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Capturing the Benefits of Restoration: Local Business Utilization and Opportunities for Growth in Northwestern Montana

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CAPTURING THE BENEFITS OF RESTORATION: LOCAL BUSINESS UTILIZATION AND OPPORTUNITIES FOR GROWTH IN NORTHWESTERN MONTANA

By

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ABSTRACT

Restoration and maintenance of forests and watersheds is increasingly a focus of management on public lands and, in addition to traditional forest management activities, has the potential to contribute to the economic vitality of local, forest-dependent communities. However, research has shown that the extent to which local communities benefit from restoration and management activities is highly variable. This study seeks to understand whether local communities in northwestern Montana are capturing the benefits of these activities on public lands by analyzing federal contracting trends. Specifically, this study 1) characterizes the value and type of federal contracts along with the spatial distribution of businesses engaged in restoration and management activities in northwestern Montana; 2) identifies the determinants of local business utilization; and 3) analyzes the use of subcontractors and the impacts this has on the distribution of benefits. The results of this study suggest that factors including Small Business Administration set-asides can negatively affect local business utilization, while certain types of work, such as heavy equipment work, and the location of work can have a positive effect on local business utilization. Businesses awarded contracts by the Forest Service were found to be distributed across 28 states and two countries. However, subcontractors were found to be predominantly located in Montana, suggesting that the analysis of only prime contracts may obscure impacts to rural, forest-dependent communities in the study area. Opportunities to increase the share of benefits captured by forest-dependent communities could include education and training on Small Business Administration set-aside programs to improve participation, targeted outreach to tribal- and other minority-owned businesses, and restructuring of contract opportunities.

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INTRODUCTION

Management of public lands has undergone significant change in the last three decades, and so have adjacent communities (Field and Lee 2005). Concerns about the impacts of timber harvesting on threatened and endangered species and changing management paradigms resulted in drastic reductions in federal timber harvest levels on public lands beginning in the 1980s. In Montana, timber harvest on federal lands fell by more than 70 percent during the 1990s, and was associated with the closure of numerous mills in the state and the loss of nearly a thousand direct forest industry jobs (McIver et al. 2013). Tourism, recreation, amenity-driven migration and the rise in mobile telecommuters have been a boon for many rural areas across the West, while other areas still dependent on more traditional natural resource sectors have largely suffered (Hibbard and Lurie 2013).

Recently, a new paradigm has begun to emerge. Coined variously as the "new natural resource economy" (Hibbard and Lurie 2013) or "healthy forests, healthy communities" (Kelly and Bliss 2000), these paradigms represent a new way of thinking about and using resources that balance production, consumption and protection. The new natural resource economy involves novel activities and drivers of economic activity in rural communities across the West—including recreation and restoration of public lands to enhance natural assets—and combine existing and emerging businesses with new mechanisms for getting work done that keep more of the value in the local community. This movement fits within a broader rural wealth creation framework, which seeks to build multiple forms of community capital through value chain development linking rural assets to market demand in strategic ways that intentionally include low-wealth individuals and communities (Ratner and Markley 2014).

The new natural resource economy is ideally suited for rural, forest-dependent communities that have historically been dependent upon more traditional forest industries and many community activists argue that it can help to replace the jobs that have been lost as a result of the changing management of public lands. A key component of the new natural resource economy in public forest-dependent communities is federal contracting of restoration and management activities. These contracts can provide opportunities for rural communities located adjacent to public lands to build wealth in the form of financial, human and cultural capital when local businesses are awarded federal contracts.

This study seeks to measure the extent to which local communities in northwestern Montana are capturing the benefits of restoration and management on public lands by looking at federal contracting trends and the degree to which local businesses are being utilized.

LITERATURE REVIEW

There is an abundance of research linking natural resource-dependency to poverty and reduced levels of community well-being (Stedman, Parkins, and Beckley 2004; Freudenburg and Gramling 1994; Kaufman and Kaufman 1990). Scholars have pointed to community instability, social pathologies such as divorce, low incomes, and higher crime rates as indicators of the association between forest-dependency and poverty (Stedman, Parkins, and Beckley 2004). Forest-dependent communities in rural areas dominated by public lands have faced a number of unique challenges including: 1) a lack of clear policy directing federal land management agencies to consider the impact of their decisions on local communities (Ashton and Pickens 1995; Perry 1989), 2) reliance upon institutions and budgets for which they have little control (Kaufman and Kaufman 1990), 3) significant reductions in federal timber harvest resulting from changing social values and management paradigms (Haynes and Grinspoon 2006), and 4) limited economic development opportunities resulting from their geographic isolation and lack of major transportation networks (Helvoigt, Adams, and Ayre 2003; Markley and Low 2012).

At the federal policy level, it was not until the Great Depression that explicit concerns about forest-dependent communities entered the national debate, one outcome of which was the Sustained Yield Act of 1944. The Act's purpose was to "promote the stability of forest industries, of employment, of communities and taxable forest wealth, through continuous supplies of timber" (16 U.S.C. § 583). Subsequent legislation continued to focus on the idea of sustained yield, although community stability became more of an implicit goal. As Perry (1989) argued: "Congress has not, in any legislation which applies generally to all National Forest System lands, provided any direction that requires the agencies to meet a community stability requirement." This omission is significant, according to Perry, because the Sustained Yield Act of 1944 as well as the Alaska Native Interest Lands Conservation Act of 1980 demonstrated that Congress was very aware of the impact of forest management decisions on forest-dependent communities.

However, in the 1990s, in response to concerns about the decline of the threatened northern spotted owl, conflict over timber harvest in old-growth forests and the perceived threats to forest-dependent communities in western Oregon, Washington, and northern

California, an initiative was established by President Clinton called the Northwest Forest Plan (Haynes and Grinspoon 2006). The goal of the Plan involved finding the "appropriate balance between continued timber harvest and restoration and maintenance of threatened watersheds and forest ecosystems" and strategies for maintaining the "socioeconomic fabric of rural forest communities" (Spencer 1999). It represented a transition from intensive timber management to ecosystem management and was significant, in part, because it recognized the role the agency could play in mitigating the negative impacts associated with reduced harvest levels, by offering "new economic opportunities for year-round, high-skill, high-wage jobs" (USDA and USDI 1994 as quoted in Charnley 2006).

More recently, new authorities and programs have been established by Congress—including stewardship end-result contracting and the Collaborative Forest Landscape Restoration Program (CFLRP)—which contain new tools, mandates, and in the latter case, funding, for increasing the benefit of restoration and management for local communities. Stewardship end result contracting (stewardship contracting), piloted in 1999 and granted permanent authorization in 2014, provides the agency with a number of new authorities, including the ability to award contracts according to best value criteria, rather than purely on cost. It also allows communities to have a role in the determination of the best value criteria and contractor selection (Moseley and Davis 2010). The CFLRP was established in 2009 to promote "collaborative, science-based ecosystem restoration of priority landscapes through a process that encourages ecological, economic and social sustainability". The program provides 10 years of funding to successful landscape-scale projects and mandates that agencies and community groups monitor activities and outcomes to inform adaptive management (Schultz, Jedd, and Beam 2012). A specific goal of the program is to "benefit local economies by providing local employment or training opportunities through contracts, grants, or agreements" (16 U.S.C. § 7303).

Nonetheless, research has shown that local communities do not necessarily benefit from activities occuring on public lands. As Danks (2003) points out, the extent to which local forest-dependent communities benefit from forest management "depends on the institutional arrangements governing access to forest resources and to employment opportunities". Within the Northwest Forest Plan area, researchers have documented vast discrepancies among communities in their ability to capture the benefits of restoration expenditures. Drivers of between and within community variations include both external factors to a community such as agency budgets and associated availability of the work, how the work opportunities are structured, and internal factors including the capacity and ability of local businesses to capture the opportunities (Davis et al. 2013). Such variations have been attributed to factors including region in which the work takes place (Moseley and Shankle 2001), proximity to major transportation corridors (Stone, Sundstrom, and Moseley 2006; Moseley and Reyes 2008; Markley and Low 2012), the type of work being conducted (Moseley and Shankle 2001; Moseley and Reyes 2008; McIver 2013), the size, structure and duration of contracts (Danks 2003; Almquist, Kauffman, and Ojerio 2007; Kauffman 2001), and proximity to urban areas (Moseley and Reyes 2008). Thus, many factors work together—logistic, geographic, structural—to influence the variegated pattern of benefit capture across the landscape.

One factor that has received little attention in the research is the impact of Small Business Administration (SBA) set-asides on the degree to which local contractors engage in restoration and management activities on federal lands. Since the enactment of the Small Business Act in 1953, the federal government has sought to ensure that a "fair proportion" of federal purchases and contracts go to small businesses (Clark, Moutray, and Saade 2006). This has been accomplished through setting aside a mandated proportion of contracts for competition only among small businesses. In addition, the SBA 8(a) program and the historically under-utilized business (HUB) zone program require the Forest Service and other federal agencies to set aside contracts for qualified socially and economically or geographically disadvantaged businesses. In addition, under these two programs, the federal government can also provide sole source opportunities and price evaluation preferences. Owners of businesses that are members of socially disadvantaged groups qualify under the 8(a) program and contractors located areas of low median household income or high unemployment (or both), such as rural counties, Indian reservations, and selected urban census blocks can qualify under the HUB zone program (Moseley and Toth 2004; SBA n.d.). There are also a number of small business set-asides that apply to women-owned, veteran-owned and emerging small businesses. Because these programs favor small and potentially rural businesses, they are of particular interest to the study of federal contracting in rural forest-dependent communities.

In 2000, Moseley and Toth (2004) conducted a study testing the location of benefit for contracts awarded through the National Fire Plan (NFP). The NFP was significant in that it gave the Forest Service the authority to consider benefit to rural communities when awarding NFP contracts. It also tested assumptions about the interaction of local benefit goals and Small Business Administration goals and hypothesized that the use of set-asides would lead to more local contractors working on NFP projects. However, the authors found that the effect on local communities varied geographically and was significant only in the more rural and remote regions of the study area. Additionally, the effect of set-asides was not consistent across set-aside types. The use of HUB zone contractors decreased the distance between contractor and work site (more local) while the use of 8(a) contractors increased the distance (less local) (Moseley and Toth 2004). Thus variables such as the type of work being conducted, set-aside, and proximity to urban areas interact to influence the success of programs aimed at providing local benefit. It is unknown if these results would hold true in western Montana.

The use of subcontractors is another area in which there is insufficient research. When prime contractors subcontract out, little is known about the businesses they employ—specifically, who they are, where they are located, how big they are, and whether they also participate in federal contracting as prime contractors. In Moseley's (2006) study of ethnic differences in job quality among contract forest workers, the author found that 58 of the 104 prime contractors (businesses awarded contracts by the federal government) surveyed subcontract less than 10 percent of their work and 85 of the 104 subcontract less than 25 percent of their work.

The use of subcontractors has multiple implications for understanding the distribution of benefits from restoration and management on public lands and the extent to which local communities benefit. A core assumption of federal contracting analyses is that the prime contractor's address (the address of the business awarded the contract) is a reasonable proxy for the location of benefit. Questions such as how often subcontractors are utilized, whether prime contractors located distant from project sites subcontract work to local firms, and whether these distant contractors bring workers with them or hire local to the project site all have significant impacts on the way benefits are distributed throughout the contracting market and beyond. The frequency and characteristics of subcontracting are additional areas in which there is insufficient research.

Another implication of subcontracting relates to the barriers that small businesses face when attempting to access federal contracts. Researchers and community advocates have argued that traditional service and timber contracts often do not meet the needs of rural communities by virtue of being inaccessible to small businesses and sole proprietors (Moseley 2002). Moreover, Allen et al. (2008) found in their assessment of the contract logging sector in the Inland Northwest that small and medium sized firms represented 74 percent of the survey population. Therefore, it is appropriate to ask whether these rural businesses are participating in management and restoration of public lands in other ways—as subcontractors—and if so, what the implications are for forest-dependent communities.

Finally, the very definition of "local" or "community" when measuring community benefit can be contentious and context-specific (Spencer 2004; Moseley and Reyes 2008). Previous studies have utilized either categorical definitions (Almquist, Kauffman, and Ojerio 2007; Kauffman 2001; Spencer 2004) or "degree of local-ness" (Moseley and Shankle 2001; Moseley and Toth 2004; Moseley and Reyes 2008) measured in terms of distance between contractor and work site, to characterize the extent to which local communities are benefiting from restoration and management on public lands. The former definition allows for the creation of categories that are context-specific, but creates limitations for more sophisticated analyses. The use of distance overcomes these statistical limitations but has relied upon measurement in straight-line distance (aka "air miles"). Especially in the west, the use of air miles fails to account for variations in and limitations of road networks which are significant in regions defined by mountain ranges and large tracts of Wilderness and other roadless areas. The addition of travel time as another alternative to air miles builds upon the work of community economic development practitioners and scholars interested in the qualitative distinctions between jobs. Such studies of job quality in the forestry sector have looked at the ability to return home at night as a key indicator of job quality and suggest that forestry contractors will travel up to 3 hours one-way and still return home (Moseley and Toth 2004).

This study seeks to fill the research gaps by analyzing the individual and combined effects of work type, use of set-asides, contract size and use of subcontractors on the extent of local benefit captured by communities adjacent to national forests in western Montana. Specifically, I address the following questions: 1) how are prime contractors geographically distributed and to what extent are local contractors engaged in restoration activities? 2) How do factors such as work type (labor-intensive, equipment-intensive, technical), contract size, location of work (county), and set-aside (Small Business, HUB Zone, 8(a), or none) influence the distance travelled by prime contractors? 3) To what extent can variables related to type of work, type of set-aside, size class, and county predict the distance between contractor and project site? 4) Is there a significant difference in the distance travelled by prime contractors versus sub-contractors? In addition, the research seeks to test various definitions of local by asking a fifth question: 5) How much impact do different measures of distance (road miles, air miles, travel time) have on the above results?

METHODS

To assess how well communities located adjacent to national forests are capturing the benefits of restoration, I chose to measure the proximity of businesses utilized to conduct forest management and restoration activities on lands managed by the U.S. Forest Service in northwestern Montana and identify whether opportunities exist to increase the economic impact of such activities for forest-dependent communities in the study area.

The U.S. Forest Service relies on private businesses to accomplish the majority of land management and restoration activities. Many mechanisms can be used to accomplish restoration and management objectives including: procurement contracts, timber sale contracts, and agreements. Each of these mechanisms is unique and a comprehensive study of local economic and social impacts of management and restoration on public lands should include an analysis of all of these mechanisms. However, even though many of the same or similar activities are accomplished through these mechanisms, the U.S. Forest Service has not integrated tracking or reporting for all of them in a way that provides a common core of comparable data. Unfortunately, due to the amount of time and effort required to collect timber sale and agreement data as well as the lack of a common core of data, only procurement contract records were chosen as the basis for this analysis. Procurement contracts are used to purchase goods or services and represent the most frequently used mechanism used to accomplish management and restoration activities on national forests (McIver 2013).

Data

Two datasets were created for this analysis. The first utilized contract records from the Federal Procurement Data System and the second used data on subcontractors from a survey of businesses awarded contracts by the U.S. Forest Service in the study area.

Restoration Contract Dataset—A dataset of restoration and management contracts was created using data from the Federal Procurement Data System, a public database containing detailed information on all procurement contracts awarded by federal agencies above the micro-purchase threshold established in the Federal Acquisition Regulations as $3,000 (FAR 13.003(b)(1)). The database contains information identifying the contracting agency, the name and address of the business awarded the contract, the value of the contract, and the type of work performed (see Table 1).

Table 1—Information contained in the Federal Procurement Data System

Variable	Description
PIID	Unique contract identifier
Product or Service Code	Code designating type of work performed
Product or Service Description	Description of work performed
Vendor Name	Name of business awarded the contract
Vendor Address	Office address of business awarded contract
Date Signed	Date contract was awarded or modification was made
Base and All Options Value	Value of Contract or Modification
Type of Set Aside	Small Business Administration program engaged to target specific business type
Principle Place of Performance County	County in which the project is located
Contracting Agency	Name of federal agency letting contract

Contract records were filtered using the Product or Service Code (PSC) assigned by the Forest Service to classify the type of work being conducted. Contracts included in this analysis involved forest management and restoration activities, such as tree thinning and planting, brushing, piling, biological surveys, riparian restoration, culvert replacement, road maintenance and decommissioning, and noxious weed control (for a full list of included activities, see Appendix A)(Almquist, Kauffman, and Ojerio 2007). Excluded activities not associated with forest management included: building maintenance, janitorial services, personnel training, and the purchase of all goods. Also excluded were contracts associated with wildland fire suppression. Timber sales and agreements also were not included in this dataset for two reasons: 1) timber sale data is not publicly available in a centralized database and must be collected from each national forest office; and 2) the data recorded for timber sale contracts and agreements are unique and lack sufficient commonality such that they cannot be easily compared with procurement contracts.

In addition to recording every contract with a value greater than $3,000, the Federal Procurement Data System also records every modification made to a contract, regardless of value. Many procurement contracts let by the Forest Service span multiple years and may include the obligation or de-obligation of dollars throughout the contract period. Consistent with Spencer (2004), contract value was calculated using the unique contract identifier (PIID) whereby all contract actions were summed for each contract for each year to allow for tracking of Forest Service investment by year. Therefore, a single contract may show up in multiple years, but only the dollars obligated to the contract in a given year will show up to avoid double counting. All contracts valued less than or equal to $0 were removed.

<u>Subcontractor Dataset</u>—This study was also interested in understanding how frequently businesses awarded contracts by the Forest Service (prime contractors) engage

subcontractors to accomplish all or part of the work, and when they do, if they tend to be located closer to where the project is taking place. As mentioned above, an understanding of subcontracting trends is useful for two reasons: first, it tests assumptions about benefit capture based on the location of prime contractors; and second, it tests the assertion that small, rural businesses are less able to access federal contracting opportunities than their larger, more urban counterparts.

Unfortunately, information on the use of subcontractors is not collected in the Federal Procurement Data System. To better understand subcontracting trends and answer the questions posed above, primary data were collected via a mail survey sent to every prime contractor in the full restoration contract dataset requesting information about whether they used sub-contractors on any Forest Service projects in the study area between fiscal years 2005 and 2013.

For this portion of the study, the unit of analysis was the contractor, rather than the contract. Contracts are nested within contractors, meaning that during the 10-year study period, most contractors had more than one contract with the Forest Service in the study area. For this reason, and because the dataset of procurement contracts did not include any type of description or name to reference that would be recognizable to contractors, it was determined that the study would rely upon contractor records and memory to answer questions about subcontracting activity. A map of the study area was included to help contractors identify projects that fell within the county boundaries. Contractors were provided with multiple modes of responding including a postage-paid envelope, email, voicemail, and text.

A letter describing the study, two questions regarding subcontracting activity, and contact information for the researcher along with a map of the study area were sent to all prime contractors (see Appendix B). At least two attempts were made to gather information from contractors. The first mailing was sent to 346 prime contractors and the second mailing was sent to 196 prime contractors that had not yet responded. Additional attempts were made for mail returned by the Postal Service with a forwarding address. All completed responses were coded as complete, partial, non-respondent, or by reason of non-delivery according to the postal service label consistent with the standards established by the American Association for Public Opinion Research (American Association for Public Opinion Research 2008). In total, 123 surveys were completed, 2 were partially completed, 89 were returned as undeliverable and 132 did not respond, resulting in a 36 percent response rate. However, considering that 26 percent of surveys were not delivered, the effective response rate excluding those not able to be delivered was 48 percent.

Study Area

The data listed in Table 1 were collected for all contracts let by the Forest Service between fiscal year 2004 and fiscal year 2013 for activities occurring in the following five counties in Northwest Montana: Flathead, Lake, Lewis and Clark, Missoula, and Powell (Figure 1). These counties were chosen because they contain the Southwestern Crown of the Continent (Southwest Crown Collaborative 2010), an area of national significance due to its selection as a project site through the CFLRP. Counties were chosen as the delineation unit for the study area to match the resolution of the data in the Federal Procurement Data System.

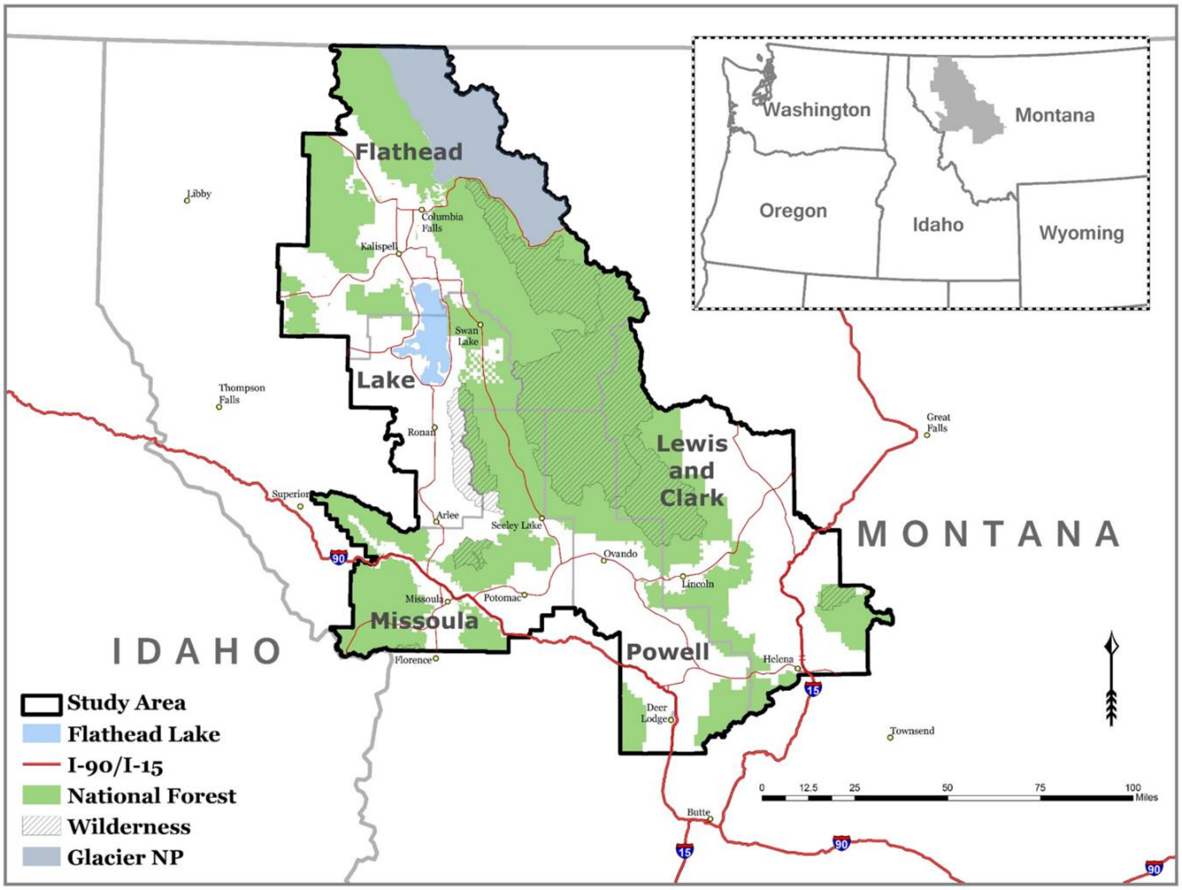

Figure 1—Southwestern Crown of the Continent Study Area

Variables

<u>Local</u>—The dependent variable in this analysis—local versus distant contractors—was operationalized as the distance, in road miles, between the business address of the firm awarded the contract and the location where the work occurred. Distance in miles was chosen as the primary unit of measurement because it provides finer resolution than categorical definitions, such as local/non-local, is better able to account for variations in topography and limited road networks, and because it allows for more sophisticated statistical tests. However, "local" was also measured in air miles, travel time and local/non-local to answer the fifth research question. This approach also allowed for comparisons

with previous studies (Moseley and Shankle 2001; Moseley and Reyes 2008; Moseley and Toth 2004) which measured distance in air miles between contractor headquarters and the centroid of each National Forest administrative unit. Calculation of the dependent variable in road miles, air miles and travel time, were accomplished using ArcGIS Online. Calculation of "local" as a binary (Y/N) variable was measured according to whether the contractor address was located in the same county in which the project took place.

A significant weakness of the Federal Procurement Data System is that it does not contain coordinates or other spatial data designating project location. To overcome this weakness, a proxy was generated to approximate the location of each project to allow for distance calculations. The only location information included in the dataset were: place of performance state, place of performance county, and place of performance zip code. Previous studies have used a spatially generated centroid for the national forest in which the project took place as the proxy for project location. Since the specific National Forest on which a project occurred was not available, and to allow for comparison with previous studies, a combination of county and national forest were used to approximate the project location.

Using ArcGIS desktop version 10.2.2, a point was created for each county-national forest combination representing the centroid of the national forest system lands within that county. Specifically, the national forest layer (regardless of administrative unit) was clipped using the boundary of each county. A centroid was then generated for each clipped national forest polygon within each county. This point became the proxy for project location and will be referred to as the national forest-county (NF-county) centroid in this paper (Figure 2).

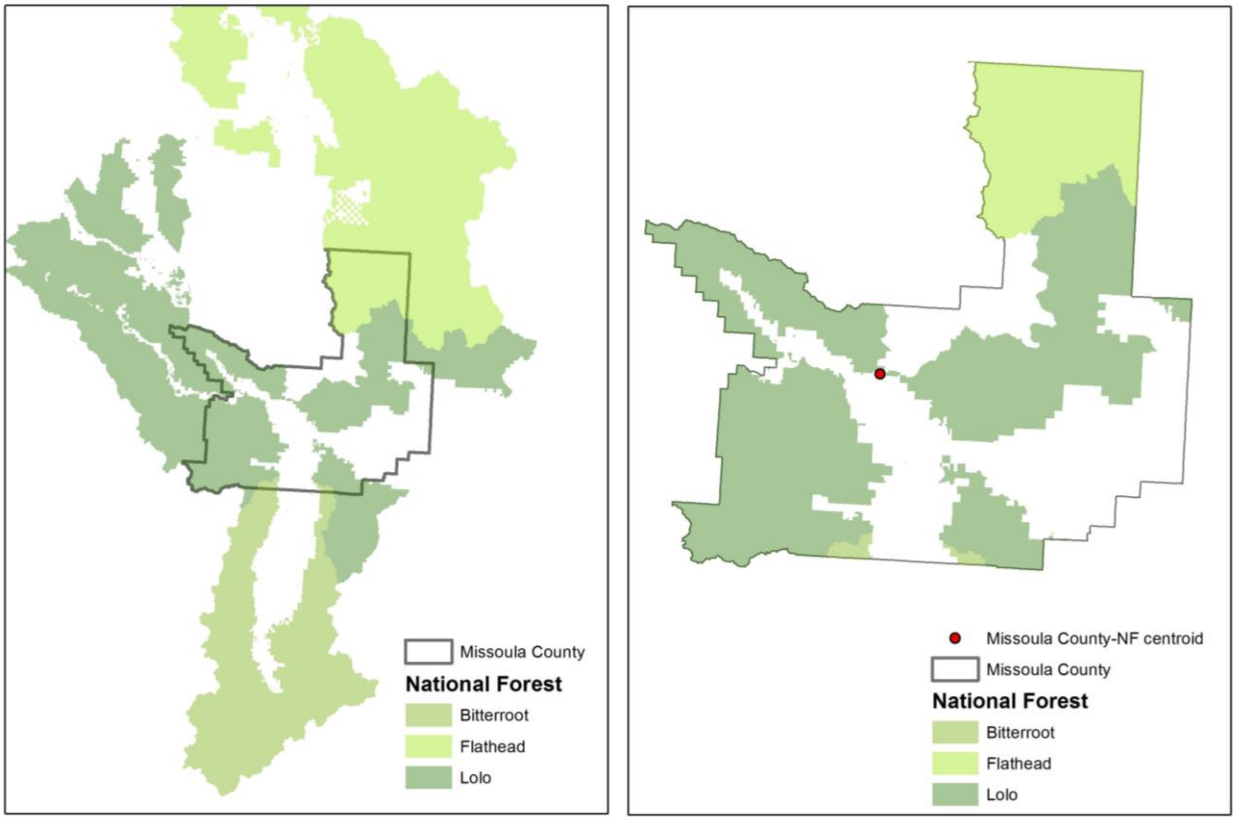

Figure 2—Illustration of method for calculating the county-NF centroids.

Distance in road miles and air miles were then measured between contractor headquarters and the nearest road segment to the NF-county centroid for all contracts occurring in each county. Travel time was also calculated using ArcGIS software using the default settings that assume drivers are obeying applicable rules and speed limits, but do not adjust for traffic conditions.

Work Type— Once the contracts were filtered to only include restoration and land management activities as discussed previously, the Product or Service Codes (PSC) were used to group activities into the following work type categories: labor-intensive, equipment-intensive, and technical (Almquist, Kauffman, and Ojerio 2007)(Table 2). These work type designations have been shown in other research to be acceptable proxies for variations in skill requirements and wage rates (Moseley and Shankle 2001; Moseley and Toth 2004). These studies have found that labor-intensive work tends to fall low on each of those scales, but is not very capital intensive, while equipment-intensive work falls high on the skill and wage scales, as well as high on capital investment. Technical work is generally moderate to high on skill and wage scales but low on capital-intensity.

Table 2—Work Type Descriptions

Work Type	Most common examples
Technical	Architecture and Engineering Services; Other Natural Resource Management and Conservation (includes stewardship contracts)
Equipment-Intensive	Maintenance, Alteration or Repair of Roads, Streets, Bridges (includes road decommissioning)
Labor-Intensive	Tree Planting; Other Range/Forest Improvement; Tree Thinning

Type of Set-Aside—Set-asides are used by the federal government to address inequalities and barriers to certain businesses in accessing federal contracts. They can be used to encourage minority-owned businesses to engage in federal contracting, such as in the 8(a) program, or identify geographical regions where businesses are economically disadvantaged as in the Historically Underutilized Business (HUB) Zone program. Federal agencies are required to set aside a proportion of prime contracting dollars exclusively for businesses that qualify for a given SBA program. Such businesses must not only qualify, but must be registered with the SBA before they can respond to solicitations for products or services by the federal government.

The 8(a) and HUBZone programs are relevant to this study because a large portion of the Flathead Indian Reservation falls within the study area indicating that there may be existing Native American-owned or tribally-owned businesses in the region. The reservation is also a designated HUB Zone, along with two counties in the study area and numerous counties adjacent to the study area (see Figure 3).

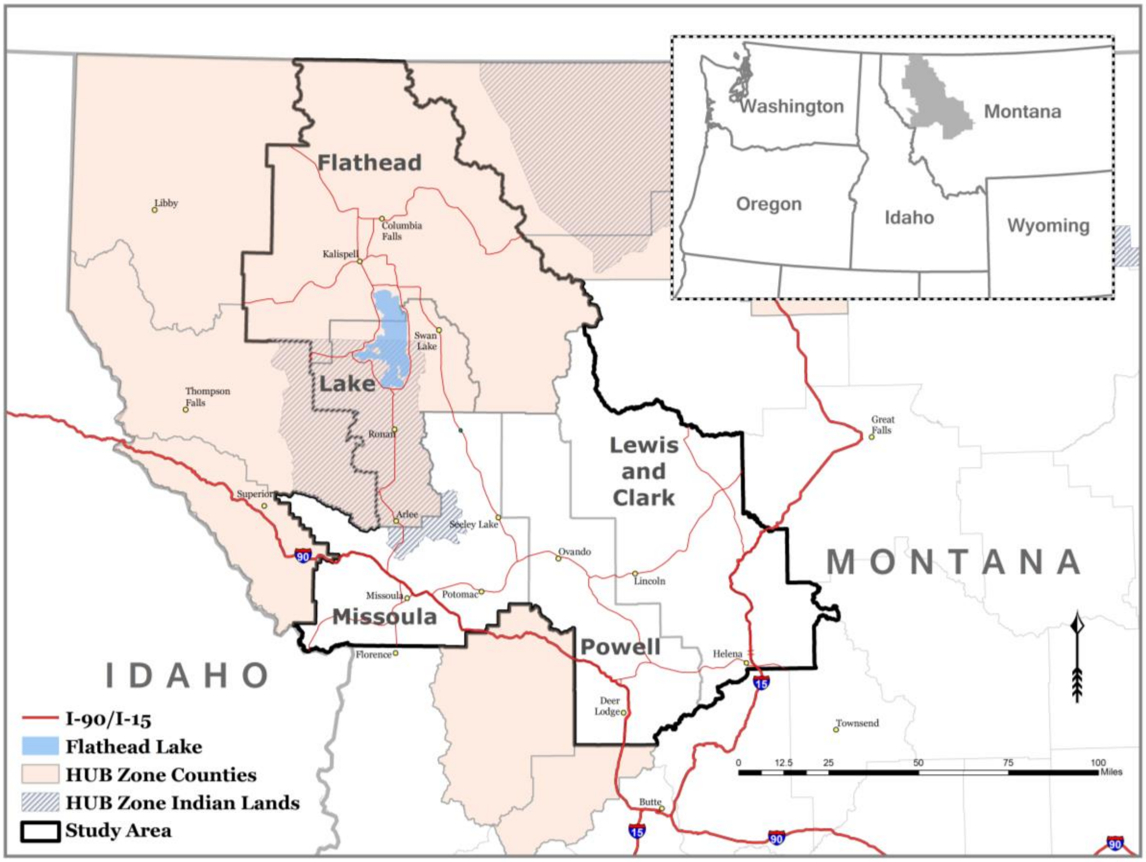

Figure 3—Indian Reservations and HUB Zones in western Montana.

Contracts were coded according to the type of set-aside used, and were grouped into the following categories: none (no set aside used), small business, HUB Zone, and 8(a). Finally, there are a myriad of designations that fall into the small business category, including partial and total small business set-asides, very small business and emerging small business which were all coded as a small business set-aside. In addition, there were 2 contracts set aside for service disabled veteran-owned small business, which were also coded as a small business set-aside since the small number did not allow for a separate analysis.

Project Location—A third variable, County, used place of performance information to assign each contract to the county in which the work took place. The County variable was used in the calculation of distance for the dependent variable and was also used to create the binary variant of the dependent variable indicating whether a business awarded a contract is located within the same county as the project or not (Y/N).

Size Class —The fourth variable, Size Class, used the sum of all contract obligations and modifications for a given contract in a given year (adjusted to constant 2013 dollars) and grouped them into four classes: less than $5,000; $5,000-$24,999; $25,000-$99,999; and over $100,000. The designation of these classes was drawn from previous studies (see Kauffman 2001; Stone et al 2006; Almquist et al 2007).

Subcontractors—A second dataset of subcontractors was created from those respondents who had used subcontractors on their projects. This dataset of subcontractors included the name, city and state of all subcontractors used by prime contractors. Two records were removed due to incomplete information. The internet was used to find street addresses for all subcontractors, which was successful in all but 5 cases. After removing these cases, the final dataset of subcontractors contained 125 cases.

In order to test the final hypothesis, subcontractor addresses were used in conjunction with the NF-county centroid to calculate the dependent variable, distance, using the same methods used for prime contractors. That is, distance was calculated in road miles, air miles, travel time and using the binary variable designating whether the subcontractor is located in the same county as the project or not.

Statistical Analysis

Analysis of Variance—To determine whether statistically significant differences between groups existed (e.g. set aside types or work types, for example) on the dependent variable (distance), two-way factorial analysis of variance (ANOVA) was chosen as the most appropriate test (Mertler and Vannatta 2010). Prior to statistical analysis, the dependent variable and four independent variables were tested for normality, linearity and homogeneity of variance. The dependent variables, *road miles*, *air miles* and *travel time* were found to have severe positive skew and severe kurtosis. For this reason, each of the variables were first transformed using a base 10 logarithmic transformation (Log10).

Because ANOVA is sensitive to unequal group sizes, records for two counties, Lake and Powell, were deleted due to very small size (N=4 and N=15, respectively). Two-way factorial ANOVA analysis was then run along with Levene's Test of Equality of Error Variance. Levene's test is used to test the null claim that the error variance of the dependent variable is equal across groups and determines the type of post hoc test to use when the results of the ANOVA are significant (Healey 2009).

Regression--To test the third research question regarding the reliability of the four independent variables in predicting distance between contractor and project site, stepwise forward multiple regression was conducted to determine whether any variable or combination of variables were significant predictors of distance (Mertler and Vannatta 2010). This method was chosen due to its exploratory nature and ability to determine the most parsimonious model.

To isolate the effects of specific work types and set asides on the dependent variable, binary dummy variables were created for each category within each of the four independent variables, resulting in 15 “dummy” variables (Table 3). The creation of the dummy variables in combination with the use of an exploratory regression model allowed the sub-categories within each variable to be tested individually and in relation to each other.

Table 3—List of Dummy Variables

Original	Transformed	N
Work Type	Equipment	436
	Labor	336
	Technical	694
Set-Aside	8(a)	58
	HUB Zone	36
	Small Business	549
	None	823
PoP County	Flathead	473
	Lewis and Clark	258
	Missoula	732
	Powell	13
Size Class	<$5,000	389
	$5,000-$24,999	608
	$25,000-$99,999	341
	>$100,000	128

Prior to analysis, the independent variables (Table 3) were screened through various SPSS tools for accuracy of data, missing data, and fit between their distributions and assumptions of multivariate analysis. The poor split on county truncated its correlations with other variables, but was retained for analysis. The dependent variables, *road miles, air miles* and *travel time* were found to have severe positive skew and severe kurtosis. For this reason, each of the variables was first transformed using a base 10 logarithmic transformation. Each of the variables were then examined for univariate outliers. The set aside and county variables were both found to have extreme distance values. Seven extreme high values were recoded to an accepted high value and five extreme low values were recoded to an accepted low value (Mertler and Vannatta 2010). Finally, multivariate outliers were identified through Mahalonobis distance with p <.001

resulting in the removal of 25 cases, leaving 1,466 cases for analysis (Tabachnick and Fidell 2001).

This analysis combined a log-transformed dependent variable with non-transformed independent dummy variables, which can create challenges when interpreting the results. To remedy this, slope estimates were transformed using the equation:

$c^* = \exp(c) - 1$

where c was the original slope estimate for the dummy variable. This allows for interpretation of dummy variables such that c* x 100 represents the percentage effect that the presence of the dummy variable has on the dependent variable (Halvorsen and Palmquist 1980).

Independent Samples t-test— t-tests were used to test the research question concerned with whether there was a significant difference in the mean distance travelled by prime contractors compared to subcontractors. Results from this test were a pre-requisite to answering subsequent research questions, and informed both the selection of tests and methods. In addition, this test was also used to evaluate whether non-respondents to my subcontracting survey were significantly different from the respondents and therefore rule out the existence of non-response bias.

All statistical analyses were conducted using SPSS software version 22.

RESULTS

Over $54 million dollars were invested by the US Forest Service in the study area to conduct restoration activities via procurement contracts between fiscal years 2004 and

2013. Annual expenditures ranged between just under $100,000 in fiscal year 2004 to over $13 million in fiscal year 2010 (Figure 3).

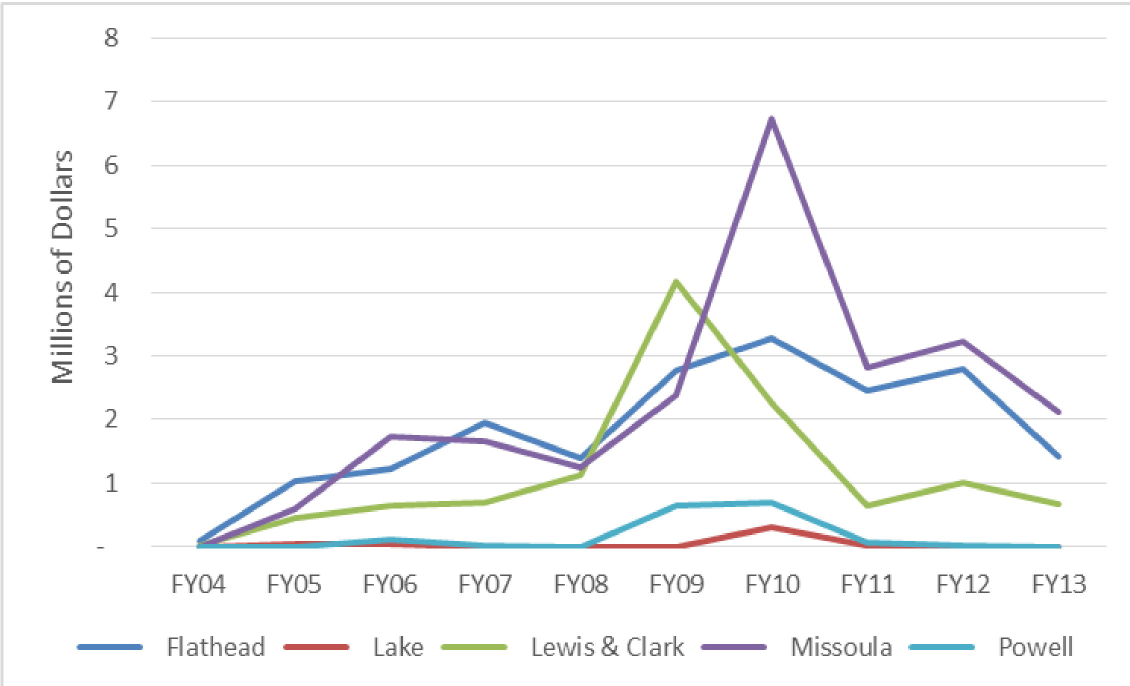

Figure 4—US Forest Service contract expenditures by county and year, 2004-2013.

Contractors engaged in restoration projects in the five county study area were distributed across 28 states and two countries (Figure 4). Seventy-four percent of the dollars obligated by the Forest Service in the study area between 2004 and 2013 were awarded to businesses in Montana. Oregon and Idaho received the second and third largest shares of the dollars obligated with 8.5% and 6.7%, respectively. Figure 4 displays the distribution of contract dollars by state obligated by the Forest Service during the study period based on the business address of contract recipients.

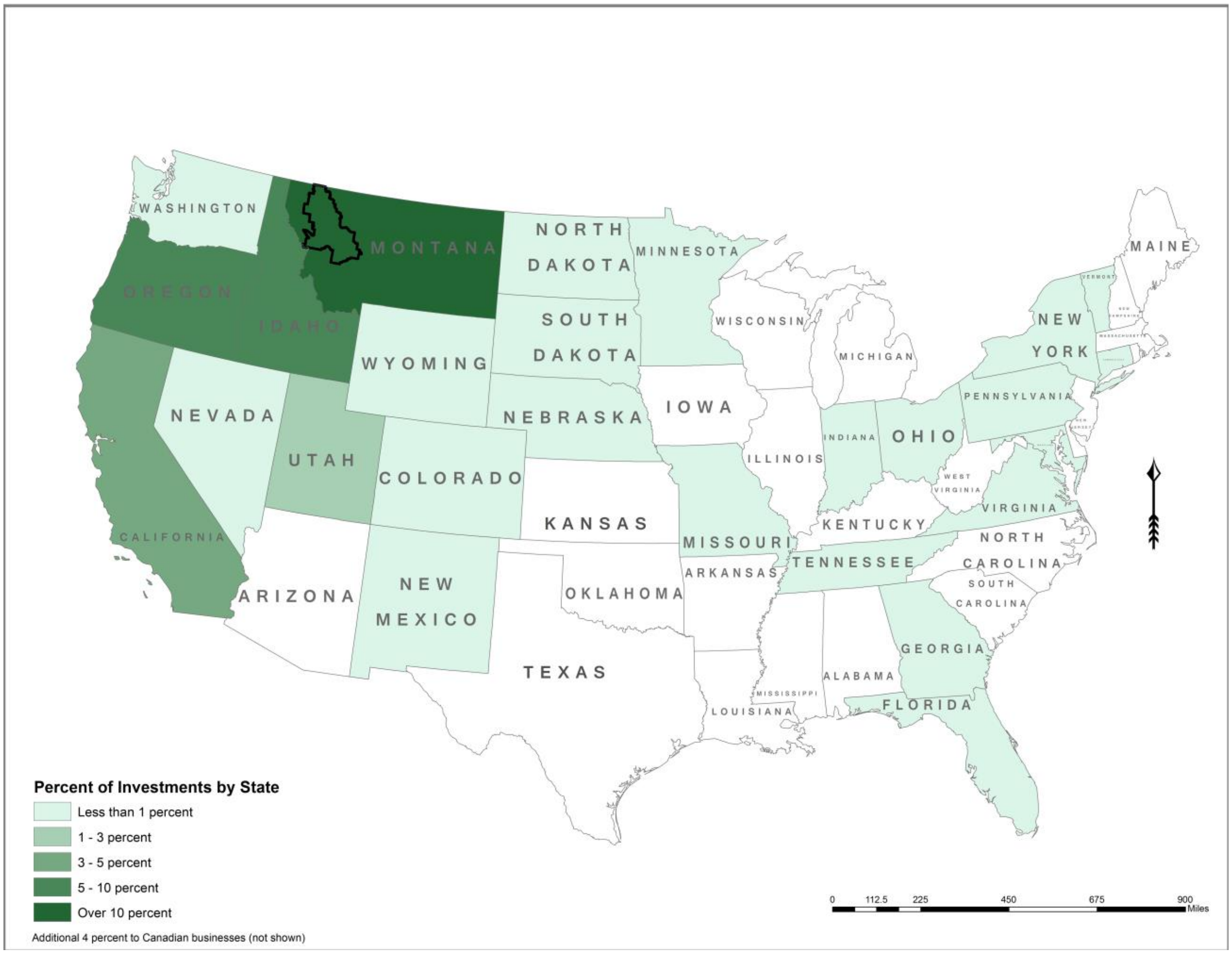

Figure 5—Distribution of contract dollars by state, 2004-2013.

Over 40 percent of the dollars invested in restoration in the study area were spent to accomplish work in Missoula County. Work in Flathead County contributed another 34 percent. The two counties combined accounted for over 80 percent of the procurement contract dollars awarded. As much as 99 percent and as little as one percent of investments in a single county were awarded to businesses located in the same county (Table 4, Figure 5). However, these extreme values are misleading since they represent the two counties with very few contracts occurring within their borders during the study period (Lake and Powell). The average proportion of contracts let to contractors in the same county as the project across all counties and all years was 39 percent. Similarly, the proportion of contracts varied from 7 percent to 75 percent, with Powell and Lake Counties at the extremes, and the average across all counties in the middle at 43 percent of contracts.

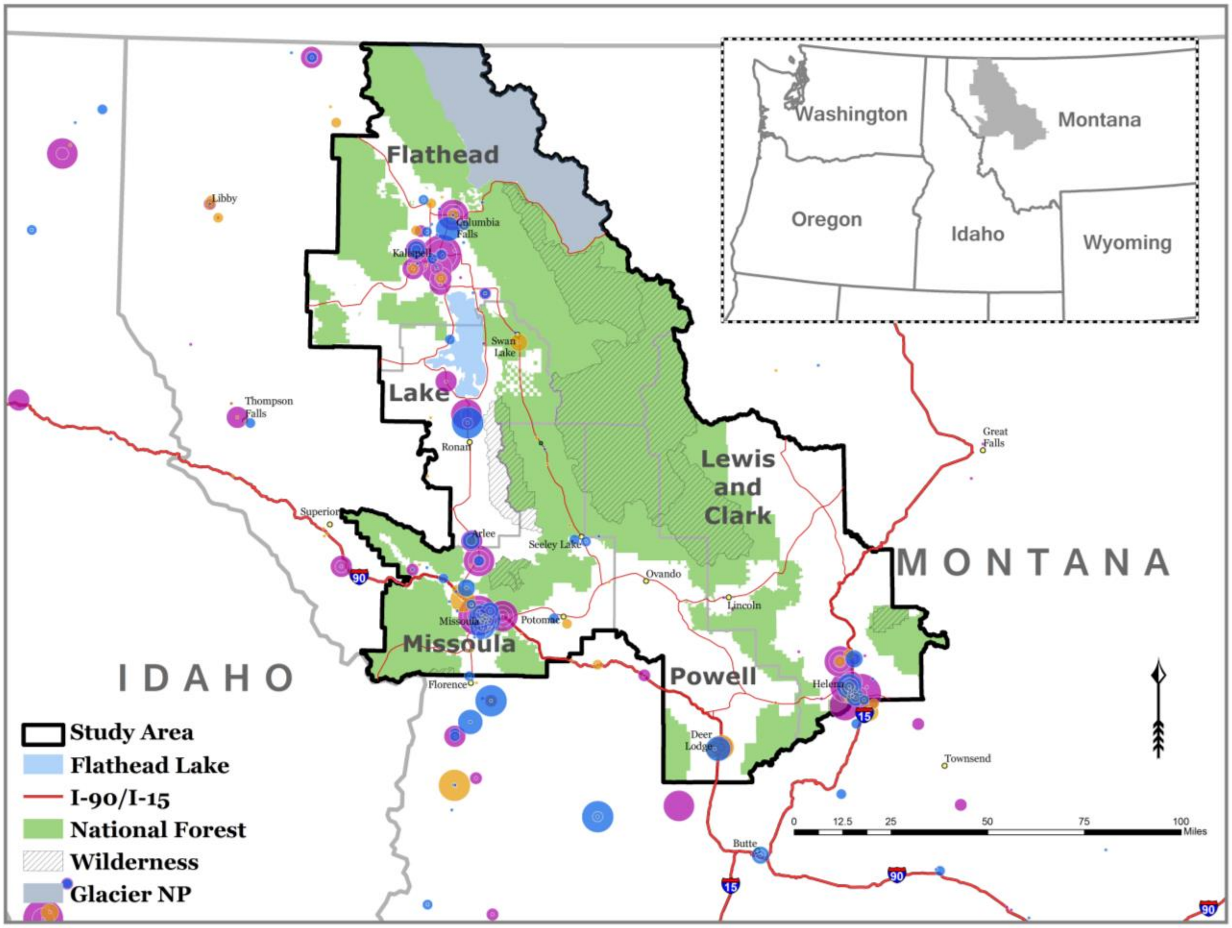

Figure 6—Location of businesses awarded restoration and maintenance contracts in the study area (dataset includes businesses located outside of map area, which are not shown)

Another way to define local draws upon research on quality job creation in the ecosystem management industry, which has used the ability to return home at night as a key indicator of job quality (Moseley, Davis, and Medley-Daniel 2012). Such studies have found that contractors are willing to travel up to 3 hours each way and still return home at night (Moseley 2006; Moseley and Shankle 2001). A conservative estimate of 2 hours was chosen in part as an attempt to overcome the limitations of distance calculations. Using this definition, I found that 63 percent of the dollars invested by the Forest Service in the study area were awarded to contractors within 2 hours travel time of the project site. The median distance between contractor and project site was only 80 miles and 84 minutes, for road miles and travel time, respectively, and indicate that there are just a few contracts going to very distant contractors, with the majority of contracts well within a distance allowing contractors to return home every night. Table 4 also demonstrates the proportion of contracts and contract dollars awarded to businesses within 2 hours travel time of the project site for work occurring in each of the five counties. While the proportion of contracts going to businesses within a 2-hour radius showed very little variation among counties, the proportion of contract dollars captured by businesses within this radius varied from a low of 17 percent to a high of only 70 percent.

Table 4—Number, value and percentage of USFS contracts by county awarded to: 1) businesses located in same county as project; and 2) businesses within 2 hours of project site, 2004-2013.

County	Total Contracts	% of contracts within same county	% of contracts within 2 hours	Total Value of Contracts	% of value in same county	% of value within 2 hours
Flathead	481	60.1	67.2	$18,390,321	41.2	47.4
Lake	4	75	75	$371,980	99.1	16.9
Lewis and Clark	252	37.7	62.7	$11,660,754	27.8	57.2
Missoula	743	36.1	60.4	$22,493,972	23.6	51.4
Powell	15	6.7	53.3	$1,499,228	1.1	17.4
Total	**1495**	**43.8**	**62.8**	**$54,416,254**	**30.4**	**50.1**

Equipment-intensive work accounted for 44 percent of all spending in the study area, but only 30 percent of all contracts awarded. Technical work accounted for 47 percent of all contracts awarded, but only 37 percent of total contract value (Table 5). Fifty-seven percent of businesses awarded equipment-intensive contracts were located in the same county as the project and 70 percent were located within 2 hours of the project. Only 15 percent of the value of labor contracts were awarded to businesses in the same county as the project, and only 34 percent of the value of labor contracts was captured by businesses within 2 hours travel time of the project.

Table 5—Number, value, and percentage of USFS contracts by work type awarded to: 1) businesses located in same county as project; and 2) businesses within 2 hours of project site, 2004-2013.

Work Type	Total Contracts	% of contracts within same county	% of contracts within 2 hours	Total Value of Contracts	% of value in same county	% of value within 2 hours
Equipment	443	57.3	70.2	$23,781,222	39.3	52
Labor	349	43	58.7	$10,502,575	14.7	33.9
Technical	703	35.8	59.7	$20,132,458	28.0	55.7
Total	**1495**	**43.8**	**62.8**	**$54,416,254**	**30.4**	**50.1**

The proportion of contracts captured by businesses within the same county as the project and within 2 hours of the project varied considerably. Only 3.4 and 3.5 percent of contracts set aside for 8(a) businesses went to businesses within the same county or within 2 hours travel time, respectively (Table 6). However, 45 percent of contracts not set aside went to contractors in the same county and 73 percent of contracts set aside for small businesses went to contractors within 2 hours travel time of the project. Similarly, only 10 percent of the 8(a) contract value was captured by businesses within the same county or within 2 hours of the project site, but 37 percent of contract value set aside for small businesses stayed within the county and 58 percent went to businesses within a 2-hour radius.

Table 6—Number, value, and percentage of USFS contracts by set-aside type awarded to: 1) businesses located in same county as project; and 2) businesses within 2 hours of project site, 2004-2013.

Set Aside	Total Contracts	% of contracts within same county	% of contracts within 2 hours	Total Value of Contracts	% of value in same county	% of value within 2 hours
8(a)	58	3.5	3.4	$4,139,902	10.3	10.3
HUB Zone	61	27.9	42.6	$4,124,394	33.4	45.1
Small Business	549	47.9	72.9	$13,923,900	37.1	58.2
None	827	45.2	62.0	$32,228,058	29.6	52.4
Total	**1495**	**43.8**	**62.8**	**$54,416,254**	**30.4**	**50.1**

Between 28 and 50 percent of contracts were awarded to contractors from the same county when analyzed by size class (Table 7). A larger share of the contracts valued less than $25,000 went to businesses in the same county or within 2 hours travel time, when compared to contracts valued over $25,000. This trend was also true for contract value and helps to explain why the proportion of contract value going to local businesses is consistently less than the proportion of contracts going to local businesses when contracts are analyzed by county and work type (Tables 4 and 5),

Table 7—Number, value, and percentage of USFS contracts by size class awarded to: 1) businesses located in same county as project; and 2) businesses within 2 hours of project site, 2004-2013.

Size Class	Total Contracts	% of contracts within same county	% of contracts within 2 hours	Total Value of Contracts	% of value in same county	% of value within 2 hours
<$5,000	392	49.5	68.6	$928,141	48.1	67.7
$5,000 - $24,999	615	50.1	69.4	$7,709,757	50.4	69.5
$25,000 - $99,999	355	33.0	52.1	$16,808,706	30.9	48.8
>$100,000	133	27.8	45.1	$28,969,651	24.1	45.2
Total	**1495**	**43.8**	**62.8**	**$54,416,254**	**30.4**	**50.1**

Table 8 presents the mean distance between contractor and project site as well as the mean distance for each category of contract. It is evident that there is considerable variation in the average distance between prime contractor and project site, especially within variable categories. The mean distance for all contracts was 221 road miles, 171 air miles and 241 minutes. However, median distance values were far less (70 and 57 miles and 84 minutes, respectively), reflecting the highly skewed nature of the variable, which had a large number of small values and few large values resulting in a one-tailed non-normal distribution. For this reason, the dependent variables measuring distance in road miles, air miles and travel time were transformed using a base10 log transformation to meet statistical assumptions that the values are normally distributed.

Table 8—Summary statistics for all variables based on road miles, air miles and travel time

		Distance-Road Miles		Distance - Air Miles		Distance - Travel Time (minutes)	
Variable Name	*N*	Mean	Median	Mean	Median	Mean	Median
Dependent Variable							
Distance	1,466	220.5	70.97	171.16	56.85	240.65	84.0
Independent Variables							
Work Type							
Equipment-intensive	436	100.23	33.99	78.70	27.35	109.43	43.0
Labor-intensive	336	279.71	70.97	217.18	56.93	302.16	80.0
Technical	694	267.4	104.49	206.61	74.31	292.85	109.0
Set-Aside							
Small Business	549	150.13	51.62	15.90	1.43	156.06	63.0
HUB Zone	36	291.0	64.9	59.72	58.59	447.2	222.0
8(a)	58	679.48	742.5	32.52	90.1	695.52	773.0
None	823	232.02	89.91	15.64	15.03	249.7	91.0
Size Class							
<$5,000	389	197.27	59.28	153.02	35.01	198.0	63.0
$5,000 - $24,999	608	199.02	47.5	155.59	38.06	228.06	56.0
$25,000 - $99,999	341	273.11	102.54	210.83	85.71	302.9	119.0
≥$100,000	128	253.0	110.4	191.34	86.09	259.0	127.0
PoPCounty							
Flathead	473	134.72	11.67	105.07	11.16	154.33	27.0
Lewis and Clark	258	227.1	57.0	172.36	40.08	236.94	66.0
Missoula	732	275.07	104.49	214.8	78.14	299.03	109.0
Powell	13	143.46	85.33	108.8	74.79	178.67	103.0

Relationship between distance and work type, set-aside and size class—To test whether differences in mean distances displayed in tables 4-7 were significant, univariate ANOVA was conducted on the restoration sample dataset. Results indicated that the differences between variable categories were large enough to reject the null claim of no difference in the population. Significant main effects were found for work type ($F(2, 1488)=45.019$, $p=.000$)(Table 9), type of set-aside ($F(3, 1487)=52.130$, $p=.000$)(Table 10), project location (county) ($F(3,1487)=39.309$, $p=.000$)(Table 11) and size of contract ($F(3,1487)=15.484$, $p=.000$)(Table 12) supporting the evidence in Table 2 that the type of work being conducted, the use of SBA set aside programs, the county in which the work takes place and the size of the contract all have significant impacts on the distance travelled by prime contractors.

Table 9—Average distance (Log_{10} road miles) between contractor and project site by work type

	Work Type			ANOVA	
	Equipment-intensive	Labor-intensive	Technical	*F* ratio	Alpha
Mean	1.59	1.95	1.94	45.02	<.001
Standard deviation	0.57	0.76	0.67		
N	442	348	701		

Table 10—Average distance (Log_{10} road miles) between contractor and project site by set-aside type

	Set-Aside				ANOVA	
	Small Business	Economically-disadvantaged Businesses	Minority-owned Businesses	No Set-Aside	*F* ratio	Alpha
Mean	1.74	2.17	2.80	1.81	52.13	<.001
Standard deviation	0.60	0.83	0.23	0.69		
N	549	61	58	823		

Table 11—Average (Log_{10} road miles) distance between contractor and project site by size class

	Size Class				ANOVA	
	<$5,000	$5,000 - $24,999	$25,000 - $99,999	>$100,000	*F* ratio	Alpha
Mean	1.77	1.75	2.01	2.01	15.484	<.001
Standard deviation	0.67	0.68	0.69	0.64		
N	391	615	353	132		

Table 12—Average (Log_{10} road miles) distance between contractor and project site by location of project

	County				ANOVA	
	Flathead	Lewis and Clark	Missoula	Powell	*F* ratio	Alpha
Mean	1.57	2.02	1.94	2.08	39.309	<.001
Standard deviation	0.70	0.50	0.69	0.36		
N	481	252	743	15		

Levene's test for homogeneity of variance was conducted and indicated that equal variance could not be assumed for all variables except size of contract. Therefore, Dunnett's C post hoc test was conducted for the three variables displaying unequal variance and the Bonferonni post hoc tests was conducted for the comparison of means among contract size classes. All post hoc tests were used to determine which variable categories contributed the most to differences in group means.

The evidence suggests that among the work type categories, equipment-intensive contracts were found to have the most significant effect in *decreasing* the distance between contractor and project site, while Labor and Technical contracts were not found to be significantly different from each other (Table 13).

Table 13—Mean differences in distance (Log_{10} road miles) between contractor and project site

	Equipment-intensive (1.59)	Labor-intensive (1.95)	Technical (1.94)
Equipment-intensive (1.59)		0.36*	0.36*
Labor-intensive (1.95)			0.01
Technical (1.94)			

*The mean difference is significant at the .05 level.

When set-aside categories were analyzed, no significant difference was found between contracts awarded under full and open competition (no set aside) and those set aside for small businesses (Table 14). However, contracts set aside for economically-disadvantaged businesses through the HUBZone program were found to significantly *increase* the distance between contractor and project site when compared to contracts set aside for small businesses and those with full and open competition. In addition, contracts set aside for minority-owned businesses were found to significantly increase the distance between contractor and project site when compared to all other contracts.

Table 14—Mean differences in distance (Log_{10} road miles) between contractor and project site by set-aside type

	Small Business (1.74)	Economically-disadvantaged Businesses (2.17)	Minority-owned Businesses (2.80)	No Set-Aside (1.81)
Small Business (1.74)		-.43*	-1.06*	-.07
Economically-disadvantaged Business (2.17)			-0.63*	.36*
Minority-owned Business (2.80)				.99*
No Set-Aside (1.81)				

*The mean difference is significant at the .05 level.

Comparison of distance by contract size class revealed a clear break between contracts valued at less than $25,000 and contracts valued over $25,000 (Table 15). Contracts in the two largest size classes were found to significantly increase the distance between contractor and project site when compared with the two smallest size classes.

Table 15—Mean difference in distance (Log_{10} road miles) between contractor and project site by contract size

	<$5,000 (1.77)	$5,000 - $24,999 (1.75)	$25,000 - $99,999 (2.01)	>$100,000 (2.01)
<$5,000 (1.77)		.02	-0.24*	-0.24*
$5,000 - $24,999 (1.75)			-0.26*	-0.26*
$25,000 - $99,999 (2.01)				0.00
>$100,000 (2.01)				

*The mean difference is significant at the .05 level.

When location of project was analyzed, those projects occurring in Flathead county were found to significantly *decrease* the distance between contractor and project site when compared with all other counties in the study area. Projects occurring in all other counties were not found to be significantly different from one another.

Table 16—Mean differences in distance (Log_{10} road miles) between contractor and project site by location

	Flathead (1.57)	Lewis and Clark (2.02)	Missoula (1.94)	Powell (2.08)
Flathead (1.57)		-0.45*	-0.37*	-0.51*
Lewis and Clark (2.02)			0.07	-0.07
Missoula (1.94)				-0.14
Powell (2.08)				

*The mean difference is significant at the .05 level.

<u>Predictors of distance between contractor and project</u>—Given that the ANOVA results indicated significant differences among group means for all variables, I was then interested in testing my third research question: to what extent can variables related to work type, type of set-aside, size class and the location of projects predict the distance between contractor and project site? To answer this question, stepwise forward multiple regression was conducted. Dummy variables representing each of the variable categories were entered into the model, resulting in a total of 15 potential variables. Regression results for road miles as the dependent variable indicated an overall model of eight predictors (8(a), Flathead, Technical, $25k to $100k, Over $100k, Equipment, HUB Zone and Missoula) that significantly predicted distance between contractor and national forest, $R^2 = .23$, $R^2_{adj} = .22$, $F(8, 1457) = 53.030$, $p<.001$ (data not shown). This model accounted for 23% of variance in distance between contractor headquarters and project site. However, collinearity diagnostics revealed high correlation between Missoula and Flathead; as a result, Missoula was removed from the model.

Results from regression indicating seven variables as predictors on distance between contractor and project site appear in Table 13. The table displays the correlations between variables, the unstandardized regression coefficients (*B*), the standardized regression coefficients (β), the unique variation (sr^2), the R^2 and adjusted R^2 for the modified model after Missoula was removed. The seven independent variables (IVs) in combination contributed 0.17 individually (see sr^2 for unique contribution of each variable) and another 0.05 in shared variability. Altogether, 22.2% (21.9% adjusted) of the variability in distance between prime contractor and project site was predicted by knowing scores on these seven IVs.

Table 17—Set-aside, work type, county and size class as predictors of distance (Log_{10} road miles) between contractor and project site

Variables	Road Miles	8(a)	Flathead	Technical	$25K to $100K	Over $100K	Equipment	HUB Zone	*B*	*ß*	sr^2
	(DV)								*percent change*		(unique)
8(a)	0.307								186.9**	35.3**	0.08
Flathead	-0.276	0.017							-30.6**	-22.2**	0.06
Technical	0.147	-0.182	-0.228						13.8*	10.0*	<.01
$25K to $100K	0.131	0.046	-0.014	0.041					21.2**	12.6**	0.01
Over $100K	0.083	0.136	0.04	-0.124	-0.17				26.0**	10.1**	<.01
Equipment	-0.234	-0.109	0.237	-0.617	-0.04	0.158			-13.7*	-9.4*	<.01
HUB Zone	-0.008	-0.032	0.23	-0.009	0.048	0.06	0.09		28.9*	6.0*	<.01
Means	0.182	0.04	0.32	0.47	0.23	0.09	0.3	0.02			
Standard Deviations	0.68	0.20	0.47	0.50	0.42	0.28	0.46	0.16			
	R^2 = .22										
	R^2_{adj} = .22										
	R = .47**										

*p <.05
**p <.001

Based on the modified slope estimates (β), the use of 8(a) set-asides increased the distance travelled by 35% while projects in Flathead County resulted in a decrease in distance travelled by 22%. These two variables accounted for the majority of unique variation, with 8 and 6 percent, respectively. Contracts with a value between $25,000 and $99,999 increased distance travelled by nearly 13% and contracts over $100,000 and for technical work both increased distance by 10%, while contributing 1 percent or less in unique variation.

Air Miles and Travel Time—Identical regression methods were used to examine the effect the 15 IVs on different measures of the dependent variable—in air miles and travel time. The same eight variables were identified as significant predictors of distance, with similar problems of collinearity between Missoula and Flathead, resulting in seven variables in each of the final models. Effect sizes and slope estimates were slightly reduced for each of these two models. Distance in air miles was able to account for 21.4% of the variability in distance (F(8, 1457) = 56.67, *p*<.001)(Table 14) and travel time was able to account for 18.1% of the variability in distance (F(8, 1457) = 46.16, *p*<.001)(Table 15).

Table 18— Set-aside, work type, county and size class as predictors of distance (Log_{10} air miles) between contractor and project site

Variables	Air Miles	8(a)	Flathead	Technical	$25K to $100K	Over $100K	Equipment	HUB Zone	*B*	*ß*	sr^2	sr^2
	(DV)								*percent change*		(unique)	(unique)
8(a)	0.289								164.8**	33.0**	0.07	0.07
Flathead	-0.281	0.017							-30.4**	-22.5**	0.06	0.06
Technical	0.154	-0.192	-0.228						13.8*	10.2*	<.01	<.01
$25K to $100K	0.128	0.046	-0.014	0.041					20.1**	12.3**	0.01	0.01
Over $100K	0.078	0.136	0.04	-0.124	-0.17				24.8**	9.9**	<.01	<.01
Equipment	-0.236	-0.109	0.237	-0.617	-0.04	0.158			-13.5*	-9.5*	<.01	<.01
HUB Zone	-0.011	-0.032	0.23	-0.009	0.048	0.06	0.09		26.7*	5.7*	<.01	<.01
Means	1.71	0.04	0.32	0.47	0.23	0.09	0.3	0.02				
Standard Deviations	0.66	0.20	0.47	0.50	0.42	0.28	0.46	0.16				
	R^2 = .21											
	R^2_{adj} = .21											
	R = .46**											

**p* <.05
***p* <.001

Table 19— Set-aside, work type, county and size class as predictors of distance (Log10 travel time) between contractor and project site

Variables	Travel Time	8(a)	Flathead	Technical	$25K to $100K	Over $100K	Equipment	HUB Zone	*B*	*ß*	*sr*^{2}	*sr*^{2}
	(DV)								*percent change*		(unique)	(unique)
8(a)	0.303								153.2**	35.0**	0.08	0.07
Flathead	-0.206	0.017							-21.2**	-16.9**	0.03	0.06
Technical	0.126	-0.192	-0.228						12.1*	9.9*	<.01	0.005
$25K to $100K	0.128	0.046	-0.014	0.041					18.1**	12..3**	0.01	0.01
Over $100K	0.079	0.136	0.04	-0.124	-0.17				20.6**	9.1**	<.01	0.008
Equipment	-0.207	-0.109	0.237	-0.617	-0.04	-0.158			-11.0*	-8.4*	<.01	0.005
HUB Zone	0.011	-0.032	0.23	-0.009	0.048	0.06	0.09		26.7*	6.3*	<.01	0.003
Means	1.91	0.04	0.32	0.47	0.23	0.09	0.3	0.02				
Standard Deviations	0.60	0.20	0.47	0.50	0.42	0.28	0.46	0.16				
	R^2 = .18											
	R^2_{adj} = .18											
	R = .43**											

*p <.05
**p <.001

Prime Contractors and Subcontractors—The survey of prime contractors regarding their subcontracting activity resulted in 124 completed surveys out of 346 potential respondents. Because I was interested in testing the hypothesis that subcontractors will be more local—that is, located closer to the project site—than prime contractors, I first needed to establish that the prime contractors who responded were, in fact, representative of the population of prime contractors surveyed. Respondents were found to be equally distributed across work type, size class and county categories which indicated that the respondents were likely representative of the population of contractors engaged in restoration in the study area. In addition, to make sure that local prime contractors were not more likely to respond than distant prime contractors, an independent sample t-test was run comparing the mean distance between respondents and projects site and non-respondents and project site. The evidence failed to reject the null hypothesis ($F(1, 1493) = .042$, $p = .838$) further supporting the conclusion that there was not a significant difference between respondents and non-respondents. Thus, I concluded that the respondents to the survey were representative of the population of prime contractors.

A total of 22 prime contractors reported using subcontractors to accomplish restoration activities in the study area between fiscal years 2005 and 2013, representing 19 percent of all survey respondents. Of the prime contractors utilizing subcontractors, 10 (45 percent) were located in the study area, 6 (27 percent) were located in other parts of the state, and 6 (27 percent) were located outside of Montana.

In total, 62 subcontractors were utilized to conduct restoration and maintenance activities in the study area. These 62 subcontractors utilized by prime contractors were distributed over 4 states, with the majority (58 subcontractors, or 94 percent) residing in Montana and 28 (45 percent) residing in the study area. In all but once case, out-of-state prime contractors utilized subcontractors located in Montana. The average distance between subcontractors and project site was 108 road miles, compared to the average for prime contractors of 220 road miles.

To test the last research hypothesis that subcontractors would be more local, on the average, than prime contractors, an independent sample t-test was run to test the mean distance (after log transformation) between contractor and project site for prime contractors versus sub-contractors. The difference between the group means of 2.08 (prime contractors) and 1.87 (subcontractors) was tested and found to be significant (t = 2.742, df = 181.7, $p < .05$), indicating that subcontractors do tend to be located significantly closer to project sites than prime contractors.

DISCUSSION

Local business utilization—In northwestern Montana, local contractors are being utilized at varying levels to accomplish management and restoration on public lands via procurement contracts. Depending upon the way local is defined, different conclusions can be drawn. When local is defined as prime contractors whose businesses are located in the same county in which the project takes place, a modest 39 percent of the total contract value is captured locally. When local is defined using a 2-hour travel time radius, 50 percent of contract value is captured locally. Over 60 percent of contracts let in the three counties with the most activity (Flathead, Lewis and Clark and Missoula) were awarded to contractors within 2 hours travel time. Consistent with previous studies, capture rates are further moderated by such factors as location of work, type of work, set aside, and size of contract. Ultimately, it is the interplay of these variables and the extant contractor capacity in the region which determines the extent to which restoration and management activities benefit local communities. While these findings are not alarming and fall within the range of previous studies, they do point to areas where significant additional work is needed, both in terms of local business capacity and federal policy, as outlined below.

Predictors of distance—Consistent with prior studies, there were significant differences in the distance travelled by prime contractors among work type and set-aside categories. Factors including projects that occurred in Flathead County, equipment-intensive contracts, and contracts valued at less than $25,000, all contributed to decreases in the distance travelled by contractors. In contrast, 8(a) set-asides, HUB zone set-asides, labor-intensive contracts, contracts in Missoula County and contracts valued at over $25,000 contributed to increases in the distance travelled.

Contracts set aside for minority-owned businesses through the SBA's 8(a) program had the most significant effect on the dependent variable by increasing distance between contractor and project site by 34 percent. The results also displayed a moderate correlation between 8(a) and labor-intensive work. Thus, minority-owned businesses are travelling the farthest to accomplish predominantly labor-intensive work activities, such as tree planting and tree thinning. Both of these trends confirm a pattern documented by Moseley (2006) and Sarathy (2008) regarding the increased use of predominantly Hispanic migrant crews to accomplish labor-intensive work throughout the Pacific and Inland Northwest.

In contrast to labor-intensive work, equipment-intensive work effectively *decreased* the distance between prime contractor and project site. Not surprisingly, there is a logistical component to this trend in that contractors are not likely to move heavy equipment long distances. Equipment-intensive work represented 44% of the total expenditures in the study area and 443 of 1,495 contracts; 215 of those contracts were for work in Flathead County. The higher than average occurrence of equipment-intensive work in Flathead County may have contributed to the lower mean distance between prime contractors and project sites. This illustrates the way that multiple variables interact to influence the distance travelled by contractors, and in turn, communities' ability to capture the benefits of restoration.

Subcontracting—Results from the survey on subcontracting were significant in a number of ways. First, the findings support my hypothesis that subcontractors tend to be located closer to project sites than prime contractors. While slightly less than half of prime contractors utilizing subcontractors and subcontractors were located in the study area, 27 percent of prime contractors utilizing subcontractors were located out of state, while only 6 percent of subcontractors were located out of state. This is significant for studies of federal contracting because it confounds the assumption that the business address for prime contractors is an acceptable proxy for the location of benefit and limits the conclusions we can draw about the proportion of benefits that are captured by communities in which the prime contractor is located. More information is needed, such as the value of subcontracts, to characterize the distribution of federal investments between prime contractors and subcontractors and understand the extent to which this phenomenon truncates location of benefit assumptions.

The data on subcontracting also provide a partial test of the argument that federal contracting is not benefiting rural, forest-dependent communities, along with the need for better data on subcontracts. Community advocates have argued that forest-dependent communities are not able to capture the benefits of restoration because the contracts themselves are inaccessible to the kinds of businesses most prevalent in those communities. While this may be true, the potential impacts to forest-dependent communities are obscured by the lack of data on subcontracting. This study contributes two important insights towards answering this question. First, it establishes that subcontractors tend to be located closer to projects than prime contractors. Second, by comparing the list of prime contractors and subcontractors, it is revealed there is very little overlap in the two groups of businesses; only five contractors were found to exist in both lists. This finding supports the assertion that some businesses do face unique challenges to accessing federal contracting opportunities as prime contractors, and therefore choose to work as subcontractors. Further research is needed to test whether these subcontractors are also more likely to be located in rural, forest-dependent communities closest to the resource, and whether this phenomenon holds true in other regions.

Opportunities for growth—The results of the ANOVA and the regression tests identify a number of variables that increase distance between prime contractor and project site, and indicate areas where local businesses are not as successful capturing potential opportunities. The most significant category, 8(a) contracts, indicate either a lack of minority-owned forestry businesses in the region, or that existing minority-owned businesses are not interested, or not competitive when attempting to access these opportunities. Given that the study area overlaps with the Flathead Indian Reservation, an area with significant forest resources and the only four-year tribal college with a forestry program, there could be potential for using a wealth creation framework to increase community capital and wealth in tribal communities and potentially engage youth at the same time.

Another gap appears to exist within the HUB zone program—in which contracts set aside for contractors located in areas of high unemployment and/or poverty had the effect of decreasing the utilization of local contractors. Again, given that Flathead County, Lake County and the portions of Missoula County that fall within the Flathead Indian Reservation are all designated HUB zones, there appears to be a need to increase outreach and education through the program to close the gap between HUB zone opportunities and contractors located in nearby HUB zones (Figure 5). In addition, a number of surrounding counties are also designated HUB zones, portions of which would fall within a 2-hour radius of projects in the study area.

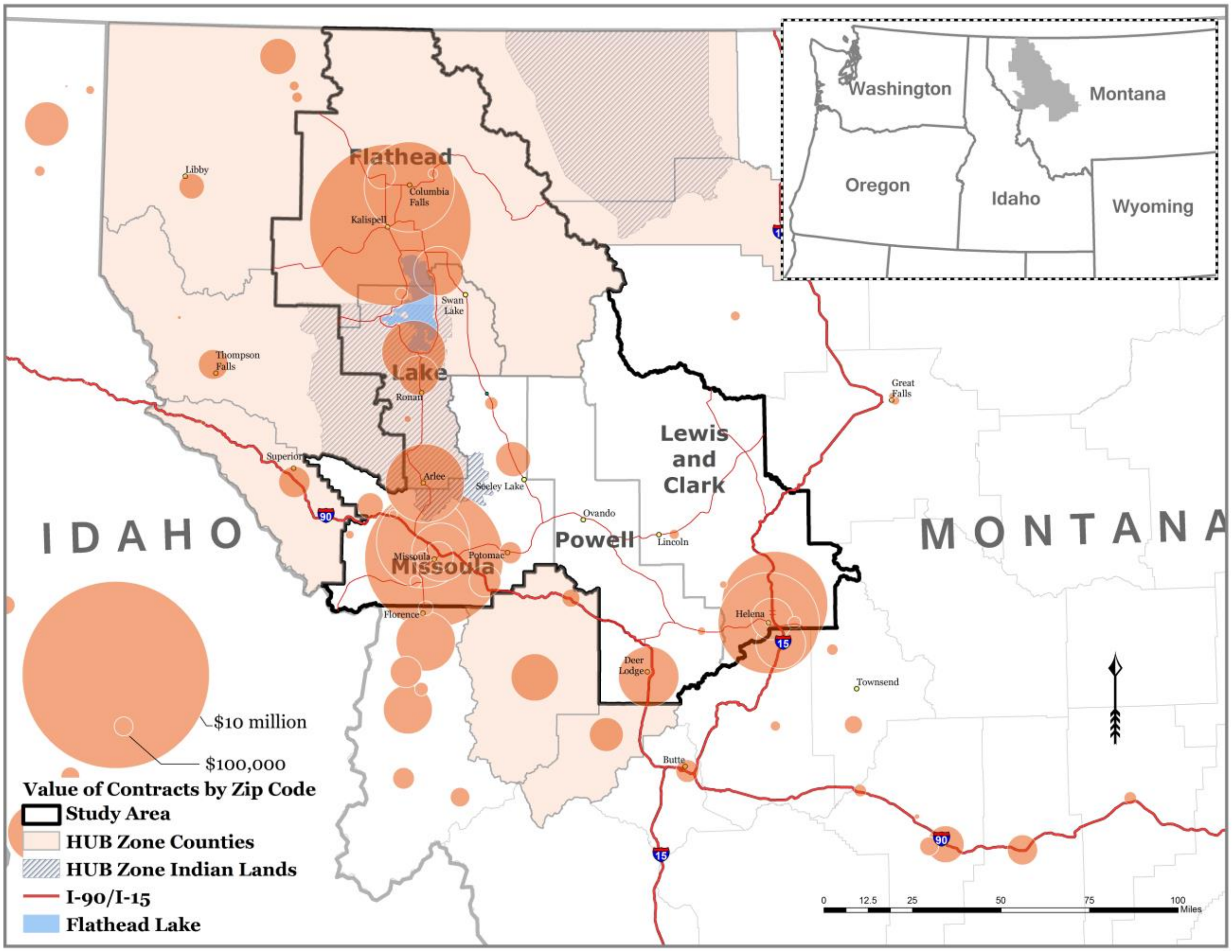

Figure 7—Value of contracts by zip code and counties and Indian lands in western Montana designated as HUB Zones by the Small Business Administration.

While not addressed directly by this study, other researchers have suggested that combining multiple tasks into a single contract (such as a stewardship contract) can help reduce the seasonality of forestry work by combining activities with different seasonal windows together so that they can be strung together to create more year-round work opportunities and contribute to another aspect of high-quality jobs. This strategy may also provide a method to address the difficulty local businesses face competing for labor-intensive work. By combining labor-intensive work with other work activities, local businesses may be better able to compete with distant contractors who are too specialized to take on such a diverse set of projects.

Methodological Implications—One of the key hypotheses in this study was to test whether the use of road miles or travel time as opposed to air miles would have a significant effect on the results of the study. Previous studies analyzing federal contracting trends have measured distance in air miles (aka "as the crow flies"). Given the mountainous geography and abundance of Wilderness and roadless areas, I hypothesized that road miles and travel time would be a far superior method of measuring distance. To the contrary, the results of this study suggest that the unit of measure used to define distance between contractor and project site actually had very little effect on the results of this analysis. Implications of this finding are significant for future studies in that the three measures (road miles, air miles, and travel time) are virtually interchangeable and any one of them can be chosen based on the data resolution, skill, and tools available to the researcher and the appropriateness to the purpose of the study or audience. However, it is not known to what extent this conclusion is impacted by the inability to identify actual project sites.

That said, it also must be stated that each of the three measures of distance displayed severe departures from assumptions of normality. The problems of non-normality in each of the dependent variables was consistent with previous studies (Moseley and Reyes 2008) and to be expected given the nature of spatial variables which tend to exhibit some degree of autocorrelation (Fortin and Dale 2009). However, to meet the assumptions of the regression technique used, the variables needed to be transformed. The results, while more accurate, create difficulties for interpretation since the output of the statistical analyses are no longer in the original distance units. A potentially superior method would be to utilize a model that accounts for problems of non-normally distributed data. Studies using count data often face similar constraints, due to overdispersion, and could provide better techniques for future studies (Coxe, West, and Aiken 2009). Spatial regression, Poisson, and negative binomial regression are a few of the models that could be explored.

Dataset Limitations and Implications for Future Research—The lack of specific project location data in the Federal Procurement Data System represents a significant limitation to the study of community benefit resulting from federal contracting of restoration and management on public lands. While this and other studies have developed ways to work around this omission, the use of a single point for each county truncates the precision dramatically, especially in less populated areas of the West where counties tend to be large and public roads widely spaced.

The results of this study determined that a combination of seven variables including type of work, type of set aside, place of performance and contract size can account for 24% of the variation in the distance between contractor and project site. Future research should look for other potential variables that could account for a greater proportion of the variation, but these efforts will be limited by the information collected by the Forest Service and its accessibility. Alternative methods might include surveys of contractors engaged in federal contracting of restoration and maintenance in the region and asking them about their perceived barriers to accessing federal contracts closer to where they are located.

Another limitation of this method for measuring the benefits of restoration and maintenance on public lands is that it provides a picture of *what* is going on, but is not able to provide insight into *why* the trends are what they are. Similar to the previous question, it is impossible to distinguish between untapped capacity and non-existent capacity as explanations for contractors not being awarded a large share of the contracts. Future research could involve a qualitative assessment of the existing capacity of the local workforce and contracting market as a means of distinguishing between questions of untapped capacity and non-existent capacity.

As mentioned earlier on in the methods section, federal procurement contracts are only one mechanism used to accomplish restoration and maintenance activities on public lands. Therefore, a portion of the activity and investment made by the Forest Service is not reflected in the dataset used for this study. Timber sale contracts and agreements are the two other predominant methods used to get work done, but data on these contracts are less accessible. Given that legislative directives exist within multiple existing authorities and programs to create local benefit, it should be the responsibility of the agency to make the data necessary for answering this question more accessible. Such data should include a "common core" of variables to include at a minimum: mechanism used (service contract, timber sale contract, stewardship contract, agreement), description of work being conducted, name of vendor/partner, address of vendor/partner, place of performance (as specific as possible), value of contract/agreement, fiscal year, type of set-aside employed (if any), description of vendor/partner, size of vendor/partner, and name and value of subcontractors used (if any).

Finally, the subcontracting trends revealed by this study suggest that it would be worthwhile to examine assumptions about how much or little forest-dependent communities are benefiting from federal contracting. That is, it seems appropriate to question whether the current division of roles and risk between those companies that act as prime contractors and those that act as subcontractors needs fixing or not. As discussed before, conversations with the forestry and restoration businesses in the region who are *not* engaging in federal contracting as prime contractors would be necessary to more fully understand the barriers that exist for these businesses as well as determine whether a type of "equilibrium" exists in the contracting market.

CONCLUSION

This study helps to answer the important and timely question of whether forest-dependent communities located adjacent to public lands are capturing the economic benefits of land management activities conducted through procurement contracts with the US Forest Service. The findings focus a light on some of the opportunities and barriers communities and businesses in northwestern Montana face when using a community-based, capitals approach to natural resource economic development. First, for researchers and community advocates to properly monitor and measure the impact of restoration and maintenance on local communities, more thought needs to be put into the quality and availability of data. With just a few changes—namely the inclusion of higher resolution project location data, collection of subcontractor information, and value of subcontracts—a much more accurate picture could be created to tell the story of how communities are benefiting from restoration and where opportunities exist to enhance those benefits. Second, the creation of a common core of information between service contracts, timber sale contracts, stewardship contracts and agreements would allow for a more complete analysis of the full breadth of activity occurring on National Forests as well as comparisons among contract mechanisms. Third, the findings point to important policy tensions between SBA program goals and local benefit goals that will need to be addressed at a national level to determine how the two goals can best work together.

There now exists multiple authorities—from stewardship end-result contracting to the Collaborative Forest Landscape Restoration Program—that give explicit guidance directing the Forest Service to create benefits for local communities from management actions. Yet, as multiple studies have shown, legislative direction is not enough to realize significant changes in the economic benefits being captured by communities located closest to the forest resource. With $40 million already invested in efforts such as the CFLRP and the agency proposing to increase the budget to $60 million, now is the time for the agency and communities to work together to ensure an equitable distribution of benefits from restoration and maintenance activities that include low wealth individuals and communities, especially those dependent upon public forests and forest management.

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APPENDIX A

PSC Codes, Descriptions and Work Type Designations for Contracts Awarded Prior to 2012:

Service Code	Work Type	Product or Service Description
F001	**Equipment**	AERIAL FERTILIZATION - SPRAYING
F002	**Equipment**	AERIAL SEEDING SERVICES
F007	**Equipment**	RANGE SEEDING - GROUND EQ
W023	**Equipment**	LEASE-RENT OF VEHICLES-TRAILERS-CYC
Y222	**Equipment**	CONSTRUCT/HIGHWAYS-RDS-STS-BRDGS-RA
Y223	**Equipment**	CONSTRUCT/TUNNEL AND SUBSURF STRUCT
Y291	**Equipment**	CONSTRUCT/REC NON-BLDG STRUCTS
Z219	**Equipment**	MAINT-REPT-ALT/OTHER CONSV STRUCTURE
Z222	**Equipment**	MAINT-REP-ALT/HWYS-RDS-STS-BRDGS-RA
Z223	**Equipment**	MAINT-REP-ALT/TUNNELS-SUBSURF STRUC
Z291	**Equipment**	ENDED-MAINT-REP-ALT/RECREA NON-BLDG STRUC
F005	**Labor**	FOREST TREE PLANTING SERVICES
F006	**Labor**	LAND TREATMENT PRACTICES
F008	**Labor**	RECREATION SITE MAINT/NON-CONSTR
F009	**Labor**	SEED COLLECTION/PRODUCTION SERVICES
F010	**Labor**	SEEDLING PRODUCTION-TRANSPLANTING
F012	**Labor**	SURVEY LINE CLEARING SERVICES
F013	**Labor**	TREE BREEDING
F014	**Labor**	TREE THINNING SERVICES
F016	**Labor**	WILDHORSE/BURRO CONTROL SERVICES
F018	**Labor**	OTHER RANGE-FOREST IMPROV/NON-CONST
F019	**Labor**	OTHER WILDLIFE MANAGEMENT SERVICES
F020	**Labor**	FISHERIES RES MGMT
F021	**Labor**	SITE PREPARATION
F022	**Labor**	FISH HATCHERY SERVICES
F105	**Labor**	PESTICIDES SUPPORT SERVICES
G003	**Labor**	RECREATIONAL SERVICES
S207	**Labor**	INSECT AND RODENT CONTROL SERVICES
S208	**Labor**	LANDSCAPING/GROUNDSKEEPING SERVICES
Z300	**Labor**	MAINT, REP-ALT/RESTORATION
AA11	**Technical**	R&D-INSECT & DIS CONT-B RES
AH92	**Technical**	R&D-OTHER ENVIROMENT-A RES/EXPL DE
AJ52	**Technical**	R&D-LIFE SCIENCES-A RES/EXPL DEV
AP21	**Technical**	LAND (BASIC)
AP22	**Technical**	LAND (APPLIED/EXPLORATORY)
AP91	**Technical**	OTHER NATURAL RESOURCES (BASIC)
AV12	**Technical**	R&D-SUBSURFACE MINING EQ-A RES/EXPL
AZ11	**Technical**	R&D-OTHER R AND D-B RES
B502	**Technical**	AIR QUALITY ANALYSES
B503	**Technical**	STUDY/ARCHEOLOGICAL-PALEONTOLOGICAL
B504	**Technical**	STUDY/CHEMICAL-BIOLOGICAL
B506	**Technical**	LAND TREATMENT PRACTICES
B509	**Technical**	STUDY/ENDANGERED SPECIES-PLANT/ANIM
B510	**Technical**	STUDY/ENVIRONMENTAL ASSESSMENTS

B513	**Technical**	STUDY/FEASIBILITY-NONCONSTRUCT
B516	**Technical**	ANIMAL AND FISHERIES STUDIES
B517	**Technical**	GEOLOGICAL STUDIES
B519	**Technical**	GEOTECHNICAL STUDIES
B520	**Technical**	GRAZING/RANGE STUDIES
B521	**Technical**	HISTORICAL STUDIES
B525	**Technical**	NATURAL RESOURCE STUDIES
B527	**Technical**	RECREATION STUDIES
B529	**Technical**	SCIENTIFIC DATA STUDIES
B532	**Technical**	SOIL STUDIES
B533	**Technical**	WATER QUALITY STUDIES
B534	**Technical**	WILDLIFE STUDIES
B599	**Technical**	OTHER SPECIAL STUDIES AND ANALYSES
C122	**Technical**	ENDED-HIGHWAYS, ROADS, STREETS, BRIDGES, AND RAILWAYS
C211	**Technical**	ARCHITECT AND ENGINEERING- GENERAL: LANDSCAPING, INTERIOR LAYOUT, AND DESIGNING
C219	**Technical**	ARCHITECT AND ENGINEERING- GENERAL: OTHER
F099	**Technical**	OTHER NAT RES MGMT & CONSERV
F104	**Technical**	IND INVEST SURV/TCH SUP
F999	**Technical**	OTHER ENVIR SVC/STUD/SUP
R404	**Technical**	PROF SVCS/LAND SURVEYS - CADASTRAL

PSC Codes, Descriptions and Work Type Designations for Contracts Awarded After 2012:

Service Code	Work Type	Product or Service Description
F001	**Equipment**	AERIAL FERTILIZATION - SPRAYING
F002	**Equipment**	AERIAL SEEDING SERVICES
F007	**Equipment**	RANGE SEEDING - GROUND EQ
W023	**Equipment**	LEASE-RENT OF VEHICLES-TRAILERS-CYC
Y222	**Equipment**	ENDED-CONSTRUCT/HIGHWAYS-RDS-STS-BRDGS-RA
Y223	**Equipment**	ENDED-CONSTRUCT/TUNNEL AND SUBSURF STRUCT
Y291	**Equipment**	ENDED-CONSTRUCT/REC NON-BLDG STRUCTS
Z219	**Equipment**	ENDED-MAINT-REPT-ALT/OTHER CONSV STRUCTURE
Z222	**Equipment**	ENDED-MAINT-REP-ALT/HWYS-RDS-STS-BRDGS-RA
Z223	**Equipment**	ENDED-MAINT-REP-ALT/TUNNELS-SUBSURF STRUC
Z291	**Equipment**	ENDED-MAINT-REP-ALT/RECREA NON-BLDG STRUC
Y1LB	**Equipment**	CONSTRUCTION OF HIGHWAYS, ROADS, STREETS, BRIDGES, AND RAILWAYS
Y1LC	**Equipment**	CONSTRUCTION OF TUNNELS AND SUBSURFACE STRUCTURES
Y1PA	**Equipment**	CONSTRUCTION OF RECREATION FACILITIES (NON-BUILDING)
Z1KZ	**Equipment**	MAINTENANCE OF OTHER CONSERVATION AND DEVELOPMENT FACILITIES
Z2KZ	**Equipment**	REPAIR OR ALTERATION OF OTHER CONSERVATION AND DEVELOPMENT FACILITIES
Z1LB	**Equipment**	MAINTENANCE OF HIGHWAYS/ROADS/STREETS/BRIDGES/RAILWAYS
Z2LB	**Equipment**	REPAIR OR ALTERATION OF HIGHWAYS/ROADS/STREETS/BRIDGES/RAILWAYS
Z1LC	**Equipment**	MAINTENANCE OF TUNNELS AND SUBSURFACE STRUCTURES
Z2LC	**Equipment**	REPAIR OR ALTERATION OF TUNNELS AND SUBSURFACE STRUCTURES
Z1PA	**Equipment**	MAINTENANCE OF RECREATION FACILITIES (NON-BUILDING)
Z2PA	**Equipment**	REPAIR OR ALTERATION OF RECREATION FACILITIES (NON-BUILDING)

F005	**Labor**	FOREST TREE PLANTING SERVICES
F006	**Labor**	LAND TREATMENT PRACTICES
F008	**Labor**	RECREATION SITE MAINT/NON-CONSTR
F009	**Labor**	SEED COLLECTION/PRODUCTION SERVICES
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F105	**Labor**	PESTICIDES SUPPORT SERVICES
G003	**Labor**	RECREATIONAL SERVICES
S207	**Labor**	INSECT AND RODENT CONTROL SERVICES
S208	**Labor**	LANDSCAPING/GROUNDSKEEPING SERVICES
Z300	**Labor**	ENDED-MAINT, REP-ALT/RESTORATION
Z1QA	**Labor**	MAINTENANCE OF RESTORATION OF REAL PROPERTY (PUBLIC OR PRIVATE)
Z2QA	**Labor**	REPAIR OR ALTERATION OF RESTORATION OF REAL PROPERTY (PUBLIC OR PRIVATE)
AA11	**Technical**	R&D-INSECT & DIS CONT-B RES
AH92	**Technical**	R&D-OTHER ENVIROMENT-A RES/EXPL DE
AJ52	**Technical**	R&D-LIFE SCIENCES-A RES/EXPL DEV
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AP91	**Technical**	OTHER NATURAL RESOURCES (BASIC)
AV12	**Technical**	R&D-SUBSURFACE MINING EQ-A RES/EXPL
AZ11	**Technical**	R&D-OTHER R AND D-B RES
B502	**Technical**	AIR QUALITY ANALYSES
B503	**Technical**	STUDY/ARCHEOLOGICAL-PALEONTOLOGICAL
B504	**Technical**	STUDY/CHEMICAL-BIOLOGICAL
B506	**Technical**	LAND TREATMENT PRACTICES
B509	**Technical**	STUDY/ENDANGERED SPECIES-PLANT/ANIM
B510	**Technical**	STUDY/ENVIRONMENTAL ASSESSMENTS
B513	**Technical**	STUDY/FEASIBILITY-NONCONSTRUCT
B516	**Technical**	ANIMAL AND FISHERIES STUDIES
B517	**Technical**	GEOLOGICAL STUDIES
B519	**Technical**	GEOTECHNICAL STUDIES
B520	**Technical**	GRAZING/RANGE STUDIES
B521	**Technical**	HISTORICAL STUDIES
B525	**Technical**	NATURAL RESOURCE STUDIES
B527	**Technical**	RECREATION STUDIES
B529	**Technical**	SCIENTIFIC DATA STUDIES
B532	**Technical**	SOIL STUDIES
B533	**Technical**	WATER QUALITY STUDIES
B534	**Technical**	WILDLIFE STUDIES
B599	**Technical**	OTHER SPECIAL STUDIES AND ANALYSES
C122	**Technical**	ENDED-HIGHWAYS, ROADS, STREETS, BRIDGES, AND RAILWAYS

C1LB	**Technical**	ARCHITECT AND ENGINEERING- CONSTRUCTION: HIGHWAYS, ROADS, STREETS, BRIDGES, AND RAILWAYS
C211	**Technical**	ARCHITECT AND ENGINEERING- GENERAL: LANDSCAPING, INTERIOR LAYOUT, AND DESIGNING
C219	**Technical**	ARCHITECT AND ENGINEERING- GENERAL: OTHER
F099	**Technical**	OTHER NAT RES MGMT & CONSERV
F104	**Technical**	ENDED-IND INVEST SURV/TCH SUP
F113	**Technical**	ENVIRONMENTAL SYSTEMS PROTECTION- WETLANDS CONSERVATION AND SUPPORT
F999	**Technical**	OTHER ENVIR SVC/STUD/SUP
R404	**Technical**	PROF SVCS/LAND SURVEYS - CADASTRAL

APPENDIX B

November 17, 2014

«Prime_Contractor»
«Address»
«City», «State» «Zip»

To Whom It May Concern:

My name is Chelsea McIver and I am a graduate student in the College of Forestry & Conservation and a researcher with the Bureau of Business and Economic Research. I am contacting you because your company has been identified as a prime contractor on a US Forest Service project in one or more of the following counties between 2005 and 2013: Flathead, Lake, Lewis and Clark, Missoula, or Powell (see enclosed map).

I am conducting a study on the impacts of Forest Service contracting on communities in the region to better understand how investments made by the agency benefit local businesses and workers. To help tell this story, I am requesting the following information from your firm:

Did your company utilize any subcontractors on Forest Service projects in the study area between 2005 and 2013? (please refer to enclosed map)

_______ YES _______ NO

If Yes, please list the name(s) of the business(es) you subcontracted with, their location (city, state), and a brief description of the work performed. You may attach another page if necessary.

Subcontractor Name	Subcontractor Address (city, state)	Work performed

I have enclosed a self-addressed stamped envelope if you choose to respond via mail. You may also send the information to me via any of the methods listed below:

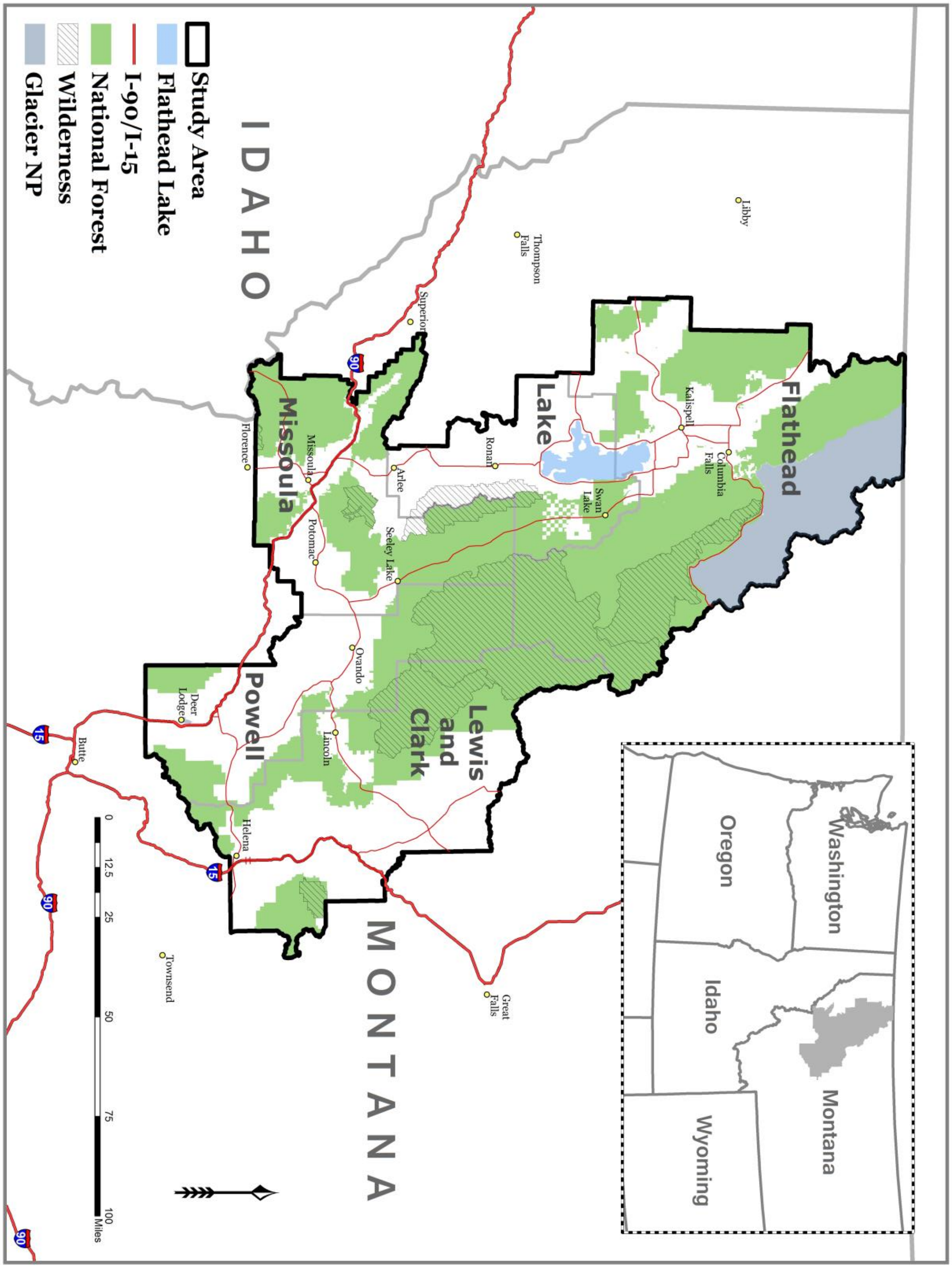
email: chelsea.mciver@business.umt.edu
phone/voicemail: (406) 243-5614 or (406) 531-2930
text: (406) 531-2930

Your response is requested by February 28, 2015.

Please indicate if you are interested in learning about the results of this project and I will notify you when the report has been released. You may also be interested in a related report on Local Contractor Participation in the Southwestern Crown of the Continent CFLRP conducted for the Southwestern Crown of the Continent Collaborative at www.bber.umt.edu/FIR/F_Workforce.

Thank you very much for your time and cooperation.

Chelsea P. McIver
Research Associate, Bureau of Business and Economic Research
Master's Candidate, College of Forestry & Conservation


Study Area
Flathead Lake
I-90/I-15
National Forest
Wilderness
Glacier NP
IDAHO
MONTANA
Flathead
Lake
Missoula
Powell
Lewis and Clark
Libby
Thompson Falls
Superior
Kalispell
Columbia Falls
Ronan
Swan Lake
Arlee
Missoula
Florence
Potomac
Seeley Lake
Ovando
Lincoln
Deer Lodge
Butte
Helena
Townsend
Great Falls
Washington
Oregon
Idaho
Montana
Wyoming
0
12.5
25
50
75
100
Miles