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Exploring the Influence of Tribal Governance Capacity: Evidence from Internet Availability in Indian Country

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ABSTRACT

The lack of internet access on American Indian lands is a frequently discussed component of greater socioeconomic inequalities faced by American indigenous communities. In this paper, I attempt to identify the barriers to internet infrastructure deployment that are unique to Indian Country. Using data on internet availability at the census block level from 2014 to 2019, I apply a spatial matching strategy to identify similar native and non-native census blocks to estimate the effect of tribal land designation on cable internet availability. Finding a significant, negative effect for land in Indian Country, I then examine four possible determinants of tribal government capacity (gaming business, federal funding, participation in self-governance compacts, and a reservation economic freedom index) to explore how it may reduce the gap in internet availability. I find that only one of these four measures, compacting, is correlated with improved internet access in Indian Country.

Keywords: American Indian; Indian Country; broadband internet; governance capacity; infrastructure inequality

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Introduction

Access to broadband internet in Indian Country has been notably lacking for most, if not all, of the internet era, a phenomenon sometimes referred to as the "tribal digital divide" (Bauer *et al.*, 2022). In expanding broadband infrastructure to improve access, Indian Country faces not only the same connectivity challenges commonly discussed in other contexts, but also some challenges which are unique to the legal structure of Indian Country.[1]

Overcoming these unique barriers is in many ways a government capacity challenge. If they are to be overcome at all, Native Nations have to engage in significant planning processes to make deployment possible in the face of often less-than-preferable pre-conditions. They may need to coordinate with other actors, such as private internet service providers or federal government agencies like the Bureau of Indian Affairs (BIA) or the Federal Communications Commission (FCC), to open the doors necessary to enable investment on tribal land. And they need to structure their land and business regulations to facilitate future development.

In this paper, I examine the tribal digital divide and the role tribal governments may play in minimizing it. First, using internet availability data at the census block level, I compare land just within and just outside Indian Country to identify how the political conditions of this land impact internet availability. From this analysis, I find that census blocks within Indian Country had a reduced likelihood of cable internet availability of 4.4 to 8.3 percentage point, confirming that there are unique barriers to broadband deployment in these territories. Despite key differences in my data and design, these results are in line with similar work on the topic by Bauer *et al.* (2022). I then look at possible measures of tribal governance capacity to explore how stronger tribal governments may enable internet provision. Specifically, I look at four possible measures of tribal governance capacity: participation in the gaming industry, funding from the Bureau of Indian Affairs, participation in self-governance compacts with the federal government, and a reservation economic freedom index. Of these four measures, I find that having entered into a compact with the federal government is correlated with a large reduction in the tribal digital divide, while the other three had no statistically significant effect.

These findings contribute to two important strains of research in American Indian politics. First, it builds on research estimating the costs imposed on native communities by the history of damaging and inconsistent federal policy (e.g. Dippel 2014, Leonard *et al.* 2020, Schroedel *et al.* 2023). Disorganized, poorly thought out and implemented, and often times antagonistic policies

[1]For example, issues of low population density and poor economic growth are potential factors in internet access in Indian Country like they are for other areas. But Indian Country also has to account for often very complex land tenure systems that come from federal trust land and ownership fractionation.

towards native communities have saddled modern native nations with a number of economic burdens. My analysis does not parse out the individual impacts of historical federal oversight, such as land allotment or fractionation, but this work does point to a negative impact that may be the legacy of these poor policy taken together.[2]

Second, my findings contribute to the discussion on the importance of tribal governance and native institutions in improving the socioeconomic conditions in Indian Country (e.g. Cornell and Kalt, 1992; Evans, 2011; Akee *et al.*, 2015a; Anderson and Ratté, 2022). Work on native communities, for understandable reasons, often focuses on how these groups suffer from the consequences of actions taken by other actors. This perspective risks ignoring the agency of native communities to act on their own behalf. By examining not just what costs native nations bear, but also what traits make native nations more successful, this work helps refocus research on tribes as the governing actors that they are.

The remainder of the paper is structured as follows. First, I discuss in greater detail the issue of internet access and the role tribal governments play in facilitating internet connectivity. Then I go through two empirical steps. In the first step, I estimate the causal effect of land belonging to Indian Country through a spatial matching strategy. In the second step, I run an exploratory analysis with four measures of tribal governance capacity to examine possible correlations in the relationship between native land and internet availability. I conclude with some thoughts on the limitations of this analysis and potentially fruitful avenues for future work on tribal governance capacity.

Barriers to Connectivity

In 2020, the FCC estimated that 27.7% of Americans on tribal land lacked access to high-speed fixed broadband internet compared to 22.3% of Americans living in rural areas (Federal Communications Committee, 2020). Similarly, researchers at the American Indian Policy Institute estimated that 18% of tribal residents had no access to the internet, and another 33% relied on using their smartphone for internet access (Howard and Morris, 2019). The issue of internet access in indigenous communities was highlighted during COVID-19, when the internet became a particularly vital resource for employment, education, and information dissemination. Subsequently, the Tribal Broadband Connectivity Program (TBCP) was created in the 2021 Bipartisan Infrastructure Law and

[2] Allotment refers to the process started by the Dawes Act of 1887 which broke apart reservations, allotting parcels of land to individual tribe members. Fractionation refers to a legacy of allotment in which these parcels of land, still held in trust by the federal government, had their ownership interest passing across many generations to the descendants of the original allotted member, resulting in tracts of land with often many minuscule claims from the descendants.

the Consolidated Appropriations Act, allocating $3 billion to improving internet access on tribal land. Subsequently, a number of tribal governments have received large grants to increase broadband connectivity in their respective communities.

Understanding the role of tribal governments in increasing internet connectivity requires a brief discussion of what broadband internet is and how it is typically provided. The term broadband internet officially refers to any form of internet provision that reaches a download speed of at least 25 mb/s and an upload speed of at least 5 mb/s. The term is typically used to distinguish between newer internet technologies that enable higher access speeds (cable, DSL, fiber, fixed wireless, and satellite) compared to older internet technologies like traditional dial-up services. These five types of broadband technology vary in their mode of transmission. Most importantly for the analysis in this paper, cable, DSL, and fiber require the laying of physical cables to connect households to the internet.[3] Fixed wireless and satellite technologies, in contrast, transmit digital information wirelessly between receivers at customers' households and broadcast towers or satellites, respectively (BroadbandUSA, 2016).

Broadband internet service is typically provided by private internet service providers (ISPs). These ISPs face significant initial costs to building broadband infrastructure and tend to prefer urban areas where the marginal cost to adding new customers will be lowest due to the geographic concentration of households. This means that rural areas tend to be unappealing to ISPs, as building out their infrastructure to rural households presents a significant costs with little potential for cheap future customer growth (Null, 2013).

Even though internet infrastructure is typically built by private companies, local governments play an important role in facilitating internet access. Municipal governments are important facilitators of general economic development through policy tools like land use regulation and business permitting processes (Leigh and Blakely, 2016). This economic facilitator role is also applicable to broadband infrastructure where permits to access public infrastructure like roads and sidewalks, as well as easements that grant access to private property, are important components to deployment (Pew Charitable Trusts, 2022). Local governments may also choose to publicly supply internet access. Publicly supplied internet tends to use fixed wireless technology because it has a much lower cost to deployment than DSL, cable, and fiber, although it may not be as consistent or fast (Mandviwalla *et al.*, 2008).

Based on this brief characterization of internet infrastructure, what should we expect internet connectivity to look like in Indian Country? Households in

[3] Cable and DSL connections were able to reuse existing infrastructure from television and phone services. However, telephone infrastructure was much more widespread than cable television, so cable-focused ISPs typically had less pre-existing infrastructure to work with.

Indian Country tend to have relatively low incomes and are frequently located in rural areas, so we should anticipate that ISPs have few incentives to build infrastructure, especially costly technologies like DSL, cable, and fiber. Simply put, the cost to build the infrastructure would be high, and the expected return from the investment would be low.

Additionally, there are unique barriers to operating in Indian Country. Due to tumultuous historical federal policies like allotment, land tenure in Indian Country is very complex, which makes it difficult for ISPs to actually build infrastructure. ISPs cannot simply engage with only tribal governments because land held in federal trust requires BIA involvement. And ISPs will find land held by individuals in Indian Country to also be difficult to deal with because this land is often fractionated, having many owners without clear ownership rights. Private ISPs may also be unfamiliar with how a tribal government operates. The bureaucratic or legal standards a company is familiar with in non-native areas may no longer be applicable, and, therefore, raises the costs to a company from either gaining the necessary expertise or from failures due to this lack of knowledge (Anderson and Ratté, 2022). So even if an ISP wanted to build internet infrastructure on tribal land, they might find it to be exceedingly slow, difficult, and expensive to actually begin construction.

These unique barriers to infrastructure development in Indian Country imply that, even after holding other factors like geography and economic status constant, there should still be a negative effect on internet availability from land being in Indian Country.

Influence of Tribal Governance

These hurdles to development are not necessarily impossible to overcome for native communities. Tribal governments with significant revenues may be able to subsidize ISP projects to reduce the up-front costs of deployment. Tribes with more skilled and better-manned bureaucracies might be able to improve the planning and permitting process, reducing some of the drawbacks ISPs may worry about when considering investing on tribal land. These tribes might also be better at facilitating communication between the tribe, the ISP, and the federal government, again minimizing some of the headaches that might arise otherwise. It could be that these tribes are also better at making the bureaucratic and legal processes more transparent, lessening the learning curve for outside investors. Tribes could even choose to forgo private suppliers and instead publicly provide internet access. However, this choice would still require the tribe have significant revenue to deal with up-front infrastructure costs, as well as technical and bureaucratic power to plan, implement, and run their own ISP service. Regardless of private or public provision, there seems to be room for tribal governments to effect the availability of internet on Indian Country.

From this observation, it makes sense to theorize that tribal governance capacity should matter for partially determining internet access.[4] This claim would line up with many of the issues identified by the federal government. In a 2021 report, the Department of the Interior identified seven barriers to deployment: insufficient data, missing building blocks, insufficient funding, complex permitting, low adoption, weak economic development, and poor coordination (Department of the Interior, 2021). The issue for tribes is not just one of ruralness or poverty, but also a lack of state capacity on the part of tribal governments to start and finish projects. If we look at the goals for the tribal projects funded by TBCP, we see that a number of tribes plan to use the money to carry out planning, engineering, feasibility, and sustainability studies, to run environmental impact studies, or to make permitting plans (BroadbandUSA, 2023). The funding is not just to buy equipment or to build infrastructure, it's to subsidize bureaucratic activity. This is potential evidence pointing to how bureaucratic limitations might partially explain the tribal digital divide.

Given that tribal governance should be an important factor in determining internet availability, it is worth considering in greater detail what tribal governance means. As of January 2024, there are 347 federally recognized tribes in the contiguous states. (Federal Register, 2024). Recognized either through acts of Congress or the more modern process established by the Bureau of Indian Affairs (BIA), these groups are acknowledged as sovereign political bodies, establishing a formal relationship between the tribe and the federal government. This relationship confers a number of benefits to the tribe, such as access to various federally funded programs and exemption from state taxes. However, this relationship also makes the tribe subject to Congressional plenary power, which allows Congress to dictate policy to tribes under its responsibilities to act in whatever ways it thinks is in the "best interest of its Indian 'wards"' (McCulloch and Wilkins, 1995; Tsosie, 2006).

The bounded power of recognized tribes can be observed in a number of political domains on tribal land. In conjunction with federal recognition, tribes may also have land set aside for use by the tribe, typically held in trust by the federal government. This land, as well as land that has since been privatized under the ownership of tribe or non-tribe members, may be referred to collectively as Indian Country and includes over 500 different reservations, off-reservation trust areas, and other indigenous land designations in the contiguous forty-eight states, spanning over fifty million acres of land. In theory, it is on this land land that tribal governments should have jurisdiction to create, implement, and enforce laws in accordance to the preferences of the tribal government. (Wilkins and Stark, 2017). However, the purview of tribal governments in Indian Country is limited by a number of ways. For example,

[4] I invoke here the concept of state/governing capacity as simply a way of expressing technical and organization abilities of a political body to accomplish want it wants. See Suryanarayan (2024) for a larger discussion on the meaning and study of state capacity.

the Major Crimes Act of 1885 gave the federal government jurisdiction over criminal cases involving major felonies like murder, rape, and arson. Almost 70 years later, Congress would pass Public Law 83-280 (PL280), which transferred both criminal and civil legal jurisdiction in a number of states from tribal governments to state governments Anderson and Parker (2008).

The gaming economy in Indian Country also reflects the bounded sovereignty of tribal governments. While not all tribes operate gaming facilities, and most of the revenue being generated from Indian gaming is concentrated among a minority of tribes, the gaming business has become a major source of revenue and employment for many tribes (Akee *et al.*, 2010, 2015). This economic opportunity was largely shaped by the Indian Gaming Regulatory Act (IGRA), which required that tribes negotiate a compact with the state government the gaming facility would reside in if they wanted to engage in the most profitable forms of gambling, such as slot machines. This means that in the gaming realm, tribal policy is not just restricted by the federal government, but by state governments. This shifts policymaking from an internal process within a tribal government to one of campaigning, lobbying, and negotiating with an outside party, the state government (Corntassel and Witmer, 2008).

The most involved actor in Indian Country outside of tribal entities, however, is undoubtedly the Department of the Interior and the BIA. Originally created under the War Department to reduce conflict between the United States and tribes, the BIA has often been characterized as particularly paternalistic in its treatment of tribes (Wilkins and Stark, 2017). Evans (2011) gives a more complex image of the BIA, arguing that the institution is made up of both bureaucrats who might hoard power and be slow to react to the needs of native communities as well as bureaucrats who are genuinely invested in helping native communities. Regardless of how one views the BIA, its influence in Indian Country and tribal governance is undeniable. The creation and adoption of modern tribal constitutions under the Indian Reorganization Act was heavily managed by the BIA and constitutional amendments still require BIA approval (Lemont, 2006). Permitting and leasing land to non-Indians requires BIA approval (Anderson and Ratté, 2022). Mortgaging land held in trust by the federal government also requires Interior approval (Alston *et al.*, 2021). More generally, the complex and messy federal bureaucracy active in Indian Country is frequently pointed to as a barrier to tribal governments actually asserting their power and improving their communities (Crepelle, 2019).

This is not to say that federal involvement in Indian Country is bad, as Evans (2011) would be quick to remind us that the BIA is an important component to building tribal governance. Frye and Parker (2016) also take a more measured approach, finding that tribes with greater BIA involvement (as a consequence of participating in the Indian Reorganization Act) had lower economic growth on average compared to tribes with relatively less BIA involvement. However, tribes with less BIA involvement had greater variation in their growth rate, implying that BIA involvement may have reduced high-end economic outcomes for native communities, but also avoided low-end ones.

Despite the many ways in which external actors control development on tribal territory, the American Indian politics literature has also articulated that indigenous institutions matter. Tribal governments have an undeniable role to play in assigning, leasing and zoning land, regulating business and environmental issues, levying taxes, and providing and managing social services like housing, education, and healthcare (O'Brien, 1993). The power of tribal governments may be ultimately bounded by the trust relationship with the federal government, but tribal governments still have significant agency.

In fact, Cornell and Kalt (1992) argue that because so much of what determines economic growth in Indian Country is out of the hands of tribal governments, it becomes more important to improve the factors tribes have the most control over: their own political institutions. Subsequently, scholars have discussed a number of ways in which tribal political institutions matter. Cornell and Kalt (2000) examines how executive, legislative, and judicial constitutional organization correlates with economic growth and employment. Akee *et al.* (2015a) extend this analysis by arguing that tribal constitutional institutions are plausibly instrumented by the political party of the presidency at the time of constitution adoption. Subsequently, they find that tribes with an indirectly elected executive had lower poverty rates. Stratmann (2023) combines a number of political and economic institutions to construct an index of economic freedom for 90 reservations and finds a correlation with household income. Dippel (2014) argues that tribes which were formed through from the forced coercion of many distinct indigenous communities into a single tribe see greater political factionalism and thus greater economic uncertainty for potential investors.

Of course, institutions should not always be thought of as better or worse than alternatives, but as possessing strengths and weaknesses to be weighed. For example, Wellhausen (2017), building off the work of Anderson and Parker (2008), considers how tribal governments sometimes have to make a credibility-sovereignty trade-offs when considering institutions. She estimates that tribes affected by PL280, a legal institution that improves the credibility of economic investments on tribal lands but hurts the sovereignty of the tribal government, had slightly improved economic outcomes. When comparing institutional organization in this instance, a native community has to ask itself, "How much is sovereignty worth?" The goal of this paper is not to answer this question. I simply raise this example to illustrate how native institutions, and tribal governance capacity more broadly, exist in an interesting and complex context, and deserves greater thought and consideration in political science.

Understanding the complex nature of tribal governance capacity, I return to the specific case of internet availability. If it is the case that, despite the influence of outside bodies, tribal government institutions and organization matter, then they should influence the availability of internet in Indian Country. More specifically, I theorize here that tribes with greater governance capacity should have higher rates of internet access compared to lower capacity tribes.

In the next two section, I look at data on internet access in Indian Country to test the hypotheses discussed above. First, I estimate internet availability between similar lands inside and outside of Indian Country to evaluate whether there is a gap attributable to the unique barriers to deployment on native land. Second, I use this estimate as a benchmark in more exploratory work on how tribal governance capacity may moderate the relationship between Indian Country and internet availability.

Estimating the Effect of Indian Country on Internet Availability

Measuring Internet Availability Disparity

To test the implication that land in Indian Country should have a negative effect on internet access, I need to compare geographic areas in Indian Country to areas outside of it. Of course, the areas that are in Indian Country are not random. If I were to simply compare all of Indian Country to the rest of the United States, it would be difficult to discern the unique effects of Indian Country land tenure from other geographic or economic characteristics that are correlated with Indian Country. A common identification strategy to solve this problem would be to subset the sample to only land that rest inside a threshold just within and just outside, say, a tribal reservation to account for unobserved variation that should be minimized at the border. Identifying the borders of Indian Country, however, is difficult. While some reservations look like a typical political boundary (a single, contiguous polygon), one of the legacies of changes in federal policy regarding tribal land is that a significant portion of reservations have some form of checker-boarding pattern where plots of Indian Country and non-Indian Country are dispersed intermittently.

Under the same logic of looking at the border, however, I instead use a spatial matching approach to select geographic areas, census blocks to be specific, which should be similar on unmeasured geographic covariates, but vary in whether they are a part of Indian Country. To select units to include in the analysis I set an inclusion restriction where the center of a census block in or out of Indian Country must be within a certain distance of at least one census block of the opposite jurisdiction. I use four distance thresholds for robustness: 10 kilometers, 5 kilometers, 2.5 kilometers, and 1 kilometer.

In order to determine which census blocks are in Indian Country, I calculate for each block whether it overlapped with a part of Indian Country, as drawn by the Census Bureau, every year from 2011 to 2019. Only census blocks that never overlapped (what I will call non-IC blocks) or always overlapped (what I will call IC blocks) were included in the final sample.[5] Additionally, I remove blocks that had a population of zero in the 2010 census.[6]

In Figure 1, I plot a few examples to show what the resulting dataset looks like. The Gila River Indian Community resembles a fairly typical geographic area in the data. Very few census blocks from the interior of the tribal area were included after matching, and only small border census blocks remain in the one kilometer threshold sample.

The other two areas show why this matching approach is useful. The Agua Caliente reservation intersects with a major urban area, Palm Springs, California, but is checkerboarded so there is no simple boundary to draw. Similarly, the Rosebud off-reservation trust land has a similar pattern, but much more sporadic in a rural setting. The matching approach offers greater flexibility to identify the pairs of blocks in short distances from one another.

It is important to note that the Census Bureau's drawing of Indian Country lacks details on land ownership in these areas. Indian Country is comprised of land held by a variety of different group. This includes land held in trust by the federal government, land held directly by a tribe, and land held by private owners. The additional barriers discussed previously should largely come from land held in trust by the federal government, so ideally I would identify which census blocks are held in government trust. However, the Census Bureau's TIGER/Line shapefile data on Indian Country does not distinguish land held in trust from other tenures. For example, Oklahoma has very little land that is truly held in federal trust, but a vast majority of the state is still designated as being part of various tribal statistical areas by the Census Bureau. This is potentially concerning because privately owned areas very likely do not have the same issues that trust land does in facilitating internet infrastructure deployment as they do not require the same interventions from the federal government (Leonard and Parker, 2021).

Currently, there are no public data on the land held in federal trust for tribal governments outside of a few specific reservations. While not ideal, for the purposes of my analysis, this obstacle actually makes for a harder test of my theory. In essence, my theory speaks to land treated with a certain type of tenure (federal trust land and land held by descendants of allotment). In reality, my measure of this land is more imprecise, and thus there will be many census blocks in my analysis which I consider treated, but which should

[5] A vast majority of census blocks were consistently overlapping or never overlapping, as the borders of census blocks and tribal territory largely match because the Census Bureau tries to take into account tribal boundaries when drawing block (Bureau of the Census, 1994).

[6] Because all land in the United States, including uninhabitable geography bodies of water, must belong to a census block, it is not reasonable to assume that all blocks represent a market for internet service. Removing these blocks helps to ensure my analysis only compares blocks where people actually live, removing potential bias from possible correlations between census block tribal designation and uninhabited areas.

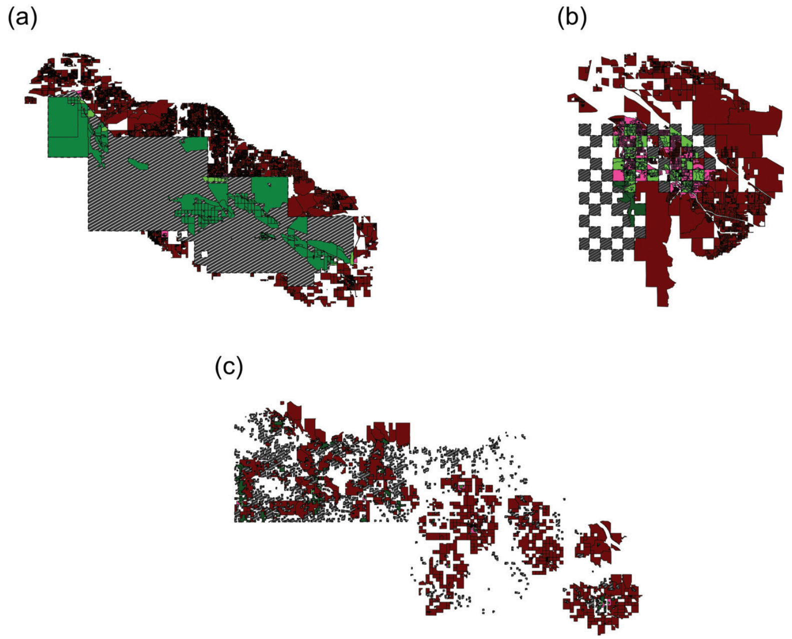

Figure 1: Census blocks in the (a) Gila River Indian Community, (b) Agua Caliente reservation, and (c) Rosebud off-reservation trust land geographic areas. Dark red and dark green colors represent non-IC and IC blocks at the 10 km threshold sample. Pink and green represent non-IC and IC blocks at the 1km threshold sample.

actually be considered control. This should make it harder to detect an effect, and any result I find can be thought of as a floor effect.

Census blocks are the primary unit of analysis for this paper because I measure internet access using the FCC's Form 477 data. All broadband providers (including both private ISPs and municipal governments) are required to submit to the FCC twice a year a list of all census blocks they could *offer service to at least one location inside the census block*, as well as the speed and technology used for the service (Federal Communications Committee, 2022). From these lists, I calculate for every 6 months from December 2014 to December 2019 (a total of 11 time periods) whether each block had at least one broadband provider claim they could service a household in that block. I do this both for cable internet availability and fixed wireless availability.[7]

[7] I focus on cable internet because it requires a physical connection. I do not use DSL because the infrastructure of phone lines was already highly saturated across the country by the starting period of this data, or fiber because it was very new and mostly concentrated in major urban centers in this period. I include fixed wireless as a non-physical connection to contrast with the availability of a physical internet connection. I do not use satellite availability because it is almost universally available, but not commonly used by most households.

It is worth noting here that using Form 477 data comes with some downsides. Bauer *et al.* (2022) perform a similar analysis to what I propose here, but they explicitly reject using Form 477 data and instead use estimates of internet access from the American Community Survey and private internet speed measurement companies. The primary argument against Form 477 data is that they overestimate internet access, perhaps particularly so in Indian Country (Howard and Morris, 2019). In order for an internet provider to list a census block as being within their service range, they only need to be able to supply internet to one location in that block. To see why this might be an issue, imagine two census blocks, both with 100 households. In the first block, all 100 households have internet access, so there is 100% availability. In the second block, only one household has internet access, so there is 1% availability. In the FCC data, these two blocks would have the same measure of internet access: one.

However, this issue does not make Form 477 data worthless. Form 477 data will likely always overestimate internet access in blocks, regardless of Indian Country status. If IC and non-IC census blocks are equally as likely to be have their access overestimated, this is just an issue of noise, not bias. If Howard and Morris, 2019 is correct and Form 477 is systematically more likely to overestimate internet access for tribal land than it is for non-tribal land, then the bias would cut against finding results, as IC and non-IC blocks would look artificially similar. If this is the case, an effect estimated from Form 477 data can be thought of as a floor effect. Because most scholars tend to believe that the systematic overestimation is on the tribal side, using Form 477 should be suitable for estimating a floor effect of Indian Country on internet access.

Form 477 data also have significant benefits. Most importantly, they allow for the estimation of internet access at the smallest geographic unit drawn by the Census Bureau (Bureau of the Census, 1994). This is extremely helpful for identifying similar IC and non-IC units to compare. The assumption that units in close proximity to one another are comparable is more believable when the units are small, implying less variation within the unit. The small size also means that there are more units in total included in the analysis. Beyond size, Form 477 data allows for a time component, as the data are collected twice a year, enabling for the creation of a panel dataset instead of a cross-sectional one.

Balance Testing

To evaluate how successful the spatial matching strategy was at gathering comparable census blocks, I look at the balance of a number of potentially relevant covariates. This is somewhat challenging because census blocks are so small that they raise privacy concerns, so many Census measures are not publicly available at the block level. For example, comparing the balance of average household income would be helpful, but is not available. Regardless, I am able to observe the balance of total population (as reported in the 2010 Census), total households (as reported in the 2010 Census), geographic size, average terrain ruggedness, and distance to urban areas. Total population and households may be relevant to internet access because they could increase demand for internet, and therefore increase the willingness of an ISP to invest. Geographic size, ruggedness, and distance to urban areas are potential costs to providing service, and therefore may reduce internet access as they increase. Because there is no exact prediction on how large the nearest urban area needs to be to impact broadband availability, I look at distances from cities with populations of at least 5,000, 10,000, 50,000, and 100,000. I log all of these covariates to account for significant skew in each.

I report the balance of each covariate in Table 1 at each distance threshold sample by regressing covariates individually on the Indian Country binary variable. I include time period and geographic area[8] fixed effects as well to focus on variation within the same time period and same geographic area. The standard errors are clustered by geographic area.

Based on the coefficients presented in Table 1, it appears that the spatial thresholds identification strategy may not be entirely successful at creating similar units at most of the thresholds. At the 10 km threshold sample there is a clear imbalance in every covariate except for terrain ruggedness. Based on these results, IC census blocks are more likely at the 10 kilometer threshold to have fewer residents, fewer households, a larger geographic size, and a greater distance to urban areas, which all theoretically predict lower internet availability. In the smallest threshold sample, 1 kilometer, many of these differences are no longer statistically significant or only significant at the $p < 0.1$ level. This lends some confidence that the 1 kilometer inclusion restriction was somewhat successful in accounting for variation between census blocks in a way the larger thresholds were not. However, they were still likely to have fewer residents and households. Because of this imbalance, I control for these variables in the final analysis.

I also examine if the trends in internet availability with different technologies matches my expectations between IC and non-IC blocks. Figure 2 show the difference in pooled average internet availability by technology between all non-IC and IC census blocks at the 10 kilometer and 1 kilometer thresholds. At the 10 kilometer threshold, 30 percentage points more non-IC census blocks had cable internet available than IC census blocks. Conversely, by 2019, over 10 percentage points more IC census blocks had fixed wireless internet available

[8]The geographic area being used for the fixed effect is based on which tribal area the census block overlapped with (for tribal census blocks) or the tribal area that the closest tribal census block belongs to (for non-tribal census blocks). For example, the IC and non-IC census blocks closest to the Nez Perce Reservation would all be included in the Nez Perce reservation area.

Table 1: Balance Test: Covariate Correlations with Indian Country Designation.

	10k	5km	2.5km	1km
Population (ln)	-0.30***	-0.23***	-0.19***	-0.13**
	(0.06)	(0.05)	(0.04)	(0.05)
Households (ln)	-0.30***	-0.24***	-0.19***	-0.11**
	(0.04)	(0.04)	(0.04)	(0.05)
Area (ln)	0.46***	0.52***	0.29***	0.07
	(0.11)	(0.13)	(0.10)	(0.06)
Ruggedness (ln)	0.06	0.06*	0.03	0.03
	(0.04)	(0.03)	(0.03)	(0.03)
5k City Dist. (ln)	0.48***	0.31**	0.18**	0.05
	(0.11)	(0.12)	(0.08)	(0.04)
10k City Dist. (ln)	0.49***	0.30**	0.19***	0.06**
	(0.11)	(0.12)	(0.07)	(0.03)
50k City Dist. (ln)	0.30***	0.15**	0.09***	0.02
	(0.09)	(0.06)	(0.03)	(0.02)
100k City Dist. (ln)	0.17**	0.07	0.04**	0.02**
	(0.07)	(0.04)	(0.02)	(0.01)

Note: All models include geographic area and time period fixed effects. Standard errors are clustered by geographic area.
*p<0.1; **p<0.05; ***p<0.01.

than non-IC census blocks. This suggests that the non-IC blocks may be more likely to be urban (hence the greater supply of the more costly cable technology) and IC blocks more likely to be rural (and thus are more likely to use the cheaper, but less stable fixed wireless technology). This is another point of evidence that the IC and non-IC census blocks are systematically different at the 10 kilometer threshold.

At the 1 kilometer threshold, there are two important shifts. First, the range of the differences in average access are reduced, from approximately -0.1 - 0.3 to 0 - 0.1, mostly from a reduction in the differences in cable and fixed wireless availability. If the IC and non-IC census blocks are similar, this more modest difference in access makes more sense than the drastic 30 percentage point difference in cable observed at the 10 kilometer threshold.

Second, non-IC census blocks almost always had greater internet availability than IC census blocks, regardless of technology.[9] Additionally, the greatest differences were in cable and DSL availability, and less so for fixed wireless.

[9]The exception to this is the early years of fiber. This might be due to fiber being the newest technology and would likely not be anywhere but major urban areas in the mid-2010s. Thus, in the early years of this data, both IC and non-IC blocks are unlikely to have fiber internet availability as they are unlikely to include these major urban areas.

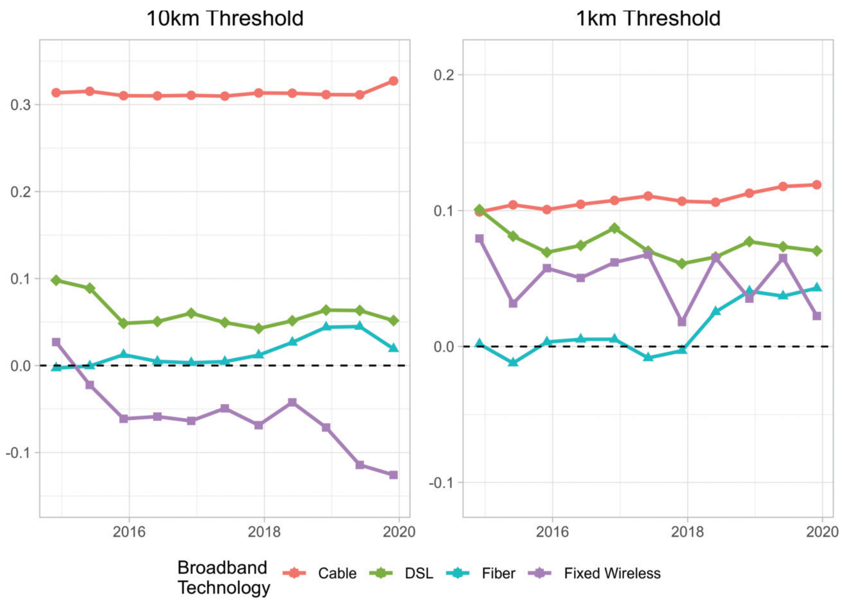

Figure 2: Average internet availability by technology types across all IC census blocks subtracted from average internet availability across all non-IC blocks at the 10 kilometer and 1 kilometer samples. Positive values on the y-axis indicate greater average access on non-IC blocks, negative values indicate greater average access on IC blocks.

This makes sense with the theory that land tenure matters for building internet infrastructure because cable, DSL, and fiber technologies require building infrastructure in Indian Country, while fixed wireless technology can theoretically provide internet to native communities without needing to physically access Indian Country. Instead of building in Indian Country, a fixed wireless internet provider interested in accessing a native market can simply build their broadcast towers just off reservation land where permitting may be quicker and easier, but still close enough to native markets to broadcast signal to them. An internet provider who uses cable, on the other hand, could not do this.

Results

To properly estimate the causal effect of Indian Country on internet availability, I use linear probability models to regress the availability of cable and fixed wireless internet on whether a census block was within Indian Country. Similar to the balance check, I include time period and geographic area fixed effects to ensure that the estimates are driven by comparisons of IC and non-IC census blocks in the same time period and geographic area. Additionally, I cluster standard errors by time period and geographic area.

The first models I estimate are naive models regressing internet access on block designation without any other controls beyond the fixed effects. Thus, the model can be written as:

$$internet_{it} = \beta_0 + \beta_1 IC_i + \eta_i + \delta_t + \epsilon_{it}.$$

The outcome variable $internet_{it}$ is a binary variable indicating the presence of at least one service provider offering internet access (either cable or fixed wireless) to at least one location in census block i in time period t. IC_i is a binary variable which indicates whether a census block i was inside Indian Country. η_i and δ_t indicate the geographic area and time period fixed effects, respectively. ϵ_{it} represents the error term for each observation.

I report the results of this model at all thresholds and for both cable and fixed wireless internet in Table 2. In Panel A, we see that the IC coefficient was negative and statistically significant across all distance thresholds. Substantively, this model predicts a negative effect of approximately a 4.4 to 17.5 percentage point reduction in cable internet availability on land inside Indian Country. The smallest distance threshold sample unsurprisingly returns the smallest predicted difference. In Panel B, we see that Indian Country did not predict any effect on the availability on fixed wireless internet availability.

Taken together, the results of both the cable and fixed wireless models fit the theory I've proposed. For cable internet availability, the designation of land as Indian Country mattered, but it did not matter for fixed wireless internet. While there are possibly alternate explanations for this finding, both of these results fit the theory that building infrastructure in Indian Country is difficult. The internet technology that requires infrastructure within Indian Country, cable, saw a negative effect, while the technology that doesn't have the same infrastructure demands, fixed wireless, saw no effect.

However, as discussed earlier, there are still systematic differences between census blocks, even at the smallest distance threshold sample. These remaining differences may contribute to the effect found in the models of Table 2. Additionally, it is possible that the effect of Indian Country will not be present in all areas included in the analysis. In particular, there are reasons to think that land in California and Oklahoma should not see the same negative effect from being part of Indian Country. California has more tribal areas than any other state, but they tend to be extremely small, sometimes only containing one or two census blocks in total. Because of their small size, and their preponderance to locate a casino on that small land base, California tribal land may have higher rates of internet access compared to other parts of Indian Country. On the other hand, as previously mentioned, most land in Oklahoma is not held in federal trust, but most of Oklahoma is drawn as part of Indian Country. Because of this, Oklahoma tribal areas (referred to officially by the Census Bureau as *Oklahoma Tribal Statistical Areas* (OTSA)) should not see

Table 2: Naive Estimate of the Effect of Indian Country on Internet Access.

	Panel A			
	Cable Internet Availability			
	10km	5km	2.5km	1km
IC	-0.175^{***}	-0.149^{***}	-0.089^{***}	-0.044^{**}
	(0.036)	(0.034)	(0.027)	(0.020)
Adjusted R^2	0.601	0.607	0.620	0.636
	Panel B			
	Fixed Wireless Internet Availability			
	10km	5km	2.5km	1km
IC	-0.003	0.004	0.008	0.009
	(0.021)	(0.016)	(0.009)	(0.007)
Adjusted R^2	0.568	0.584	0.626	0.649
Observations	2,900,326	1,272,491	546,227	169,972
Census Blocks	263,666	115,681	49,657	15,452
Geographic Areas	353	348	333	289

Note: All models include geographic area and time period fixed effects. Standard errors are clustered by geographic area and time period.
*p<0.1; **p<0.05; ***p<0.01.

much, if any, federal or tribal bureaucracy involvement in facilitating internet infrastructure deployment.

To account for the fact that there may be heterogeneous effects in California and Oklahoma, I use a new model with the same specifications used in the models in Table 2, except I now include two interactions terms, one between IC designation and belonging to a tribe in California,[10] and another between IC designation and belonging to an OTSA. The model can be written as:

$$internet_{it} = \beta_0 + \beta_1 IC_i + \beta_2 IC_i \times California_i + \beta_3 IC_i \times OTSA_i \\ + \eta_i + \delta_t + \epsilon_{it}.$$

[10] I label any tribal area with greater than 30% of its census blocks in California as a California tribe.

In this model, both $California_i$ and $OTSA_i$ are binary variables.[11] For interpretation, this means that the $\beta_1 IC_i$ term now represents the effect of Indian Country when the geographic area is not in California or Oklahoma. $\beta_2 IC_i \times California_i$ and $\beta_3 IC_i \times OTSA_i$ represent the additional effect of Indian Country when a census block is in a Californian or OTSA geographic region. In expectation, my theory would predict that β_1 should be negative, and that β_2 and β_3 should be positive.

To account for the systematic differences still remaining between census block types, I also use a model that controls for all the covariates included in the balance test. This model can be written as:

$$\begin{aligned} internet_{it} = \beta_0 + \beta_1 IC_i + \beta_2 IC_i \times California_i + \beta_3 IC_i \times OTSA_i \\ + X_i + \eta_i + \delta_t + \epsilon_{it}. \end{aligned}$$

The X_i represents the vector of covariates for census block i, including population, households, geographic size, average terrain ruggedness, and distance to cities with populations of at least 5,000, 10,000, 50,000, and 100,000. I measure these variables cross-sectionally, and thus they do not vary over time.[12]

In Table 3, I report the results of these two models only at the 1 kilometer threshold because the blocks in this sample are the most believably similar and should be the best and hardest test to find a significant effect. In Panel A, we see that the results largely match what my theory would predict. IC blocks outside of California or OTSAs had a negative, statistically significant effect on cable internet availability. Depending on whether other controls are included, IC blocks under these conditions saw a reduction in cable internet availability of about 6.0 to 8.1 percentage points compared to non-IC land. These effect sizes are actually larger that the effect size estimated in the 1 kilometer sample in Panel A in Table 2. In comparison, Panel B shows that once again there was no estimated effect of Indian Country on wireless internet availability.

Turning to the interactions effects, we see that both predicted a large, positive effect on cable internet availability, but only the California interaction was statistically significant. Taken additively, the models predict that IC blocks in California should be equally as likely to have cable internet availability as their surrounding non-tribal land, or about 1 percentage point higher likelihood of availability, depending on whether covariates are included.

[11] The lower order terms of these variables are not included in the model because they do not vary over time or within a geographic area. Because of this within-cluster invariance, the lower order effects cannot be disaggregated from the geographic area fixed effects.

[12] A small number of blocks are dropped in the covariates-included models because of slight missingness in the terrain ruggedness data. This missingness is due to a few small blocks on the coast which were outside the 1 km by 1 km resolution data on terrain ruggedness. In total, only three blocks are dropped.

Table 3: Effect of Indian Country on Cable and Fixed Wireless Internet Access at 1km Threshold.

	Panel A	
	Cable Internet Availability	
	(1)	(2)
IC	-0.081^{***}	-0.060^{***}
	(0.019)	(0.016)
IC × California	0.081^{***}	0.069^{***}
	(0.019)	(0.017)
IC × OTSA	0.194	0.195
	(0.140)	(0.136)
Includes Controls	No	Yes
Adjusted R^2	0.639	0.689
	Panel B	
	Fixed Wireless Internet Availability	
	(1)	(2)
IC	0.005	0.006
	(0.008)	(0.008)
IC × California	−0.005	−0.0003
	(0.008)	(0.009)
IC × OTSA	0.052	0.049
	(0.039)	(0.039)
Includes Controls	No	Yes
Adjusted R^2	0.650	0.652
Observations	169,972	169,939
Census Blocks	15,452	15,449
Geographic Areas	289	289

Note: All models include geographic area and time period fixed effects. Standard errors are clustered by geographic area and time period.
$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$.

Taken together, My results show a consistent, negative effect of approximately 4.4 to 17.5 percentage points in cable internet availability for census blocks within Indian Country. When looking at fixed wireless internet availability, no effect is ever returned in any model specification. These results match what I expected to find based on my theory that building in Indian Country should be more difficult than building outside of it. With these estimates as a baseline, I now move on to the second part of the analysis concerning how tribal governance capacity might reduce these negative effects.

Tribal Governance Capacity

Capacity Factors

Quantifying tribal governance capacity is not a straightforward task. In the state capacity literature, measures of bureaucratic capacity often focus on GDP, tax revenue, ratings of the rule of law, and the quality of institutions (Hendrix, 2010). To my knowledge, there are currently no measures of tribal GDP or tax revenue, nor are there any systematic analyses of the rule of law or institutional quality across a large number of native nations. Because there is no obvious best way to measure tribal governance capacity, I look at four different possible determinants/proxies for governance capacity.

The first measure I consider is whether a tribe operates a casino. Numerous works have found positive economic effects from tribes operating a casino, both qualitatively (Cattelino 2008) and quantitatively (Cornell *et al.* 1998, Gonzales *et al.* 2007). Assuming casinos increase tribal revenue, participation in the gaming industry may lead to higher investment into bureaucratic power compared to tribal governments who do not participate.[13] Tribes involved in gaming might also be more engaged in federal and state politics (Corntassel and Witmer, 2008). This engagement might make the tribal government better connected to outside actors, enabling the facilitation of outside investment. Operating a casino could also be seen as a proxy for the ability to competently lobby and negotiate with outside actors, as operating class III gaming facilities requires approval from the state government.[14] I operationalize participation in the gaming industry as a binary variable where a value of 1 indicates a tribal government owning a casino.

[13]This is assuming that a casino increases a tribe's revenue, which is not guaranteed. While information on casino revenue and tribe profit are not publicly available, a number of tribal-government-owned casinos are known for their poor economic performance.

[14]This claim too is not necessarily constant across all native nations. Some tribes partner with private investors who facilitate and manage the tribe's casino. In these tribes, the same lobbying skills may have been essentially exported to these private investors.

The second measure I consider is funding from the Bureau of Indian Affairs. Evans (2011) makes the argument that federal funding, largely acquired from the BIA, is an important component to tribes building bureaucratic expertise. Specifically, she highlights that support from the BIA improves technical information needed to solve policy problems, gives the tribe greater knowledge of the interests and incentives of other actors, and exposure them to potentially better organizational structures. Of course, this can also been seen as something of a proxy. It is possible that tribes with greater governance capacity could be better at lobbying the BIA for funding or making more compelling grant applications, in which case federal funding would serve as a proxy for governance capacity. In another separate project, a coauthor and I collect the total federal funds each tribe has received each fiscal year from 2013 to 2021 from the BIA (Brouwer and Provins, 2024). Combining this data with estimates of total tribal enrollment size reported by the Department of Housing and Urban Development,[15] I estimate the total BIA funding per capita each year from 2014 to 2019. In order to account for skew in the data, I log this measure.

The third measure I consider is whether a tribal government has entered into a compact with the BIA. In 1975, the Indian Self-Determination and Education Assistance Act (ISDEAA) was signed into law and allowed tribes to request a contract to plan, conduct, and administer specific programs otherwise controlled by the Department of the Interior or Health and Human Services. These contracts allowed tribes to act more like local governments by managing the delivery of various services (Stuart, 1990). These agreements are commonly referred to as contracts, self-determination contracts, or 638-contracts.

In 1994, the federal government amending the ISDEAA to create the much more flexible compacting system. The requirements for a tribe to enter a compact are higher than a contract, as tribes have to have maintained a contract agreement for at least three years without fiscal issues. Under a compact agreement, unlike a contract agreement, tribal governments can determine the priorities of the programs covered by the compact and reallocate funding appropriately, and the federal government cannot easily re-assume the responsibilities of the compact without specific reasons (Delaney, 2016). Agreements made under the 1994 amendment are commonly referred to as compacts or self-governance compacts. Approximately 50% of tribes have entered into a compacting agreement with the BIA, according to the Office of Self Governance.[16]

In theory, both self-determination contracts and self-governance compacts should increase the governance capacity of a tribe. For example, concerning forestry management, Krepps and Caves (1994) observes that tribes that

[15] Enrollment data available at https://www.hud.gov/program_offices/public_indian_housing/ih/codetalk/onap/ihbgformula

[16] https://www.bia.gov/as-ia/osg

entered a self-determination contract on forestry management had better timber yields and higher sale values. Similarly, in a case study of the Hoopa Valley Tribe's self-governance compact on forestry, Harris *et al.* (1995) observes that timber production was no worse under tribal management than it was under the BIA, and that the tribe had much greater flexibility in how it ran its programs.

I focus in this analysis on self-governance compacting. Self-governance compacts may impact tribal governance capacity by enabling a tribe to organize their bureaucracy in a more efficient fashion, or to align spending on the reservation with the goals of the tribe. There could also be a proxy element to self-governance. Tribes that enter into a compact have to prove some bureaucratic competence, so being in a self-governance compact could simply indicate that a tribe meets some minimum threshold of bureaucratic competence. The Office of Self Governance publishes a list of all tribes that have entered into a compact and the initial year they entered it, albeit with no information of the programs included in the compact. Based off this list, I create a binary variable that takes the value 1 in any year a tribal government had a compact with the federal government.

Finally, the last measure of tribal governance capacity that I include in this analysis is the Reservation Economic Freedom Index (REFI) created in Stratmann (2023). This index attempts to capture the various political factors that may influence investment on tribal land, including codes and parameters of business regulation and taxation, legislative-executive organization, and judicial professionalization and power. Thus, while REFI may have been created with the intention of measuring economic freedom for private investors, a lot of what it captures are government institutional features that reflect a professional and organized government. These factors may influence investment either by enabling the tribal government to act more efficiently, or by removing possible concerns from private investors that they will be mistreated or expropriated. REFI values range from 0 to 13, with 13 representing the highest level of economic freedom. Unfortunately, only 90 tribes are included in the index, and it excludes all tribes in Oklahoma, so the sample in models using this index are much smaller.

Before moving on to the results, it is important to note that these four measures are taken at the tribal government level. For the purposes of this analysis where census blocks are the unit of analysis, these capacity factors can be thought of as geographic area factors, as they will be uniform across all census blocks in a geographic area, but vary from year to year.

It is also worth emphasizing that the coefficients being estimated in this exercise are not causal. The findings in this section should be taken as an exploration into possible relationships between internet availability and tribal governance capacity, not as the direct effect of tribal governance capacity on internet availability.

Results

To examine the correlations between tribal governance capacity and internet availability, I use the same model construction as the model used in Table 3, including all covariates. Using the 1 kilometer threshold sample, I estimate the effect of each governance capacity factor separately. The model used can be written as either:

$$\begin{aligned} internet_{it} &= \beta_0 + \beta_1 IC_i + \beta_2 IC_i \times California_i + \beta_3 IC_i \times OTSA_i \\ &\quad + \beta_4 TGC_i + \beta_5 IC_i \times TGC_i + X_i + \eta_i + \delta_t + \epsilon_{it}, \\ internet_{it} &= \beta_0 + \beta_1 IC_i + \beta_2 IC_i \times California_i + \beta_3 IC_i \times OTSA_i \\ &\quad + \beta_4 IC_i \times TGC_i + X_i + \eta_i + \delta_t + \epsilon_{it}. \end{aligned}$$

Where TGC_i represents the value of a tribal governance capacity measure and $IC_i \times TGC_i$ represents the interaction between IC designation and a given value of tribal governance capacity. Whether the individual TGC_i term is included depends on the specific governance capacity measure. The values of self-governance compacting and log BIA funding per capita are not necessarily constant across time in a given geographic area. Each year BIA funding may fall or rise, and some tribes enter into compacts during the time period being studied. Because of this variation, the individual coefficient of both measures are also included separate from the interaction term. The measures of casino ownership and REFI did not change in a geographic region over time, and therefore the lower order term is not included in these models. For the dependent variable, I look at cable internet availability, as that is the measure of internet availability I expect tribal governance capacity to influence.

Table 4 presents the results for each governance capacity factor. Overall, the results are mixed. The model that best matches what my theory would predict is the self-governance model. In this model, the IC variable indicates that census blocks connected to a tribe which never entered a compact, and which does not reside in California or an OTSA had a reduced likelihood of having cable internet access of approximately 8.9 percentage points compared to non-IC census blocks under the same conditions. Conversely, we see in the interaction term that blocks connected to a tribe that had entered into a compact saw a predicted increase in cable internet availability of about 10.3 percentage points. Taken together, these results mean that census blocks outside of California and Oklahoma that entered a federal compact had an associated decrease in the likelihood of having cable internet available by only 2.5 percentage points compared to non-IC census blocks in geographic areas of tribes with self-governance compacts.

The results of the other three models do not fit the prediction of my theory. To fit my theory, the coefficient of the IC alone variable should be negative, representing the availability of cable internet when governance capacity is low.

Table 4: Association Between Tribal Governance Capacity Factors and Cable Internet Availability.

	Dependent variable:			
	Cable Internet Availability			
	Casino	BIA	Self-Gov	REFI
IC	−0.031	−0.001	−0.089***	−0.006
	(0.019)	(0.152)	(0.019)	(0.139)
IC × California	0.068***	0.069***	0.084***	0.085***
	(0.017)	(0.018)	(0.019)	(0.023)
IC × OTSA	0.199	0.183	0.158	
	(0.136)	(0.122)	(0.122)	
IC × Casino	−0.034			
	(0.021)			
BIA Funding per capita (ln)		−0.009		
		(0.014)		
IC × BIA Funding per capita (ln)		−0.008		
		(0.021)		
Self-Governance			−0.039***	
			(0.010)	
IC × Self-Governance			0.103***	
			(0.032)	
IC × REFI				−0.009
				(0.018)
Controls	X	X	X	X
Observations	169,939	167,570	169,939	81,972
Census Blocks	15,449	15,389	15,449	7,452
Geographic Areas	289	286	289	83
Adjusted R^2	0.689	0.695	0.690	0.718

Note: All models include geographic area and time period fixed effects. Standard errors are clustered by geographic area and time period.
*p<0.1; **p<0.05; ***p<0.01.

The interaction term with the tribal governance capacity measure should then be positive, indicating the increased likelihood at cable internet availability as capacity increases. In the other three models, the tribal control variable is negative, but it is not statistically significant. The interaction term coefficient, however, is both negative and statistically insignificant, in total contrast to my theory. I'm not certain why this would be the case. Perhaps these measures are particularly noisy determinants of tribal governance capacity, or possibly not good measures of capacity in relation to the bureaucratic power necessary for internet availability.

Discussion

At the beginning of this paper, I characterized the effect of these complications in Indian Country as a bundle of policies and structural issues that may reduce the ability of native communities to properly plan, partner, permit, and implement broadband infrastructure. Dissecting this bundle to separate and measures the individual impacts of different policies is an important next step for the study of tribal governance.

The lack of granularity on land tenure in my data is a major limitation to this goal. Leonard and Parker (2021) show quite effectively how variation in parcel size, ownership type, and the mixture of ownership types impacts the production of oil on different land parcels of the Fort Berthold Indian reservation. Expanding this detailed analysis to more reservations and to other industries could be very informative on the impacts of land management regimes in Indian Country. For example, in studying the availability of internet in Indian Country, more detailed land tenure data might suggest that a high share of trust land is actually beneficial for deployment by creating a single group for deployment coordination and negotiation. In contrast, the reduction to internet availability may be due to a mixture of many different owners creating too many interested parties to effectively coordinate in a negotiation with an ISP.

I also attempt in this paper to explore the possible value of tribal governance capacity in the relationship of tribal land and internet access. While not causally identified and largely mixed in results, my findings suggest that tribes which have entered self-governance compact agreements may be fundamentally different than other tribal nations in regards to bureaucratic power. This thread may be valuable to pull on going forward as political science studies tribal bureaucracy in greater detail.

This study is by no means a conclusive measurement of tribal government capacity. I selected four potential measures of capacity, but there is a lot more work to be done in thinking about how to measure capacity in specific contexts. For example, I use the BIA funding as a measure of capacity, but a better measure might be one that identifies funding from competitive grants, or funding from other potentially relevant federal agencies. There are also a number of other capacity measures I did not explore in this paper, such as the impact of inter-tribal networks or the strength of relationships with state and local governments.

Overall, future work should continue to theorize about tribal governance capacity. Most scholars of American Indian politics agree that tribal governments have an important role to play in governance. Going forward, it will be valuable to quantify exactly what institutions and characteristics make tribal governments operate better. This is a difficult task, as state capacity has strong endogeneity problems making the estimation of causal effects difficult (Hendrix, 2010). Therefore, not only will data collection and measurement be important, but also coming up with clever research designs to isolate the effects of tribal governance capacity.

Vital to this work will be continuing to understand and learn from the perspectives of policymakers and bureaucrats in native nations. Studies like this paper present quantitative evidence for issues in Indian Country, but it lacks a more complete picture of the micro-processes occurring within indigenous governments to solve the issue of internet connectivity. For example, a number of tribes have opted to create and run their own internet infrastructures. It would be valuable to the study of tribal governance capacity to discuss the issues that led to these tribes investing in their own networks and how the government handled the process of planning and constructing the network. More work of this kind, in conjunction with better data, can push forward how political science theorizes about tribal governance.

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