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**Title:** *Expert Assessment of Geographic Information Science (GIS) for Health Communication in Natural Resource Development of the Canadian Arctic*

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Natural resource exploration in northern Canada has accelerated over the last 30 years. During the same period, aboriginal groups have successfully litigated the constitutional duty to consult about such development through the Canadian legal system, raising questions about the sufficiency of process and consultation methods to elucidate environmental and health concerns.

Recent development activities have raised questions about whether risks to northern people may outweigh the benefits by increasing health inequities. New platforms for coordinating multi-stakeholder perspectives on health issues related to development are needed, and we have examined how Geographic Information Science (GIS) has been used by both proponents of development and aboriginal groups in northern communities as a communications tool. Our research investigated expert opinion on whether incorporating GIS for consultation and accommodation during environmental assessment could improve communications about health-related concerns in aboriginal communities facing natural resource development.

In 2012, we conducted 30 semi-structured interviews with 29 experts in GIS, health impact assessment, medical geography, epidemiology and surveillance, natural resource policy, aboriginal law, aboriginal health, and community-based participatory research in the circumpolar context. Qualitative analysis of the resultant transcripts for key themes indicated that the majority of circumpolar experts supported employing GIS for health communication to facilitate a more extensive collaboration with communities to produce higher quality data outputs. To ensure that GIS enables improved communication about health concerns, the experts recommended improving communities' access to technology and training, community stewardship of the data, utilizing data for ongoing monitoring of development impacts, and coordinating cumulative impact monitoring within regions.

While our study was focused on informing environmental assessment processes in northern Canada and the United States, this research has broader relevance to other circumpolar regions where natural resource management systems are evolving to be accountable to the needs and concerns of indigenous people and local populations. In this context, our work can contribute to the development of the



Arctic Council's Spatial Data Infrastructure project, which is intended to provide access to geospatial data to facilitate decision making and monitoring.