Measuring Community Capacity for Protection from Wildfire

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Introduction

Measuring or even defining community capacity to prepare and repair after wildfires is a difficult task. However, the threat of wildfires across the western US has prompted a focus on identifying communities at risk (American Forests 2001, United States Congress 2003). A recent audit of fuel reduction projects called for quantitative assessments in order to identify "human and economic values being protected, and protection capability" of the community (USDA Inspector General 2006). Federal and state assistance for wildfire protection does not always go to the neediest communities. In fact, in some cases, assistance has been given to wealthier communities to the detriment of less well off communities (Morton 2003). Fuel reduction strategies may also differ between high and low capacities. The goal of this paper is to provide a quantitative method that will allow assistance and appropriate strategies to be focused on those who need the most help by identifying communities with less capacity to mitigate the effects of wildfire. The Index of Community Capacity for Protection from Wildfire (ICCPW) developed here is a first step.

We use a case study from Taos County, New Mexico to illustrate the use of the ICCPW. The forests of Taos County have long supported local communities, but fire suppression, population growth, and perhaps even climate change has increased the risk of wildfire. Since the communities of Taos County differ greatly in their socio-economic status and ethnic make up, it is an excellent example of the importance of including community capacity in the prioritization of areas for fuel treatment.

Definition

Community capacity is the collective ability to prepare for, respond to, and recover from disasters (Smith et al. 2003, Lynn and Gerlitz 2005) or more generally the "ability or potential to effect positive changes" (Frankish 2003). Communities with greater capacity are more stable and have a higher quality of life (Markey and Vodden 1998, Smith et al. 2003). Studies also use other concepts synonymous or closely related to community capacity including: community development, community empowerment, community competence, and community participation (Frankish 2003).

The focus of this study is community capacity as it relates to the threat of wildfire. Communities have capacity to prepare for, respond to, and recover from a wildfire. The community actions related to the capacity to reduce the impact of wildfires includes activities such as, ecosystem restoration, building fire fighting infrastructure, and creating defensible space around a home. Capacity to respond to a wildfire is likely based on preparations for a wildfire and includes the ability to protect people, property, and the natural environment. Community capacity to recover from wildfire includes the ability to rebuild houses, restore community services, and resume regular activities. Each of these aspects of capacity may

be different, but in this report we consider all three in combination, which we term the capacity for protection from wildfire.

We combine these three elements of community capacity for protection from wildfire into one index for two reasons. First, to prepare for, respond to, and recover from a wildfire are all intertwined. Communities that have the resources to prepare for wildfire are likely to respond effectively to an emergency. Similarly, where people have the community strength to prepare for wildfire, they are also likely to have the capacity to recover from a wildfire. For example, if a community has the financial assets and awareness to prepare for a wildfire they are also likely to be better able to recover from a disaster because of insurance coverage or savings. The second reason for focusing generally on capacity for protection from wildfires is the lack of research needed to separate indicators of ability to prepare from indicators of ability to recover. Based on initial efforts such as this study, future research may be able to more finely delineate communties' capacities with respect to protection from wildfire.

How each community approaches fire threat reduction will be different (Communities Committee et al. 2004), but some communities are better able to take the necessary actions than others. In other words, some communities have greater capacity to take preventative measures for and mitigate the effects of wildfires than others. A study of three communities showed that the towns with greatest capacity as measured by a series of quantitative indicators were better able to respond to flooding (Buckland and Rahman 1999). The appropriate strategies for fire threat reduction also change with community capacity. A Firewise (www.firewise.org) campaign that uses websites and the internet to distribute information will be much more successful in a high capacity community than a low capacity community because of increased access to computers in the high capacity community.

Community capacity is constantly evolving and a community's capacity will fluctuate as residents move, schools are built, or other changes occur (Frankish 2003). Community capacity does not include the biotic and abiotic factors that increase the risk of fire such as tree densities beyond the natural range of variability. Other projects such as LANDFIRE (www.landfire.gov) or ForestERA (www.forestera.nau.edu) are well suited to identify the fire risk communities face.

Community capacity clearly has a big effect on the threat of wildfire. The best way to measure community capacity is much less clear. Our goal was to develop a quantitative measure of community capacity based on available data that could be replicated across the US. In order to uncover the best indicators of community capacity we searched through wildfire, forestry, disaster management, public health, and community development publications for the most appropriate methodology to identify communities that might need greater assistance in the face of wild fires.

Literature review

There is woefully little published literature on communities' capacity to prepare for and respond to wildfire, especially since low capacity communities are at great risk from wildfire and the federal government has focused attention on at-risk-communities (American Forests 2001, United States Congress 2003). We sought out papers and reports on community capacity for protection from wildfire, but were forced to settle for studies on a much broader range of communities' capacities. The majority of literature on community capacity is focused on health or economic development (e.g. Frankish 2003, Higgins and McCorkle 2006). However, some of the documents we examined were directly focused on community capacity as it relates to emergencies (Granot 1995, Buckland and Rahman 1999, Morrow 1999, Petterson 1999, Buckle et al. 2000, King and MacGregor 2000, Kuban and MacKenzie-Carey 2001) or even wildfire specifically (Rhodes and Reinholtd 1998, Case et al. 2000, Niemi and Lee 2001, Program for Watershed and Community Health 2003, Lynn and Gerlitz 2005). Research on international development also provide insight into community capacity (Henninger and Snel 2002, Watkins 2006). Although some of the literature we consulted addressed different aspects of community, we felt it was important to start with a broad base at this early stage in the development of an index for community capacity for protection from wildfire.

We identified 10 elements of community capacity based on a preliminary assessment of community capacity in Cuba, NM. Then we examined the 17 reports and articles that dealt most specifically with the quantitative measurement of community capacity (table 1). Some of the articles were themselves reviews of literature on community capacity. For example, Frankish (2003) summarizes 65 documents on community capacity and related concepts. All of the elements we identified in our preliminary assessment were repeated in at least 4 of the studies. Many of the studies mentioned other elements of community capacity, which did not easily fit in our initial categories. Most often these other elements were difficult if not impossible to measure in a quantitative way, such as "shared community values" (Buckle et al. 2000) or "leadership" (Laverack and Wallerstein 2001). Three studies included elements focused on geographic isolation of communities (Doak and Kusel 1997, Buckle et al. 2000, Case et al. 2000), which we added to our analysis.

Table 1 – Indicators of community capacity identified from the literature

	Population	Poverty	Public assistance	People needing assistance	Gender	Education	Employment	Income	Cultural diversity	Physical infrastructure	Other
Buckland and Rahman 1999		●	●		●	●	●	●	●		●
Buckle et al. 2000				●	●			●	●	●	●
Case et al. 2000				●						●	●
Doak and Kusel 1997	●	●		●		●				●	●
Frankish 2003	●			●		●	●	●		●	●
Goodman et al. 1998						●		●			●
Higgins McCorkle 06			●	●		●	●	●	●	●	●
King and MacGregor 2000	●		●	●	●	●	●	●	●	●	●
Kuban and MacKenzie-Carey 2001	●		●	●	●			●	●	●	●
Lynn and Gerlitz 2005	●	●	●	●	●	●	●	●	●	●	●
Markey and Vodden 1998				●		●	●	●		●	●
Maxim et al. 2001	●	●		●	●	●	●				
Mower 1999		●		●	●				●		
Niemi and Lee 200		●									
PWCH 2003		●					●	●		●	
Watkins 2006		●			●	●	●	●		●	●

Our review of community capacity literature also revealed alternative frameworks for analyzing capacity. Table 2 shows that community capacity has different facets, which may overlap or have different names.

Table 2 – Frameworks for measuring community capacity

Social Capital	Society	Cultural	Social Capacity	Family and social resource
Human Capital	Demography	Organizational	Human Capacity	Human or personal resources
Financial Capital	Economy	Financial	Economic	Economic and material resources
Cultural Capital	Behavior	Physical	Ecological Capacity	Political resources
Natural Capital	Environment			Vulnerability of minorities and women
Political Capital	Values			
Built Capital	Built structures			
(Higgins and McCorkle 2006)	(King and MacGregor 2000)	(Lynn and Gerlitz 2005)	(Markey and Vodden 1998)	(Morrow 1999)

Based on these five different conceptual frameworks, we decided to focus on four facets of community capacity:

- Social Capital
- Human Capital
- Financial Capital
- Political Capital

We chose to exclude natural capital (or "Environment" or "Ecological Capacity") and built capital (physical infrastructure) because they are usually included in other processes for planning community wildfire protection. We also excluded elements such as "Cultural Capital" or "Values" which are particularly difficult to measure and require expensive interviews or surveys to measure effectively (King and MacGregor 2000). No index of community capacity can exactly measure all facets of a community's strengths. Our aim is to build on previous efforts and create an index that will improve resource allocation and permit adaptations as new data become available.

Indicators of Community Capacity

Our literature review also examined the indicators that researchers used to measure each facet of community capacity. The indicators varied based on the scale of the study. For example, many of the communities in our study are too small to have bond ratings. We selected indicators for each of four facets of community capacity that were best supported by the literature and were accessible at the community scale.

We chose three indicators to measure social capital. Many of the papers we reviewed focused on increased vulnerability of the very young and the very old to disasters (Markey and Vodden 1998, Morrow 1999, Buckle et al. 2000, Case et al. 2000, King and MacGregor 2000, Maxim et al. 2001). We used the age dependency ratio (population < 15 years + population > 64 years / population between 15 and 64 Maxim et al. 2001) where a low dependency ratio is indicative of greater community capacity. We calculated the dependency ratio using US Census data on population by age in Summary File 1, table P12 (US Census SF1, P12). We also included the percent of the population with disabilities, because they might need extra assistance in an emergency (US Census SF3, P42) (Morrow 1999, Buckle et al. 2000, Kuban and MacKenzie-Carey 2001). Percent of households headed by a single female parent (US Census SF1, P18) is an indicator designed to capture the increased vulnerability of women during emergencies as documented by Morrow (1999).

The three indicators we used to measure human capital were education, employment, and ability to speak English well. Percent of the population with a high school diploma is an obvious measure of education while percent of the population employed is a direct measure of employment (US Census SF4, PCT79). Although many communities are multilingual, access to government resources and disaster response are facilitated by ability to speak English well (Buckland and Rahman 1999, King and MacGregor 2000, Higgins and McCorkle 2006). Therefore, we include the percent of the population that speaks English well or very well as an indicator of community capacity for wildfire protection (US Census SF3, P19).

We used both income and also percent of the community above the poverty line as indicators of financial capital. Income is a common indicator of community capacity in studies at scales from local (Buckland and Rahman 1999) to international (Watkins 2006). In the Taos process, we used percent of households above the federal poverty line to identify the relative economic status of communities (SF3, P90). Some studies have used other measures of families in difficult financial situations, such as the US department of Housing and Urban Development (HUD) income limits (Lynn and Gerlitz 2005). The federal poverty limits used to determine percent of households below the poverty line may

underestimate the number of households living in poverty (Lynn and Gerlitz 2005). Therefore, future implementations of the index will employ the HUD income limits rather than the federal poverty limit.

Finding a readily available indicator of Political Capital is difficult, especially at the community scale. Some studies use surveys of civic organizations to measure political capital (Buckland and Rahman 1999), but these require in depth surveys of each community. At the county scale, political capital can be measured by the influence of elected officials on important congressional committees (Higgins and McCorkle 2006). In our Taos case study we used voter turn out data provided by the New Mexico Secretary of State since it gives an indication of political engagement in each community.

- Social Capital
    - Vulnerable populations (Age Dependency Ratio)
    - Vulnerable populations (Percent without disabilities)
    - Vulnerability of minorities (Female only headed households)
- Human Capital
    - Education (percent with high school diploma)
    - Employment (percent employed)
    - Ability to Speak English (percent of population who speak English well)
- Financial Capital
    - Income (median income)
    - Poverty (percent of community below the poverty line)
- Political Capital
    - Political participation (voter turn out)

An Index of Community Capacity for Protection from Wildfires

We combined the 9 indicators to create an Index of Community Capacity for Protection from Wildfires (ICCPW). The ICCPW is designed to integrate social, human, financial, and political capital into a single measure. Each of the 9 indicators is rescaled to a 1 to 10 scale, where 10 indicates high capacity and 1 indicates the most need for assistance. The indicators are scaled based on the range of values in the state, which in the case study was New Mexico. In other words, a scaled value of 10 represents a value in the top 10 percent of the range of values found in the state. The range of values is determined by the lowest and highest values identified in the state. Each of the indicators receives equal weight in the ICCPW to make the index more transparent and the results easier to interpret. However, in some cases an individual indicator is not available for a particular geography. In the case of missing data, this indicator is excluded from the composite ICCPW. The composite ICCPW value is the sum of

all the indicators for a particular geography divided by the number of indicators. Therefore, missing values do not affect the ICCPW unless they are missing because they are unusually high or low, which is not the case with the Census data. Because the index is still in development the value of each of the indicators should be reported instead of just the composite index.

One of the benefits of creating quantitative indicators of community capacity from readily available data is that the ICCPW can be mapped. Geographic location is the link between human communities and their natural environment. Once the ICCPW is included in a map it can be compared to maps of fire threat, land ownership, vegetation type, and other physical attributes in order to prioritize fuel treatment projects (Sisk et al. 2006). US Census data usually provide the basis for mapping of communities in the US because of its specificity and accessibility (Doak and Kusel 1997, Donoghue 2002). For our case study, the main unit of analysis was the Census Designated Places (CDPs), but the ICCPW can be mapped at other Census geographies as well.

Taos Case Study

Taos County engaged in a process to draft a community wildfire protection plan (CWPP) and prioritize areas for fuel reduction treatments (Communities Committee et al. 2004). Taos County hired consultants to build maps of the biotic and abiotic factors that relate to wildfire threat and response such as tree density, fire suppression infrastructure, and topographic features. We presented a map of the ICCPW as a potential addition to the biotic and abiotic factors to a meeting of the CWPP core team. The map showed community capacity for 13 towns in or near the county of Taos, NM using the themes and indicators outlined above. Table 3 lists the towns and shows both individual indicator scores and composite index scores. In terms of the ICCPW, Vadito and Taos Pueblo have the lowest community capacity and are most likely to need assistance in preventing and recovering from wildfire. Taos Ski Valley and Angel Fire have the highest community capacity.

A number of towns were too small to be incorporated in the Census Designated Places and could not be directly included in the ICCPW, including: Arroyo Hondo, Carson, Costilla, El Prado, Pilar, San Cristobal, Rodarte, Ranchito, and Tres Piedras. In order to integrate these communities into the ICCPW, we used US Census block group information. Data at the block group level have two main problems. First, more than one community may be included in a block group; as an example, Tres Piedras, Carson, and Pilar are all in the same block group (#5595231). Second, communities such as Arroyo Hondo can be split by block group boundaries. Despite these disadvantages, block group level data are currently the best available, that is the most spatially detailed.

The results of the block group level ICCPW is presented in Table 4. The block group analysis splits the town of Taos into multiple block groups and the differences between sections of town are clearer. The ICCPW indicates that the northwestern sections of Taos are low capacity and may be in greater need of assistance preparing for and preventing wildfire, even though Taos as a whole was not ranked nearly as high in the CDP level analysis.

The core team reacted positively to the ICCPW map and supported the idea of integrating socio-economic data into their wildfire protection plan. However, individuals representing communities ranked as low capacity thought the ICCPW was a great tool and individuals representing communities ranked as high capacity were less enthusiastic. No one took issue with idea of a community capacity index or how the ICCPW was constructed, but still wanted to see his or her community prioritized for funding. This reaction is similar to our experience with the wildfire protection plan in Cuba, NM. We are starting to see a pattern where individuals who participate in the CWPP process tend to be from high capacity communities.

To further examine the capacity of communities who actively participate in the creation of CWPPs, we compared the ICCPW values for those Census county subdivisions that included communities with CWPPs in place to those without CWPPs. The results showed that, for New Mexico counties, areas that have CWPPs have a higher community capacity for protection from wildfire than those areas lack such plans. The ICCPW score for county subdivisions with CWPPs was 8 while those without had an average score of 7 and the 95% confidence interval of the difference was from 0.02 to 1.7 on the 10 point ICCPW scale.

Discussion

Lessons from the Taos County process

Participating in the community process to prioritize areas for fuel reduction highlighted some important aspects of measuring community capacity for protection from wildfires. First, it is important to engage the people involved in treatment prioritization on the topic of low capacity communities early on in the planning process. People, particularly those from high capacity communities who are likely to be active in the planning process, need time to see the potential advantages for the larger area of providing assistance to low capacity communities. In the Taos process, the ICCPW was introduced after people had already become invested in garnering resources for their community.

The Taos case study also emphasized the difficulty of potential confounding issues of cultural capital not captured by the ICCPW. The relative low community capacity value for the two Native American pueblos in Taos County, Picuris and Taos, may highlight the lack of a cultural capital theme

within our index. It may be that the community cohesion and social networks within the pueblos makes them better able to prepare for or respond to wildfire than our community capacity would indicate. On the other hand, cultural capital may not offset the disadvantages of low financial or human capital for protection from wildfire. The difficulty of measuring cultural capital means that planning efforts must rely on local knowledge to assess community cohesion or social networks. The Taos process could have benefited from a community discussion of the qualitative aspects of community capacity for protection from wildfire with the ICCPW as a starting point.

Another example of the importance of local expertise in measuring community capacity is communities that are not included in any static database. For example, a high priority in a previous community wildfire protection plan was a Girl Scout ranch that was only used periodically. Although there were no year round residences at the ranch, it had a high priority for wildfire protection funds because of a vulnerable, but temporary population of campers at the site during seasons of high fire risk. Local knowledge is crucial for making sure all communities are included in wildfire protection plans. The community capacity index can serve as an objective framework in which other communities can be added by comparison.

Use of the community capacity for protection from wildfire

We hope that in other communities the ICCPW can be a useful tool to help in the prioritization of areas for fuel reduction treatments. The first step is to establish an open discussion across all communities within the planning area about the interaction of socio-economic and natural factors in the assessment of fire threat. The ICCPW can be an initial framework for comparing the capacity of communities across the planning area. Because of the flexible construction of the ICCPW indicators can be added or removed according to the communities' perception of capacity for protection from wildfires. In the Taos case study, we included voter turn out data to measure an aspect of political capital. Other areas may have access to more information appropriate for the ICCPW and not have voter turn out data available. Qualitative information can be included through a nominal group technique where the group comes to agreement about which community attributes should be included and how they should be ranked.

Once there is agreement about the relative community capacities for protection from wildfire, this socio-economic data can be compared to maps of fire threat. Areas of high fire threat near communities of low capacity to protection themselves from wildfire may be good targets for fuel reduction projects. Community capacity may help identify appropriate fuel reduction strategies, rather than just treatment areas. For example, in New Mexico, communities with lower financial capital may

have high capacity to remove firewood from designated areas, which would suggest fuel reduction projects that include fire wood collection be targeted for areas near low capacity communities.

Further Research

Our index of community capacity in the face of wildfire needs further research. The methodology described in this paper is untested. A useful extension of this research would be a comparison of the community capacity index to actual response to wildfire. Unfortunately, many communities have had to face wildfires in the last few years and these communities' preparation and response to wildfire could be compared to the ICCPW. Such a comparison, perhaps in a regression context, could provide a validation of the ICCPW and a relative importance of the indicators.

Another area where research could improve the ICCPW is the mapping of communities. Although US Census data often provide the framework for regional comparisons of communities, there are opportunities to improve the geographic depiction of small rural communities (Dobson et al. 2000, Donoghue 2002). A potential alternative to use of block group level data for communities not delineated as Census Designated Places is to use expert local knowledge to place each community on the ICCPW. Future iterations of the Taos County ICCPW may be able to take advantage of such expert data.

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Appendix – Further detail on calculating the Index of Community Capacity for Protection from Wildfire

Social Capital

- Dependency ratio - SF1, P12 (Sum_1 (P012003, P012004, P012005, P012027, P012028, P012029) + Sum_2 (P012020,P012021,P012022,P012023,P012024,P012025, P012044,P012045,P012046,P012047,P012048,P012049)) / (P001001 - Sum_1 + Sum_2)
- Percent of Population disabled - SF-3, P42 ((P042001 – Sum(P042004,P042007,P042014, P042021,P042024,P042028,P042031,P042038,P042045,P042048)/ P042001)
- Female only headed households - SF-1, P19 (P019007 / P019001)

Human Capital

- Percent with high school diploma - SF-3, P37
- Percent employed - SF-4, PCT79, for block groups SF-3 P150A through P150G
- Percent of Population 5> who speak English - SF-3, P19 (Sum of P019003 through P0190067 where English is spoken well or very well / P019001)

Financial Capital

- Median family income - SF3, P77
- Percent of families above poverty line - SF3, P90

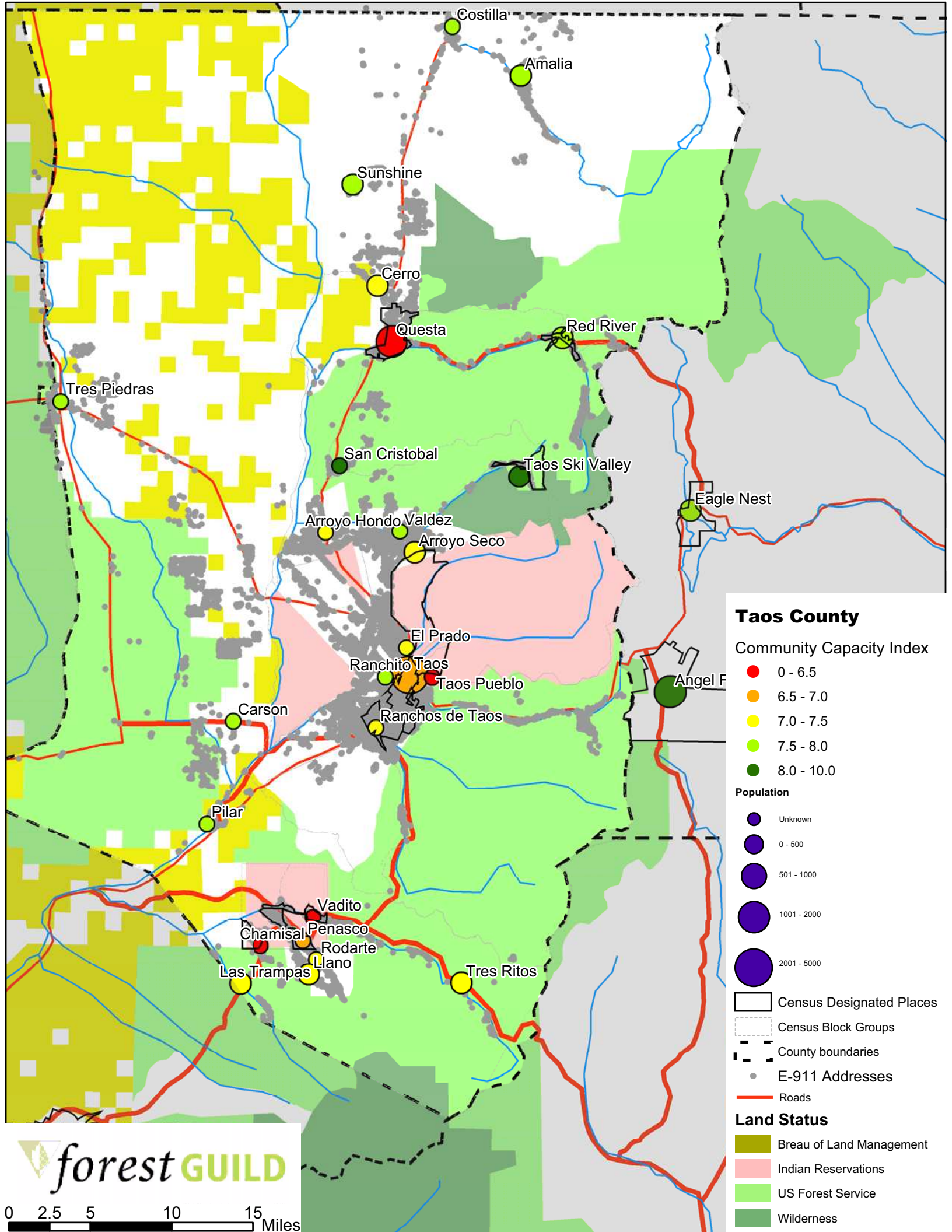
Political Capital

- Political participation (voter turn out - from New Mexico Sec. of State)

Table 3 - Taos County Community Capacity Index for Census Designated Places	Angel Fire	Chamisal	Eagle Nest	Penasco	Picuris Pueblo	Questa	Ranchos de Taos	Red River	Rio Lucio	Taos	Taos Pueblo	Taos Ski Valley	Vadito
Population	1048	301	306	572	86	1864	2390	484	379	4700	1264	56	242
Age Dependency Ratio*	0.47	0.54	0.32	0.59	0.51	0.57	0.48	0.37	0.63	0.53	0.55	0.08	0.67
Precent of population >5 yrs without a disability	80%	72%	78%	80%	69%	74%	78%	87%	72%	78%	79%	91%	82%
Percent of households with a single female parent	6%	12%	9%	16%	13%	14%	14%	6%	22%	16%	21%	0%	15%
Precent of population >25yrs finished high school	95%	63%	86%	69%	71%	65%	76%	96%	71%	80%	80%	100%	76%
Percent of labor force employed	97%	94%	97%	98%	NoData	93%	95%	98%	99%	95%	91%	NoData	96%
Precent of population speak English well	99%	93%	99%	96%	100%	97%	97%	99%	91%	94%	97%	98%	98%
Median family income (1999)	$ 56,125	$ 29,286	$ 38,750	$ 25,833	$ 16,875	$ 30,000	$ 32,045	$ 39,792	$ 22,292	$ 33,564	$ 23,867	$103,422	$ 20,625
Percent of familes above poverty level	93%	81%	82%	79%	64%	79%	86%	95%	82%	82%	73%	100%	59%
Voter turn out by precinct in 2006		67%		68%	70%	65%	69%	61%	70%	63%	62%	70%	61%
Scale Values													
Age Dependency Ratio*	6.5	5.8	7.8	5.4	6.1	5.6	6.4	7.4	5.1	5.9	5.7	10.0	4.7
Precent of population >5 yrs without a disability	7.3	6.3	7.1	7.4	5.8	6.6	7.0	8.2	6.3	7.0	7.2	8.8	7.5
Percent of households with a single female parent	8.7	7.4	8.1	6.4	7.1	6.9	6.8	8.8	5.1	6.4	5.4	10.0	6.7
Precent of population >25yrs finished high school	9.5	5.7	8.4	6.4	6.7	6.0	7.3	9.6	6.7	7.7	7.7	10.0	7.3
Percent of labor force employed	8.8	8.0	8.8	9.3		7.5	8.4	9.2	9.7	8.2	6.8		8.7
Precent of population speak English well	9.9	8.5	9.9	9.1	10.0	9.5	9.3	9.8	8.2	8.8	9.5	9.5	9.6
Median family income (1999)	5.6	3.1	3.9	2.7	1.9	3.1	3.3	4.0	2.4	3.5	2.5	10.0	2.2
Percent of familes above poverty level	9.1	7.5	7.6	7.2	5.2	7.3	8.2	9.3	7.6	7.6	6.4	10.0	4.6
Voter turn out by precinct in 2006		5.3		5.7	6.7	4.3		2.4	6.7	3.1	2.9	6.7	2.4
Community Capacity Index	**8.2**	**6.4**	**7.7**	**6.6**	**6.2**	**6.3**	**7.1**	**7.6**	**6.4**	**6.5**	**6.0**	**9.4**	**6.0**
Rank	12	5	11	8	3	4	9	10	6	7	2	13	1
** population < 15 years + population > 64 years / population between 15 and 64*													

block group #	5595211	5595212	5595213	5595214	5595215	5595231	5595232	5595241	5595242	5595243	5595244	5595245	5595246	5595247
Table 4 - Taos County Community Capacity Index for Block Groups	Red River	San Cristobal	Valdez	Taos Ski Valley	Questa	Tres Piedras, Carson, Pilar	Arroyo Hondo	Taos Pueblo	Taos	Taos	El Prado	Taos	Taos	Taos
Population	772	964	1598	1370	1435	1590	1311	375	564	551	843	666	401	1092
Age Dependency Ratio*	0.46	0.44	0.46	0.38	0.44	0.39	0.44	0.29	0.51	0.55	0.52	0.38	0.42	0.40
Precent of population >5 yrs without a disability	83%	85%	80%	83%	74%	72%	81%	75%	79%	81%	83%	81%	83%	72%
Percent of households with a single female parent	6%	5%	5%	7%	8%	5%	10%	9%	12%	13%	12%	7%	8%	9%
Precent of population >25yrs finished high school	89%	97%	78%	88%	64%	86%	75%	84%	79%	81%	80%	85%	89%	74%
Percent of labor force employed	99%	97%	96%	94%	92%	97%	87%	73%	91%	92%	93%	95%	92%	94%
Precent of population speak English well	99%	100%	98%	96%	97%	98%	99%	95%	83%	85%	99%	93%	99%	97%
Median family income (1999)	$ 34,063	$ 41,917	$ 40,066	$ 37,782	$ 32,000	$ 29,271	$ 39,583	$ 25,682	$ 24,375	$ 22,125	$ 32,188	$ 37,500	$ 35,000	$ 28,000
Percent of familes above poverty level	87%	88%	83%	94%	82%	86%	81%	83%	76%	68%	89%	82%	83%	77%
Scale Values														
Age Dependency Ratio*	6.6	6.7	6.6	7.3	6.8	7.2	6.8	8.1	6.1	5.8	6.0	7.3	7.0	7.1
Precent of population >5 yrs without a disability	7.8	7.9	7.3	7.8	6.5	6.2	7.4	6.7	7.2	7.4	7.7	7.5	7.8	6.3
Percent of households with a single female parent	8.6	8.9	8.8	8.5	8.3	8.9	7.8	8.1	7.4	7.2	7.4	8.5	8.1	7.9
Precent of population >25yrs finished high school	8.7	9.6	7.5	8.6	5.9	8.4	7.1	8.1	7.6	7.8	7.7	8.3	8.8	7.0
Percent of labor force employed	9.6	9.1	8.6	7.9	7.4	9.1	5.8	1.0	7.0	7.3	7.5	8.4	7.2	7.9
Precent of population speak English well	9.8	9.9	9.7	9.2	9.3	9.5	9.8	9.0	6.6	7.0	9.8	8.6	9.9	9.4
Median family income (1999)	3.5	4.2	4.1	3.8	3.3	3.1	4.0	2.7	2.6	2.4	3.3	3.8	3.6	2.9
Percent of familes above poverty level	8.3	8.4	7.7	9.3	7.7	8.2	7.5	7.8	6.8	5.8	8.5	7.6	7.7	6.9
Community Capacity Index	**7.8**	**8.1**	**7.5**	**7.8**	**6.9**	**7.6**	**7.0**	**6.4**	**6.4**	**6.3**	**7.2**	**7.5**	**7.5**	**6.9**
Rank	23	24	19	22	7	20	10	3	2	1	14	18	17	8
** population < 15 years + population > 64 years / population between 15 and 64*														

block group #	5595248	5595261	5595262	5595263	5595264	5595271	5595272	5595273	5595291	5595292
Table 4 - Taos County Community Capacity Index for Block Groups	Ranchito	Taos		Taos	Ranchos de Taos	Rodarte			Chamisal	Vadito, Penasco
Population	2358	816	2034	1458	2271	1401	2785	1523	927	874
Age Dependency Ratio*	0.42	0.62	0.50	0.41	0.41	0.52	0.49	0.49	0.48	0.55
Precent of population >5 yrs without a disability	77%	65%	80%	79%	82%	86%	80%	77%	74%	82%
Percent of households with a single female parent	9%	15%	12%	12%	11%	8%	11%	8%	9%	12%
Precent of population >25yrs finished high school	85%	83%	78%	86%	71%	69%	77%	76%	71%	70%
Percent of labor force employed	95%	95%	94%	98%	95%	96%	95%	95%	94%	97%
Precent of population speak English well	99%	98%	94%	98%	90%	96%	98%	95%	92%	97%
Median family income (1999)	$ 37,188	$ 30,766	$ 28,947	$ 38,958	$ 35,101	$ 36,724	$ 32,614	$ 34,596	$ 28,906	$ 25,208
Percent of familes above poverty level	85%	76%	84%	87%	90%	85%	84%	83%	82%	72%
Scale Values										
Age Dependency Ratio*	6.9	5.2	6.2	7.0	7.0	6.0	6.3	6.3	6.4	5.8
Precent of population >5 yrs without a disability	6.9	5.3	7.4	7.1	7.7	8.2	7.3	6.9	6.5	7.6
Percent of households with a single female parent	8.1	6.7	7.3	7.4	7.6	8.3	7.6	8.3	7.9	7.3
Precent of population >25yrs finished high school	8.3	8.1	7.4	8.3	6.7	6.4	7.4	7.2	6.6	6.5
Percent of labor force employed	8.2	8.2	8.0	9.3	8.3	8.7	8.3	8.4	8.0	8.9
Precent of population speak English well	9.8	9.6	8.8	9.5	7.9	9.1	9.6	9.0	8.3	9.3
Median family income (1999)	3.8	3.2	3.0	4.0	3.6	3.7	3.4	3.5	3.0	2.7
Percent of familes above poverty level	8.0	6.9	7.8	8.2	8.7	8.0	7.9	7.8	7.6	6.3
Community Capacity Index	**7.5**	**6.6**	**7.0**	**7.6**	**7.2**	**7.3**	**7.2**	**7.2**	**6.8**	**6.8**
Rank	16	4	9	21	11	15	13	12	6	5
** population < 15 years + population > 64 years / pop*										


Costilla
Amalia
Sunshine
Cerro
Questa
Red River
Tres Piedras
San Cristobal
Taos Ski Valley
Eagle Nest
Arroyo Hondo
Valdez
Arroyo Seco
El Prado
Ranchito
Taos
Taos Pueblo
Ranchos de Taos
Carson
Pilar
Vadito
Penasco
Chamisal
Rodarte
Llano
Las Trampas
Tres Ritos
Taos County
Community Capacity Index
0 - 6.5
6.5 - 7.0
7.0 - 7.5
7.5 - 8.0
8.0 - 10.0
Population
Unknown
0 - 500
501 - 1000
1001 - 2000
2001 - 5000
Census Designated Places
Census Block Groups
County boundaries
E-911 Addresses
Roads
Land Status
Breau of Land Management
Indian Reservations
US Forest Service
Wilderness
forest GUILD
0 2.5 5 10 15
Miles