

Estimating the Economic Value of Forested Watersheds: A Spatial Analysis of the Economic Value of Forested Watersheds as Source Water

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We investigate the impact of forest cover on drinking water treatment costs in Canada using the 2015 Survey of Drinking Water Plants (SDWP). We estimate proportion of forest, urban, and agricultural land cover in the sub and sub-sub drainage areas surrounding each drinking water treatment facility. Analysis is complicated by endogeneity between land use, raw water quality, and drinking water treatment costs in our model, as well as potential spatial spillovers. To address the first issue, we instrument raw water quality on forest cover. For the second, we use Moran's eigenvector method to build a spatial weighting matrix accounting for spillover effects. We explore spatial error and spatial lag models with drainage basin fixed effects and raw water quality as an instrumented variable for treatment plants across Canada. Our study contributes to the literature on the economic value of watershed ecosystem services by showing forest cover provides important economic benefits through their water purification services.