Norton, W. E., Lungeanu, A., Chambers, D. A., & Contractor, N. (2017). Mapping the Growing Discipline of Dissemination and Implementation Science in Health. Scientometrics, 112(3), 1367-1390. <https://doi.org/10.1007/s11192-017-2455-2>

Norton et al. (2017) conducted a comprehensive analysis of the field of dissemination and implementation (D&I) science in health, offering parallels that resonate with the interdisciplinary research undertaken at Boise State University's Grand Challenges initiative. The study presents D&I as a discipline that systematically integrates evidence-based practices into healthcare and public health settings. This is akin to the GCs objective, which is to foster scientific creativity targeting significant societal issues.

The paper underscores the value of mapping the evolution of a scientific discipline as a means of strategic planning and capacity building within a field. This mapping process, enabled by advances in technology and data processing, provides a foundational understanding of the D&I community's origins, seminal contributions, and key thought leaders. These insights are invaluable for our research at Boise State, as we seek to understand the dynamics and outcomes of team science training and provide actionable feedback to refine the Grand Challenges program.

Norton et al. (2017) employ network mapping techniques to visualize the D&I discipline's growth using bibliometric analyses and self-reported survey data, a methodology that mirrors our use of professional and personal networks constructed from survey responses. The study's objectives to describe participant characteristics, resource engagement, network dynamics, and predictors of scientific performance closely align with our goals of characterizing individuals engaged in grant proposals, understanding collaborative networks, and predicting scientific productivity.

The methodological framework of Norton et al. (2017) serves as a valuable guide for our research. By analyzing the interdisciplinary nature of scientific networks and evaluating the impact of initiatives like the Grand Challenges, we can gain insights into network characteristics conducive to successful interdisciplinary collaborations.

Norton et al.'s (2017) results section delves into the advice and collaboration networks within the D&I science field, revealing the significant influence of a select few individuals. These individuals demonstrate high centrality scores across multiple network measures, indicating their pivotal roles in the community's connectivity. The networks' small-world characteristics suggest close connections across the community, despite a considerable number of isolates. These findings highlight the strategic importance of networking within the D&I field and suggest the need for network-based interventions to enhance growth and productivity.

The study's regression analyses reveal that advanced expertise and high network status are influential predictors of publication and grant funding success, highlighting the importance of strategic networking. Demographic characteristics, however, do not significantly predict D&I outcomes. This reinforces the strategic aspect of network building in scientific advancement.

The discussion section of Norton et al. (2017) provides thoughtful commentary on the D&I community's traits, engagement with resources, network dynamics, and motivations for collaboration. The presence of small-world characteristics in both advice and collaboration networks suggests efficient pathways for information flow within a sparsely connected community. The study also notes the motivations behind collaboration choices, emphasizing the strategic selection of partners to enhance scientific advancement. This aspect of strategic network building is of particular interest to our research, as we seek to understand and promote interdisciplinary research within the Grand Challenges framework.

In summary, Norton et al. (2017) offer a rich, methodologically sound analysis of the D&I field that can inform our approach to examining the structure and impact of interdisciplinary collaborations at Boise State University. The insights gleaned from this study provide a robust framework for mapping scientific networks' evolution and impact, which is directly relevant to our research goals within the Grand Challenges initiative.

Research Summary

Norton et al. (2017) offer a comprehensive examination of the field of dissemination and implementation (D&I) science in health research, integrating network mapping (SNA) and bibliometric methods, similar to our approach, to analyze the evolution and dynamics of D&I as a scientific discipline. They gather data about participant demographics, engagement with D&I resources, and network dynamics using an online survey (Norton et al. 2017). Participants rate the frequency of engagement with D&I resources, providing insights into preferred communication channels in the D&I field (Norton et al. 2017). Roster-Nomination Method is used to collect data on advice and collaboration networks, allowing participants to report their D&I-related advice-seeking behaviors and collaborations (Norton et al. 2017). The study uses actor-specific measures (e.g., in-degree, betweenness centrality) and broader network metrics (e.g., size, density, clustering coefficients) to understand network properties (Norton et al. 2017). Regression analysis is applied to individual and network-level data to identify predictors of scientific performance (Norton et al. 2017). The advice network in D&I is dominated by a few influential individuals, evident from high centrality scores. These networks show small-world characteristics, indicating a close-knit but sparsely connected community. The collaboration network shows trends similar to the advice network with a few central actors. Despite its sparse structure, it retains small-world characteristics. Advanced or intermediate expertise in D&I correlates with a higher likelihood of funded grants. The status in the advice network also plays a significant role in securing grants. The results highlight the significance of central individuals in the D&I community, essential for connectivity and information flow. Norton et al.’s approach to network analysis, particularly in understanding the role of central actors and the dynamics of advice and collaboration networks, guides the investigation into the characteristics and dynamics of interdisciplinary collaborations at BSU.