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# Public Lands and Urban Quality of Life

Sherzod B. Akhundjanov  
Utah State University

Paul M. Jakus  
Utah State University

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## Public Lands and Urban Quality of Life

Federal and state-owned public lands occupy a significant proportion of many U.S. urban regions, contributing to two highly-valued, nontradable goods: viewsapes and outdoor recreational opportunities. Yet, public lands have not been adequately addressed in the urban quality-of-life (QOL) literature.

First, much of the public lands literature has focused on the effect of public lands within a tightly defined geographic region, such as a Metropolitan Statistical Area or a core urban region. Our study relies upon a larger geographic region, the Combined Statistical Area, which is explicitly defined to include connections to the geographically broader social and recreational resources upon which urban QOL depends.

Second, our study is further distinguished by assuring that our measures of public land ownership include 'generic' federal and state public lands. Past studies have often limited their analysis to lands that have special protective (or management) status as national, state, or local parks, as wilderness or recreation areas, or a similar designation. However, lands protected with special designations make up less than half of all publicly owned lands. Studies that focus only on protected lands ignore the contribution of adjacent and nearby generic public lands to viewsheds and in providing outdoor recreation opportunities that are not permitted on protected lands. We also maintain a distinction among federal, state, and local levels of government, allowing us to identify preferences with regard to differences in ownership and management of public land.

Third, the public lands literature has not often addressed the possibility of endogeneity between public lands and wages, housing prices, or economic growth measures. More recent public lands studies have used a variety of quasi-experimental methods to control for endogeneity, but the data used to empirically test our primary research question do not allow for such an approach. Instead, our analysis controls for endogeneity using two 19th century land disposal policies as instruments.

Our primary focus is estimating the effect of federally- and state-owned public land in Census defined urban statistical areas on urban QOL. Our primary geographic unit of analysis is the Combined Statistical Area (CSAs), with a robustness check provided by Core-Based Statistical Areas (CBSAs). Crucially for our purposes, the definition of a CSA also considers weekend recreation activities that can extend beyond the boundary of a single CBSA. Our QOL index is based on Albouy (2008, 2016), which has several attractive features, including: (i) it includes an effective federal tax on labor income, which most QOL measures in the literature ignore; (ii) it does not treat labor as the only source of household income; (iii) it weighs cost-of-living differential across locations as about a third; and (iv) it is adjusted to account for selective migration---people engage in residential sorting on the basis of preferences beyond those measured by housing cost and wage differentials.

The empirical challenge in identifying the effect of public lands on QOL is that public lands can be correlated with unobservable local amenities that drive QOL. Such omitted variables may confound estimates of the contribution of public lands to urban QOL. To address this challenge, we employ two different identification strategies. First, following Altonji et al. (2005) and Albouy et al. (2016), we assess the potential for omitted variable bias by rigorously examining the robustness of our ordinary least squares (OLS) estimates to an array of specifications using a rich set of controls selected in consultation with the existing literature. Although we find a compelling evidence for the stability of our OLS estimates, we acknowledge that the influence of unobserved local amenities on our estimates

cannot be fully ruled out. As a result, our second empirical strategy involves an instrumental variables (IV) estimation using the two largest 19 century “place land grant” policies of the United States—State Trust Lands and Land Grant Railroads—as possible instruments. Place grants are those in which parcels of land to be transferred to state and private control were designated in legislation with great specificity. The initial trust land allocation was distributed with near uniformity across a state; it follows that trust lands could vary widely in land quality. The initial uniform allocation is plausibly exogenous to QOL and is also believed to be correlated with current state and federal land ownership. Similarly, the every-other-section allocation of land within the place limits of land grant railroads resulted in an exogenous “checkerboard” pattern of land ownership that is likely to be highly correlated with state and federal land ownership and independent of QOL.

The two empirical methods that exploit different identifying variation to establish a causal effect produce quantitatively similar results, providing plausible bounds for the causal effect of public lands on urban QOL.

Our modeling demonstrates that public land ownership is a significant factor contributing to regional quality of life, regardless of estimation method, model specification, alternative QOL indices, and geographic level of aggregation. Public land, either measured as combined federal and state lands or as federal lands alone, is an important factor contributing to urban QOL. Our analysis is quite useful for policy analysis because the QOL models can be used to estimate welfare changes associated with the changing quantity of public lands within a geographic region. We have estimated a WTP measure—in the form of foregone wages and increased housing rental costs—that suggests an annual value of roughly \$81-\$130 for a one percent change in the quantity of federal and state public land in a CSA. The results of our analysis can be used to evaluate the welfare consequences of proposed land exchanges and other changes in land ownership or management.

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