

# **Determining Appropriate Locations for siting Palliative Care Hubs in British Columbia using Geographic Information Systems**

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## **Abstract**

The purpose of this research is to determine appropriate location(s) for siting palliative care services (PCS) to better service rural and remote areas of British Columbia. Palliative or end-of-life care focuses on providing crucial services for the dying. Consequently, the aim is to reduce the severity of suffering, not to change the outcome. The interest in palliative care issues in Canada has grown in recent years as a result of the growing push to improve the quality of life for those affected by life limiting illness, death, and bereavement (BCHPCA, 2006). This has been compounded by the fact that the Canadian population is aging, resulting in service that is unable to keep up with demand, particularly in rural and remote areas which provide few, if any services for those in need of palliative care (CHPCA, 2005). Unlike many other health outcomes, the relocation of palliative care patients to urban centres that have PCS is controversial, as most people would prefer to spend their final days at home (Gilbar and Steiner, 1996; BC Ministry of Health, 2006). It is recognized that it is not feasible to implement full PCS in areas with sparse population and inadequate established health and support services (Pereira, 2005). However, suitable sites for implementation of regional palliative care hubs can be determined and rationalized using rigorous and robust GIS methods.

## **Background and Relevance**

The purpose of this research is to determine appropriate location(s) for siting palliative care services (PCS) to better service rural and remote areas of British Columbia. Palliative or end-of-life care focuses on providing crucial services for the dying. Consequently, the aim is to reduce the severity of suffering, not to change the outcome. The interest in palliative care issues in Canada has grown in recent years as a result of the growing push to improve the quality of life for those affected by life limiting illness, death, and bereavement (BCHPCA, 2006). This has been compounded by the fact that the Canadian population is aging, resulting in service that is unable to keep up with demand, particularly in rural and remote areas which provide few, if any services for those in need of palliative care (CHPCA, 2005). Unlike many other health outcomes, the relocation of palliative care patients to urban centres that have PCS is controversial, as most people would prefer to spend their final days at home (Gilbar and Steiner, 1996; BC Ministry of Health, 2006). It is recognized that it is not feasible to implement full PCS in areas with sparse population and inadequate established health and support services (Pereira, 2005). However, suitable sites for implementation of regional

palliative care hubs can be determined and rationalized using rigorous and robust GIS methods.

## **Methods and Data**

An extensive review of related literature was undertaken to elucidate current issues in palliative care, including its mounting importance in health services research, applications of GIS to health services and palliative care provision, and the relationship between access to palliative care for those in need, and their socio-demographic characteristics. Data of existing palliative care locations were gathered from the regional BC Health Authorities, combined into a single dataset, georeferenced and added to an existing map showing census-defined Urban Areas (UA) (communities with at least 1000 persons, and a population density of at least 400 people per km<sup>2</sup>). Using the dataset showing locations of current PCS, catchments were created surrounding these communities that boast PCS, based on a maximum travel time of one hour to the services.

## **Results**

The catchments served to highlight the UAs considered to be out of the practical service range for palliative care in BC based on the determined maximum travel time of one hour. Several Urban Areas that are more than one hour drive from existing PCS were identified as potential candidate sites for the creation of regional palliative care hubs to provide service to the neglected areas of the province.

## **Conclusions**

Results of this research suggest that serious inadequacies exist in the spatial distribution of palliative care services in British Columbia. Access to PCS in rural and remote regions of the province is particularly sparse or in many cases so distant as to be non-existent. The creation of strategically located regional palliative care hubs based on the findings of this study could help to ameliorate geographic inequities in service provision. The methodology employed in this study could be easily translated to other health research in which resolving inequities in geographic access and improving resource allocation are the objectives.

## **References**

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