AN ASSESSMENT OF THE LOCATION OF THE BEARS EARS NATIONAL MONUMENT CULTURAL CENTER

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# Table of Contents

- Executive Summary .......................................................... 1
- Purpose .............................................................................. 2
- Methods ............................................................................. 3
  - Data Collection ............................................................... 3
  - Data Analysis .................................................................. 7
- Results ................................................................................. 9
  - Travel Patterns in Bears Ears National Monument ................. 9
  - Optimal Siting Locations .................................................... 9
- Discussion .......................................................................... 15
- References .......................................................................... 16
EXECUTIVE SUMMARY

A cultural center at Bears Ears National Monument, if well planned, could serve as an anchor destination through which visitors could learn about, experience, and appreciate the cultures, histories, and landscapes that define southeastern Utah. A cultural center also holds the potential to bolster the regional economy, by signaling a long-term investment in the sustainability of the region's outdoor recreation and tourism industry. Our intent with this analysis is to establish a foundational understanding of potential locations for a cultural center. We develop and analyze a set of cultural, environmental, and economic metrics that can be used to shape ongoing discussions about the potential locations for the Bears Ears National Monument cultural center. Our analysis shows markedly different potential siting locations depending upon whether cultural, environmental, or economic considerations are given priority. When all three considerations are equally weighed, there are several notable “hot spots” near Bluff, south and west of Blanding, and west of Monticello. We describe the advantages and disadvantages associated with each of these potential locations. Ultimately, we hope the work we have completed here can be used to shape ongoing discussions about the potential locations for the Bears Ears National Monument cultural center.
On October 7th, 2021, President Biden restored the original boundaries of Bears Ears National Monument to those established by former President Obama in 2016 (The White House, 2021). The decision, made via an executive order authorized under the Antiquities Act, also retained protections for an additional 11,200 acres [45 km²] added to the monument by former President Trump in his own executive order which reduced the overall size of the monument by 85% (Turkewitz, 2017). The current extent of the Monument is shown in Figure 1.

While the boundaries of Bears Ears have gone back and forth under different presidential administrations, one thing that has remained consistent is the increase in outdoor recreation and tourism visitation to the region. A 2020 study commissioned by Utah Outdoor Partners and completed by Utah State University, found the amount of outdoor recreation occurring within the region increased by 50.6% in the three years since the monument was created (Smith et al., 2020, 2021). As visitation to the region continues to rise, there has been very limited, if any, additional resources appropriated or allocated to protect the area’s cultural and natural resources, educate visitors, and support the sustainable growth of the area’s outdoor recreation and tourism industry.

The Utah State Legislature has recently formed the Bears Ears Visitor Center Advisory Committee, comprised of representatives from five Native American tribes, to explore the feasibility, functions, and location of a potential cultural center near the Monument (Bears Ears Visitor Center Advisory Committee, 2021). A cultural center, if well planned, could serve as an anchor destination through which visitors could learn about, experience, and appreciate the cultures, histories, and landscapes that define southeastern Utah. A cultural center also holds the potential to bolster the regional economy, by signaling a long-term investment in the sustainability of the region’s outdoor recreation and tourism industry, regardless of future decisions that may affect the size of the monument.

We would argue that a cultural center needs to be located where it is easily accessible to outdoor recreationists and tourists so that it can provide the educational and experiential opportunities for as many non-locals as possible. A highly accessible cultural center can also spur regional economic growth, particularly in sectors such as arts, entertainment, and recreation as well as accommodation and food services.

The siting of a cultural center should not be exclusively determined by accessibility, however. The cultural and environmental characteristics of potential locations should also be considered, as it is this surrounding landscape that will define the experiences of visitors. Perhaps more importantly, the cultural and environmental characteristics of potential locations should also reflect the values tribal representatives want to communicate to visitors. In our work, we have attempted to identify the cultural and environmental characteristics that can be considered in the siting of the monument’s cultural center. We weigh these characteristics equally with other characteristics focused on the ability of the cultural center to catalyze local economic growth. Our intent with this analysis is to establish a foundational understanding of potential locations for a cultural center. We develop and analyze a set of cultural, environmental, and economic metrics that can be used to shape ongoing discussions about the potential locations for the Bears Ears National Monument cultural center.
Data Collection

Travel Behavior
We acquired recent (January 2021 – March 2022) data characterizing non-local vehicle trips made through Bears Ears National Monument. These data were collected though location-based applications downloaded to cell phones as well as cellular enabled navigation systems (e.g., OnStar); they include a continuous account of the exact geographic coordinates of both phones as well as navigation systems. These data are processed to differentiate trips made by locals (i.e., individuals whose phone or navigation system spend most of its resting time in the local area) and non-locals (i.e., individuals whose phone or navigation system spend most of its time outside of the local area). Through this segmentation process, we characterized the temporal patterns of non-local visitation to five distinct road segments crossing the Monument's boundary.

The five distinct road segments we analyzed include national and state highways leading in to and out of the Monument; this includes one segment along U.S. 191 north of Mexican Hat (southern entrance), two segments along Utah 95 (eastern and western entrances), one segment on Utah 276 leading to Halls...
Figure 2. The southern corridor entering Bears Ears National Monument extends from Mexican Hat northwards along US163.

Figure 3. The eastern corridor entering Bears Ears National Monument extends west of Blanding on UT95.
Figure 4. The northern corridor entering Bears Ears National Monument extends west and north of Monticello along UT211; the corridor parallels Indian Creek.

Figure 5. The western corridor entering Bears Ears National Monument extends east of the Hite Bridge along UT95; the road runs east towards Natural Bridges National Monument.
Regional Characteristics

We generated a series of characteristics that define the cultural, environmental, and economic characteristics of the landscape within 50 miles (80.5 km) of the Monument’s current boundary. These characteristics were identified based upon internal discussions amongst the research team and the availability of existing data. These characteristics are not exhaustive of all the factors that could, or should, influence the siting of the cultural center. Rather, they represent available indicators that can be aggregated to visualize the spatial patterns of distinct types of landscape characteristics.

Cultural Characteristics

Cultural characteristics include proximity to lands managed by the Navajo Nation as well as existing locations where interpretation services (e.g., kiosks, museums, etc.) are provided. As we were unable to ascertain the content of interpretation provided at individual locations around the region, we were broadly inclusive of all types of locations that provide interpretation services. This includes historic districts and trails, historical monuments, markers, and museums, viewpoints, and federal land management agency offices. See Table 1 for a full list of data sources.

Environmental Characteristics

Environmental characteristics include proximity to water bodies, state and federally managed public lands (differentiated by agency), and the presence of federally and state listed threatened, endangered, and sensitive animal and plant species. These indicators are broadly representative of potential siting locations’ conservation value. See Table 1 for a full list of data sources.

Economic Characteristics

Economic characteristics broadly represent the potential of a siting location to spur local economic growth. As such, these indicators include proximity to local hotels, motels, restaurants, and residential areas.
For specific locations of local businesses (i.e., hotels, motels, and restaurants), we cross checked with the San Juan County Tourism and Economic Development website (which lists local businesses) with publicly available data from Google Maps and Open Street Maps. See Table 1 for a full list of data sources.

**Infrastructure Characteristics**

We also compiled a list of characteristics describing the region’s transportation and outdoor recreation infrastructure. These data included roads and highways as well as trails and pathways, camp sites, and boat ramps. See Table 1 for a full list of data sources.

### Data Analysis

**Travel Patterns in Bears Ears National Monument**

We compiled descriptive statistics and visualizations illustrating non-local travel patterns through each of the five road segments leading into Bears Ears National Monument. These data illustrate broad patterns of tourism travel throughout the region and are used in conjunction with the subsequent multi-criteria siting analysis to identify potent locations for the Monument’s cultural center.

**Multi-criteria Decision-making (MCDM) Model**

We constructed a MCDM model to identify potential siting locations where the cultural center could maximize the cultural, environmental, and economic characteristics of the landscape. MCDMs are commonly used in both the academic and grey literatures to weigh different indicators characterizing

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**Table 1. Data used in the Multi-criteria Decision-making (MCDM) model, by characteristic type.**

<table>
<thead>
<tr>
<th>Type of Characteristic</th>
<th>Characteristic</th>
<th>Description (Geometry)</th>
<th>Data Source</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural</td>
<td>Historic districts</td>
<td>Historic districts (Polygon)</td>
<td>SGID</td>
<td>2021</td>
</tr>
<tr>
<td></td>
<td>Historic trails</td>
<td>Historic Trails (Poly line)</td>
<td>SGID</td>
<td>2021</td>
</tr>
<tr>
<td></td>
<td>Monuments and markers</td>
<td>Location, text, photos, and other information about historic markers and monuments (Point)</td>
<td>UGRGC</td>
<td>2021</td>
</tr>
<tr>
<td></td>
<td>Viewpoints</td>
<td>Viewpoints (Point)</td>
<td>OSM</td>
<td>2021</td>
</tr>
<tr>
<td></td>
<td>Tribal lands</td>
<td>Tribal land boundaries (Polygon)</td>
<td>State of Utah Data Catalog</td>
<td>2020</td>
</tr>
<tr>
<td></td>
<td>Existing cultural centers</td>
<td>Forest Service centers (Point)</td>
<td>SGID</td>
<td>2020</td>
</tr>
<tr>
<td></td>
<td>Existing cultural representations</td>
<td>BLM filed office (Point)</td>
<td>UGRGC &amp; BLM</td>
<td>2013</td>
</tr>
<tr>
<td></td>
<td>Museums</td>
<td>Museums (Point)</td>
<td>OSM</td>
<td>2021</td>
</tr>
<tr>
<td>Economic</td>
<td>Hotels &amp; motels</td>
<td>Hotels and motels listed on the DMO website (Point)</td>
<td>Google map data &amp; DMO websites</td>
<td>2021</td>
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<tr>
<td></td>
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<td>Google map data &amp; DMO websites</td>
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<tr>
<td></td>
<td>Residential areas</td>
<td>Populated block areas based on 2010 census (Polygon)</td>
<td>UGRGC</td>
<td>2011</td>
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<tr>
<td>Environmental</td>
<td>Water bodies</td>
<td>Main water bodies (Poly line)</td>
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<tr>
<td></td>
<td>Public land units</td>
<td>Public land boundaries (discrete layers for national parks, national monuments, state parks, and wildlife management units) (Polygon)</td>
<td>BLM, PAD-US</td>
<td>2018</td>
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<tr>
<td></td>
<td>Wildlife</td>
<td>Utah Species of Greatest Conservation Need (This dataset represents Utah’s federally and state listed threatened, endangered, and sensitive animal and plant species)</td>
<td>UDWR</td>
<td>2021</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Roads and highways</td>
<td>Road and highway centerlines (Poly line)</td>
<td>UDOT</td>
<td>2022</td>
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<td>BTS</td>
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<td>Boat ramps (Point)</td>
<td>OSM</td>
<td>2021</td>
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<td></td>
<td>Scenic byways</td>
<td>Scenic byways (Poly line)</td>
<td>UDOT</td>
<td>2021</td>
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</table>

potential siting locations. Based upon the weights assigned to individual characteristics of sets of characteristics, MCDMs identify 'optimal' siting locations. Siting analyses are commonly used for landfills, refineries, and industrial parks and energy plants; however, they have also been used within the field of public lands management to identify sites suitable for outdoor recreation (Caglayan et al., 2020).

**Identifying Potential Siting Locations**

Our MCDM model begins by dissecting all state and private lands within 50 miles of the Monument into 5-acre ‘grid cells.’ These grid cells represent all potential locations where a cultural center could be constructed, with the exception of lands that are outside the ideal slope for in-ground building (i.e., a slope greater than about 10 degrees; Building Advisor, n.d.) and may become available as a result of federal land swaps or purchases. We selected 5 acres as the size of the grid, believing that 5 acres is a sufficiently large amount of land on which construct a cultural center.

**Quantifying Suitability by Characteristic Type**

We calculated a value for each grid cell and each individual characteristic (Table 1) by calculating the distance-based shortest path (proximity) from the centroid of each grid cell to the nearest feature of each characteristic. For the historic districts characteristic for example, we calculated the shortest distance from the center of each grid cell to the nearest historic district. This distance was recorded and then we proceeded down the list of other characteristics. After distances for all characteristics were calculated, we computed a cumulative distance metric for each of the three characteristic types (cultural, environmental, and economic). These cumulative distance metrics can be interpreted as measures of the cultural, environmental, and economic suitability of each potential siting location. Lower cumulative distance metrics represent more suitable locations as those sites are closer to either cultural, environmental, or economic siting features.

**Weighing Characteristics**

The most subjective part of MCDM models is the process of assigning a weight to each characteristic. This can be achieved through literature review (Ilhamdaniah, 2018), surveying recreationists (Miller et al., 1998), or obtaining expert opinion (Gül et al., 2006). In our analysis, we equally weight cultural, environmental, and economic criteria (33.3% each). We do this by standardizing and then summing the three cumulative distance metrics.

While this approach is balanced, it may not reflect the weights key decision makers (such as the tribal representatives on the Bears Ears Visitor Center Advisory Committee) would like to place on each of the three sets of characteristics. We would welcome discussions with these decision makers to explore how our MCDM model might yield different results under alternative weighting schemes that best reflect their values.
**RESULTS**

**Travel Patterns in Bears Ears National Monument**

Our analysis of non-local trips through Bears Ears National Monument revealed notable differences across the five primary roadways leading into and out of the monument. The entrance corridor most heavily used by non-locals was the southern entrance, just north of Mexican Hat on State Route 163 (Figure 7). The southern entrance corridor received an average of 1,278 non-local trips per day between January 2018 and March 2022. Non-local trips were slightly higher (4.4%) on the weekends relative to the weekdays (Table 2).

![Average Daily Non-Local Traffic Through Bears Ears National Monument](image)

*Figure 7. Average daily non-local trips through each of the major entrance corridors into Bears Ears National Monument.*

Notably, our analysis revealed that all other entrance corridors used to access the Monument received very little non-local traffic throughout the year (< 500 trips per day). The eastern entrance, just south and west of Blanding, Utah, received an average of 343 non-local trips per day between January 2018 and March 2022. This entrance corridor is also more traveled by non-locals on the weekends, relative to the weekdays (~45.4% more non-local trips per day on the weekends). The northern entrance, in the Indian Creek corridor along State Route 211 only received an average of 239 trips per day between January 2018 and March 2022, this is approximately one fifth of the non-local trips through the southern entrance corridor. The western corridor (State Route 95 from the Hite Bridge) only saw an average of 149 non-local trips per day between January 2018 and March 2022. The southwestern corridor (State Route 276 out to Halls Crossing) received an average of less than 100 non-local trips per day during any quarter for which we ran our analyses.

**Optimal Siting Locations**

**Cultural Suitability**

The map of the cumulative distance metric for all of the cultural characteristics considered in the MCDM is shown in Figure 8. The areas of state and private lands closest to existing cultural resources and interpretation facilities are just north of White Mesa and in Monticello (those areas shown in yellow in Figure 8).
Environmental Suitability

The environmental suitability of potential siting locations is shown in Figure 9. This map illustrates the cumulative distance metric for all of the environmental characteristics we considered; this included distance to water bodies, distance to discrete types of state and federally managed public lands (e.g., state parks, state wildlife management areas, national parks, etc.), and distance to areas with known federally and state listed threatened, endangered, or sensitive species. The areas of state and private lands closest to high-quality environmental resources are on the southern end of the Indian Creek corridor (those areas shown in yellow in Figure 9).
Figure 8. Visualization of the cumulative distance metric for cultural characteristics. Dark brown areas are closest to existing cultural resources and interpretation centers; these areas are followed by those in lighter shades (higher cultural suitability) to white (little cultural suitability).

Figure 9. Visualization of the cumulative distance metric for environmental characteristics. Dark green areas are closest to high-quality environmental resources; these areas are followed by those in lighter shades (higher environmental suitability) to white (little environmental suitability).
Finally, the economic suitability of potential siting locations is shown in Figure 10. As can be seen from the figure, the economic characteristics favor existing municipalities. Blanding, Monticello, and Bluff are all prime locations for a cultural center that would be capable of spurring economic growth within the region.

Aggregate Suitability

The three suitability maps shown in Figures 8-10 show markedly different potential siting locations. To rectify the differences, we standardized the cumulative distance metrics for each type of characteristic and summed the resulting Z-scores. This process yields a new cumulative distance metric that equally weights the cultural, environmental, and economic characteristics included in our MCDM. The visualization of the final summed Z-score is shown in Figure 11. The figure shows several notable “hot spots” near Bluff, south and west of Blanding, and west of Monticello (Figure 12). These areas, when considering all of the cultural, environmental, and economic characteristics we included in our analyses, are potential locations that we suggest the Bears Ears Visitor Center Advisory Committee consider in earnest. The advantages and disadvantages of each potential location are described in Table 3.

Southern Entrance Corridor Near Bluff, Utah

The southern corridor into the Monument near Bluff is the most travelled by non-locals and therefore well positioned to see relatively high visitation rates. This corridor is also the home of the de facto visitor center managed by Friends of Cedar Mesa. This location is also very proximate to Valley of the Gods, a major attraction for non-locals. However, accommodation and food service businesses are currently very limited within the city of Bluff (as well as in Mexican Hat further south along SR163), which may prohibit many visitors from extending their trips for multiple days and subsequently bolstering the local economy.

Eastern Entrance Corridor Near Blanding, Utah

State and private lands south and west of Blanding were also identified as some of the most culturally and economically suitable lands within the region.
Figure 11. Visualization of siting locations that equally favor the cultural, environmental, and economic characteristics considered in our analysis. Yellow areas are closest to existing cultural resources, high-quality environmental resources, and existing economic infrastructure that could compliment the cultural center; these areas are followed by those in dark red (higher suitability) to white (less suitability).

Figure 12. Visualization of potential siting locations that equally favor the cultural, environmental, and economic characteristics considered in our analysis. Panel A shows the southern entrance into the Monument near Bluff, Utah. Panel B shows the eastern entrance into the Monument to the south and west of Blanding, Utah. Panel C shows the northern entrance into the Monument west and north of Monticello.
Similar to the southern entrance corridor, the eastern entrance corridor is also within the boundaries of the Monument. Potential siting locations along this corridor could include areas within Comb Wash (largely privately owned) and areas east of the Butler Wash Ruins (SITLA). The Comb Wash area has some outstanding physical geography as well as campsites and trails managed by the Bureau of Land Management. The areas east of Butler Wash Ruins are notably less scenic and offer little in the way of developed outdoor recreation infrastructure. This corridor is also proximate to Blanding, which has more accommodation and food service businesses relative to municipalities in the southern portion of the Monument.

Northern Entrance Corridor Near Monticello, Utah

The Indian Creek corridor north and west of Monticello is also another potential siting location. This area is home to the Indian Creek State Park (Utah Division of Parks and Recreation), internationally renowned rock climbing (Bureau of Land Management), and the Canyonlands Research Center (private). Our analysis revealed this corridor was less traveled relative to the southern entrance corridor. Worth noting, this corridor is most likely associated with Canyonlands National Park and not the National Monument. The Needles District of Canyonlands National Park is approximately 20 miles west of the corridor.
There is abundant potential for a new cultural center within the vicinity of the Monument. In this analysis, we have attempted to conceptualize and quantify how potential siting locations reflect the cultural, environmental, and economic characteristics of the region. Our analysis placed equal weights on cultural, environmental, and economic characteristics. This, in the end, may not be what the tribal representatives on the Bears Ears Visitor Center Advisory Committee decide is in their best interest. Our model can be adjusted to place more, or less, weight on any one characteristic. It is also capable of integrating new data, that we were unaware of at the time we completed this analysis. Ultimately, we hope the work we have completed here can be used to shape ongoing discussions about the potential locations for the Bears Ears National Monument cultural center. A cultural center, if well planned, could serve as an anchor destination through which non-locals could learn about, experience, and appreciate the cultures, histories, and landscapes that define southeastern Utah. A cultural center also holds the potential to bolster the regional economy, by signaling a long-term investment in the sustainability of the region’s outdoor recreation and tourism industries.
REFERENCES


