inconsistencies. A working group focused on leveraging Julia's computational strengths for high-performance Rt estimation, while another explored hierarchical models and spatial structures to address real-time data challenges.

Public health relevance

Supports public health officials and researchers with collaborative approaches that fosters innovation, enhances existing tools, and develops scalable solutions, empowering policymakers with accurate, actionable insights.