



# Relevant Research for Practice - 2015

An Annotated Bibliography of Recent Research Articles Published from 2012-2015  
Perceived to have Direct Application to Daily Work in Parks,  
Recreation, and Conservation

Compiled for the National Recreation and Park Association (NRPA)  
through contract with North Carolina State University  
by Teresa L. Penbrooke, MAOM, CPRE, Editor



National Recreation  
and Park Association

One of the ongoing challenges for the field of parks, recreation, and conservation (P&R) is the ability to translate current high-level academic research to the everyday practice of P&R management and application. P&R research is often conducted and disseminated by faculty and graduate students at universities, primarily for publication in academic journals. The language and complex methodologies required by these outlets is often ill suited for the practice-level settings of most professionals (practitioners) working in the field. Additionally, academic journals are not freely accessible to practitioners who may be interested in reading this research, as journals are only available through subscription or for those formally associated with an academic institution. To create this “translational” article, the National Recreation and Park Association (NRPA) contracted with North Carolina State University (NC State), and specifically with Teresa L. Penbrooke as compiling editor, due to her professional experience as a P&R practitioner, consultant, educator, and PhD student conducting research in this field.

## Purpose

This summary report is intended to help bridge the current research-practice gap by identifying key peer-reviewed published research articles from 2012 to 2015 that appear to provide a strong evidence base and/or have strong potential impact on the practice of P&R. The intended audience is both practitioners and their community decision makers.

As thousands of potential articles are published in many journals and sources each year, assumptions had to be made. The search was conducted under the broad categories defined by NRPA’s three “Pillars” of **Conservation, Health & Wellness, and Social Equity**, and also included sub-categories prevalent in administration in parks and recreation.

## Key Questions Guiding Selection for Inclusion of Articles

- Does the article appear to have direct application to practice in the field of P&R administration?
- Does the article include a focus on a topic that aligns with the NRPA Pillars and/or key current trends in the broad field of P&R administration?
- Is it possible to translate the article to a more concise summary that makes sense in layperson’s language?
- Can practitioners get access to the full article if desired, either directly from the contact listed or through open-source channels?

## Approach

This work was approached as a layperson’s annotated bibliography, editing, “translating” and summarizing published abstracts and articles to make them more readable for the intended practitioner audience, while attempting to preserve the content, intent, and general findings.

A mixed-methods approach was conducted February to November 2015 to find key relevant articles. Subjective judgements were made regarding selection of articles with current application to practice or provision of information for agency decision making using the guiding questions. In addition, the editor reached out to professional and social media (e.g., ResearchGate, P&R Network, World Leisure Organization, the NRPA listserves, the NC State Graduate Listserve), and to her personal national and international contacts who are active in P&R academia and practice. Keywords were identified from the annotations and indexed (see *Key Word Index* section). The summary results are from **37** journals and relevant open sources (see list of Journals and open sources in the Appendix). In total, **over 700** articles were reviewed, and due primarily to space limitations, **45 articles** were included.

## Framing by the NRPA Pillars

The need to reframe the conversation about parks and recreation away from “What do you do?” to “What impact do you have?” has led to the development of NRPA’s three pillars—conservation, health and wellness, and social equity. Whether called “themes,” “values,” or “positions,” these three pillars encapsulate the work of 100,000 professionals running tens of thousands of widely different programs and facilities. In the world of literature, a famous writing challenge is to write a story in only six words. These six words—conservation, health and wellness, social equity—hold the story of an entire field working in thousands of communities and touching the lives of millions of people. This report is organized under these three pillars, as much as possible, given the diverse array of work in this field.

## Basic Assumptions and Working Guidelines

- As reader interests vary greatly and many articles cover more than one topic area, this summary is presented under the NRPA Pillars, and then in alphabetical order by lead author last name, from searches using relevant key words, journal titles, and active authors, often as identified from the *CabAbstracts Journal Index*.
- Headlines for articles were created to provide basic topic information for quick perusal, and may be different than the published title. Full published titles and citation information are provided in APA format following the annotated summary.
- Annotated abstracts may have been directly copied or edited to remove acronyms, secondary article citations, references to specific methodologies or protocols, detailed statistical analysis, and/or to improve practitioner readability. Attempts were made to summarize key findings but to not change content intent. All summary annotations have been reviewed by at least one identified author. Key phrases were identified by the Editor for each article to help readers more easily identify topics of interest.
- The draft summary was reviewed by **more than 30** practitioners and academicians prior to publication.
- As a primary goal was to offer direct author contacts to provide access to the full article for interested practitioners (as most practitioners don’t have paid journal access), if an article is not freely available for public download and/or the author did not respond to inquiries, their article was likely not included. Some articles are Open Access.

**Apologies are made if there appear to be key missing articles or other oversights (please send a note to the editor for potential future inclusion or correction). It is anticipated that this may be an ongoing effort for NRPA in future years for their members and stakeholders.**

## Limitations

Some authors are prolific and had more articles that could have qualified, but only one or two at most from each author were included. Due to the nature of the Editor’s own professional circles, there may be more authors who were identified from some institutions and colleague contacts. It is likely that each of these articles and many more are worthy of further deeper review and additional summary articles to detail findings for practitioner use and implementation. It also is important to note that similar to the music industry and other forms of journalism, forms of publication may be transforming with the widespread internet technology and social media. Many authors are choosing to self-publish (through internet channels and listserves) research that may have been previously submitted to peer-reviewed journals. Examples include published open access research briefs from Active Living Research, GP RED, Social Science Research Network, Trust for Public Lands and various university departments who do not have formal peer-reviewed journals. This may encourage greater translation of research to practice and broader readership, but may also limit the rigors of the peer-review practices in some situations.

*Note: while many worthy NRPA publications, they were not included here as they can be obtained directly through NRPA.*

## **Index of Contents by Pillar and Key Word Index**

As the articles are purposefully chosen and varied to cover a broad array of topics within the focus of the **NRPA Pillars** (Conservation, Health and Wellness, and Social Equity) in the vast field of parks and recreation management, all annotated articles are listed under these three primary themes, and then in alphabetical order by first author last name. To help readers with specific interest areas, the following pages include this ***Index of Contents by Pillar*** and a ***Keyword Index***. Many articles could fit under several or all Pillars, but for purposes of this summary, inclusions under each primary Pillar are as follows:

- **Conservation** – Topics related to conservation of land and environmental resources, forestry, site-specific audit tools, design and development of parks (including active components and programming spaces), disaster preparedness, and wildfire mitigation.
- **Health and Wellness** – Topics related to physical activity, obesity, aging, active programming, nature play, place-based activities, and sport.
- **Social Equity** – Topics related to system-wide planning and management, diversity, equity, social justice, balancing local vs. tourism aspects, partnerships, leadership, and economic impact.

It is important to note that the Indexing is subjective and many articles could be considered under additional pillars and keywords. For example, many believe that any positive activity in the field can enhance community health and wellness, or that all well-managed community recreation and conservation activities contribute to a positive indirect economic benefit or environment, and that each of these topics can and should be addressed from a social equity lens.

## **Editor Bio**

### **Teresa Penbrooke, MAOM, CPRE**

Teresa is a PhD Student, Researcher, and Instructor in the Parks, Recreation, and Tourism Management (PRTM) Department in the College of Natural Resources at North Carolina State University. Teresa's career has spanned over 30 years in varied parks and recreation related positions. She is a Certified Parks and Recreation Executive, with over six years specifically as a practitioner and administrator for three different public parks and recreation agencies in Colorado. Teresa teaches continuing education courses and sessions for state, national, and international associations, and consults to help communities thrive. In 1999 Teresa founded and continues to serve as the CEO for GreenPlay, LLC ([www.greenplayllc.com](http://www.greenplayllc.com)), a national private parks and recreation management consulting firm. Teresa is Faculty and a Co-Founder of GP RED ([www.gpred.org](http://www.gpred.org)), a national non-profit organization focused on providing Research, Education, and Development for health, recreation, and land management agencies, serving as the Director of the Healthy Communities Research Group (HCRG). She has a BS in Kinesiology, a Master's Degree in Organizational Management, and is expecting to receive a doctorate in Parks, Recreation, and Tourism Management in late 2016. Teresa loves her varied profession that allows her to combine her natural intellectual curiosity with her entrepreneurial spirit and public sector heart. She can be reached at [tlpenbro@ncsu.edu](mailto:tlpenbro@ncsu.edu), [teresap@greenplayllc.com](mailto:teresap@greenplayllc.com), or [teresap@gpred.org](mailto:teresap@gpred.org).

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## Keyword Index

Keywords and Phrases	Lead Author
	<i>See alphabetical listings by Pillar</i>
Accessibility	<i>Sui</i>
Adventure Programming	<i>Newsome, Tsaur</i>
Audit Tools (capacity, observation, survey, geographic)	<i>Bruton, Cohen, Dickinson, Eyler, Hockings, Kardan, Keeler, Lee, Wood</i>
Big Data (social, crowd-sourced)	<i>Afzalan, Keeler, Kaczynski, Wood</i>
Climate (change, readiness)	<i>Bitsura-Meszaros</i>
Complete Streets (transportation, trails)	<i>Harnik, Mboup, Moreland-Russel</i>
Community Capacity Building	<i>Edwards, Fordham, Harnik, Henderson J, Howard, Kardan</i>
Conservation	<i>Chen, Lawhon, Hockings, Keeler, Manning, Newsome, Schmidt, Siikamaki, Wood</i>
Design (parks, facilities)	<i>Chen, Cohen, Fordham, Harnik, Hipp, Kaczynski, Lee, Mboup</i>
Disaster Preparedness	<i>Afzalan, Schmidt</i>
Environment (sustainability, education)	<i>Chen, Hockings, Jennings, Kardan, Keeler, Lawhon, Moore, Manning, Sallis, Schmidt, Siikamaki, Wood</i>
Economic Impact	<i>Crompton, Fordham, Harnik, Kardan, Keeler, Kellison, Mboup, Schmidt, Siikamaki</i>
Forestry	<i>Dickinson, Hockings, Schmidt</i>
Fracking (and parks)	<i>Kellison</i>
Nature Play	<i>Moore, Siikamaki</i>
Obesity (nutrition and activity)	<i>Cohen, Eyler, Jennings, Kardan, Sallis</i>
Partnerships (schools, others)	<i>Harnik, Henderson J, Howard, Kanters</i>
Planning & Management (systems, leadership)	<i>Fordham, Harnik, Hipp, Lee, Manning, Moreland-Russel, Sotomayor, Tummer</i>
Programming (recreation)	<i>Harnik, Heo, Lawhon, Lee, Manning, Moore, Newsome, Siikamaki, Sotomayor, Tsaur</i>
Physical Activity	<i>Bruton, Cohen, Harnik, Hipp, Howard, Jennings, Kanters, Kardan, Kaczynski, Lee, Moreland-Russel, Sallis</i>
Rural Communities	<i>Edwards, Hansen, Schmidt, Sotomayor</i>
Seniors / Older Adults	<i>Heo</i>
Social Equity (justice, disparities)	<i>Bruton, Cohen, Crompton, Floyd, Harnik, Hipp, Henderson KA, Jennings</i>
Social Media	<i>Afzalan, Keeler, Wood</i>
Social Network Analysis	<i>Afzalan, Dickinson</i>
Sport	<i>Edwards, Crompton, Newsome</i>
Tourism	<i>Bitsura-Meszaros, Manning, Newsome, Siikamaki, Sotomayor</i>
Urban Communities	<i>Bruton, Chen, Cohen, Crompton, Harnik, Kardan, Mboup</i>
Wildfire Mitigation	<i>Dickinson</i>

## Annotated Bibliography of Selected Articles 2012- 2015

As readers have a variety of interests, these annotated summaries are organized first by corresponding primary NRPA Pillar, then in alphabetical order by first author's last name. Headlines may be shortened or reworded to summarize content focus.

### Conservation

#### ***Bitsura-Mezzaros, et al. (2015) - Building Coastal Climate Readiness***

**Summary:** This research project includes application of interdisciplinary approaches from the geophysical, social and economic sciences to provide a rigorous assessment of community climate readiness. The frameworks presented provide an innovative process that combines hydroclimatic and visitation data to better understand climate-related risks to nature-based recreation and tourism destinations. Not discussed in depth here, but of equal importance, are project objectives to assess North Shore communities' capacity to adapt to climate change and create decision-support tools to enhance adaptation capacity. The decision-support tools are designed to be strategically linked to the most critical recreation and tourism resources identified by stakeholders during project-related interviews and workshops. In all, the research team's approach reflects the multifaceted nature of climate readiness and is iterative with a replicable framework.

Includes an innovative framework to better understand climate-related risks for tourism destinations.

**Full Reference:**

Bitsura-Mezzaros, K., McCreary, A., Smith, J., Seekamp, E. Davenport, M.A., Nieber, J. Wilson, B. Anderson, D.H. Messer, C. and Kanazawa, M. (2015). Building Coastal Climate Readiness along the North Shore of Lake Superior, *Michigan Journal of Sustainability*, Spring. Volume 3.

**Contact:** Karly Bitsura-Mezzaros, kameszar@ncsu.edu

#### ***Chen (2013) - Design Methods for an Ecological Urban Park***

**Summary:** This article from a Chinese landscape research journal (in English) provides an overview of design considerations for urban parks that are global in application. Planning and design of urban ecological parks, is a multi-disciplinary research topic involving multiple disciplines and sectors, and is quite complex.

Provides an overview of steps to undertake for park design and development.

Therefore, it requires the designers for specific operations, government-level decision makers, the public and foundations actively participating in the project to develop a concrete and sophisticated design methodology for guidance, and solve concrete problems in accordance with relevant principles. The article provides an overview of steps to undertake for park development, including preliminary design considerations, spatial analysis, vertical space considerations, plant and natural conservation aspects, inclusion of water elements, and other aspects requiring attention. There is an overview of urban design considerations, public process, conformity with other development, along with energy and environmental considerations.

**Full Reference:**

Chen, Y.F. (2013). Design methods of ecological urban park. *Journal of Landscape Research*, 1-3, 7.

**Contact:** Yu Fu Chen, cheniyufu111@163.com

### **Dickinson, et al (2015) - Social Interactions, Beliefs, and Wildfire Risk Mitigation**

**Summary:** Social interactions are widely recognized as a potential influence on risk-related behaviors.

Using social interactions to mitigate and prevent wildfires.

In this study, the authors present a mediation model in which social interactions are associated with beliefs about wildfire risk and mitigation options, which in turn shape wildfire mitigation behaviors. They test this model using survey data from fire-prone areas of Colorado. In several cases, the results show that perceived wildfire probability partially mediates the relationship between several interaction types and vegetative mitigation behaviors, while perceptions of aesthetic barriers and lack of information play a mediating role. The results suggest that social interactions may allow mitigation and prevention behaviors to “catch fire” within a community, and that wildfire education programs could leverage these interactions to enhance programmatic benefits.

#### **Full Reference**

Dickinson, K., Brenkert-Smith, H., Champ, P., & Flores, N. (2015). Catching fire? Social interactions, beliefs, and wildfire risk mitigation behaviors. *Society & Natural Resources*, 28(8), 807-824.

**Contact:** Katherine Dickinson, katied@ucar.edu

### **Hockings, et al. (2013) - A Draft Code of Practice for Research in Protected Areas**

**Summary:** Protected areas are favored sites for ecological research and monitoring. Responsible, well managed research can help to improve management effectiveness and enhance conservation outcomes. Many countries have formalized processes for approving and monitoring

Contains a draft code of practice for those carrying out research in protected areas.

research within their protected area systems. There are already a number of codes addressing ethical and social issues with respect to research in protected areas, sacred natural sites and in the traditional territories of indigenous peoples and local communities. However, less attention has been paid at a global scale to the ecological impacts of and access to information from ecological research within protected areas. There are numerous examples of research that is of little value to management or is poorly planned, where the results are not shared with the protected area, and even where research causes significant ecological (and/or social) damage. This paper contains a draft code of practice for those carrying out research or other work in protected areas, which the authors believe should provide a basis for discussions on minimum standards for academic research and practice in the future.

#### **Full Reference**

Hockings, M., Adams, W.M., Brooks, T.M., Dudley, N., Jonas, H., Lotter, W., Mathu, V., Väisänen, R. and Woodley, S. (2013). A draft code of practice for research and monitoring in protected areas.

*PARKS: The International Journal of Protected Areas and Conservation*, International Union for Conservation of Nature, Vol. 19.2.

**Contact:** Marc Hockings, m.hockings@uq.edu.au

**Open Source:** [https://cmsdata.iucn.org/downloads/parks\\_19\\_2\\_hockings.pdf](https://cmsdata.iucn.org/downloads/parks_19_2_hockings.pdf)

### **Keeler, et al. (2015) - Using Geotagged Photography to Measure Recreational Water Demand**

**Summary:** More than 41,000 water bodies are listed as impaired by the US Environmental Protection Agency under the Clean Water Act. Implementation and enforcement of regulations designed to address these impairments can be costly, raising questions

Social-media data (especially crowd-sourced photography) can inform social-ecological research and resource management.

about the value of the public benefits derived from improved surface water quality. In this study, authors assessed the recreational value of changes in water quality using freely available geotagged photographs, taken by members of the public, as a proxy for recreational visits to lakes. The study found

that lake size, water clarity, near-lake population, presence of a boat ramp, and state were significant predictors of annual average per-lake visitation. They also found that improved water clarity is associated with increased numbers of visits to lakes and that lake users were willing to incur greater costs to visit clearer lakes. Lake users were willing to travel 56 minutes farther (equivalent to US \$22 in travel costs) for every one-meter increase in water clarity in Minnesota and Iowa lakes, when controlling for other lake attributes. This approach demonstrates the potential for social-media data (especially crowd-sourced photography) to inform social-ecological research and resource management, including assessment of the recreational benefits of improvements in water quality.

**Full Reference**

Keeler B.L., Wood S.A., Polasky S., Kling C., Filstrup C.T., and Downing J.A. (2015). Recreational demand for clean water: Evidence from geotagged photographs by visitors to lakes. *Frontiers in Ecology and the Environment*, 13(2), pp. 76-81.

**Contact:** Bonnie Keeler, keeler@umn.edu

***Kellison, et al. (2015) - Fracking & Parkland - Understanding the Impact of Hydraulic Fracturing on Public Park Usage***

**Summary:** This exploratory study represents one of the first investigations specifically looking at hydraulic fracturing (fracking) operations related to park usage and participation. The purposes of this study were to explore the parkland-fracking link and to consider the extent, if any, to which fracking operations taking place in or around designated public parks affect expectations of continued visitation and participation. In other words, if fracking operations were to take place on or near public parkland, how would visitation be affected—or, what do currently active park users predict will happen? A 55-item survey was used to identify participants’ views on a number of topics, including their general attitudes toward the environment, fracking and public policy, and fracking on parkland. The instrument also assessed park users’ perceptions of the extent to which nearby fracking impacts their sport-participation levels. Most respondents (>60%) expressed familiarity with the process of fracking. Park users are concerned fracking that occurs on or near their public parks will negatively impact their participation. Only one-third of participants indicated their willingness to participate in recreational activities near fracking operations. More than half of all respondents expressed concern that a fracking operation would limit their ability to access their park, willingness to travel further to visit a park unaffected by fracking, and support for legislation prohibiting fracking near their favorite park. In general, park users believe that fracking on public land is unnecessary and bad for the environment, although they are more neutral relative to the potential economic benefits of fracking.

In general, park users believe that fracking on public land is unnecessary and bad for the environment.

**Full Reference**

Kellison, T., Bunds, K., Casper, J., & Newman, J. (2015). *Fracking & parkland - Understanding the Impact of Hydraulic Fracturing on Public Park Usage*, Exploratory Research Report, University of Florida.

**Open Access:** [http://plaza.ufl.edu/tkellison/\\_/Home\\_files/Fracking-Parkland\\_Report.pdf](http://plaza.ufl.edu/tkellison/_/Home_files/Fracking-Parkland_Report.pdf)

**Contact:** Tim Kellison, tkellison@ufl.edu

***Lawhon, et al. (2013) - Factors Influencing Behavioral Intentions for Leave No Trace Behavior in National Parks***

**Summary:** Resource degradation resulting from visitor behavior continues to be a significant concern for land managers, and effective educational messages such as those promoted through Leave No Trace, which target depreciative behaviors, are imperative. This study examined psychological and knowledge

Users’ perceptions of the effectiveness of *Leave No Trace* practices can predict future intended behaviors.

variables that were hypothesized to influence future Leave No Trace behavioral intent of visitors in Rocky Mountain National Park. An on-site survey was administered to individuals in the Bear Lake corridor of the park. Results of analysis revealed that perceived effectiveness of Leave No Trace practices is a significant predictor of future behavioral intent in all cases. Park visitors like those at Bear Lake are more likely to practice Leave No Trace principals if they perceive the practices to be effective at reducing impacts.

**Full Reference**

Lawhon, B. Newman, P. Taff, D., Vaske, J., Vagias, W. Lawson, S. Monz, C. (2013). Factors Influencing Behavioral Intentions for Leave No Trace Behavior in National Parks. *Journal of Interpretation Research*, Vol. 17 Issue 3, p. 23.

**Contact:** Ben Lawhon, Ben@LNT.org

**Manning, et al. (2014) - Research to Guide Management of Outdoor Recreation and Tourism in Parks and Protected Areas**

**Summary:** This summary research is part of a growing body of scientific and professional literature on outdoor recreation and tourism that can be used to build the capacity of park and protected area management agencies. The article presents background and a framework for management. This management-by-objectives framework includes, (1) formulating indicators and standards of quality, (2) monitoring indicators of quality and (3) implementing management actions designed to maintain standards of quality. The framework can be used to help balance the demand for outdoor recreation and tourism, and the need to protect park resources and the quality of the visitor experience. The paper presents substantial research and references as a basis. The article has conservation implications and the management framework, can be used by conservation practitioners to balance use and protection of national parks and protected areas.

Provides a framework for management and conservation of national parks and protected areas.

**Full Reference**

Manning, R.E., (2014), Research to guide management of outdoor recreation and tourism in parks and protected areas, *Koedoe*, 56(2), 1159.

**Contact:** robert.manning@uvm.edu

**Open Source:** [http:// dx.doi.org/10.4102/koedoe.v56i2.1159](http://dx.doi.org/10.4102/koedoe.v56i2.1159)

**Newsome (2014) - Policy Development for Adventure Racing in Protected Areas**

**Summary:** Adventure racing is a global activity with widely publicized events. Activities include running, mountain biking, kayaking and rope courses, which may take place over a period of 3–5 days, often in parks or other public lands. There can be several hundred competitors participating in such events, which are supported by crews and viewed by spectators. This perspective paper raises awareness about the potential environmental impacts of such activities and sporting events taking place in protected areas. Participants in adventure racing are likely to be focused on risky, thrill-seeking activities where the overall goal is to complete the event as quickly as possible. Such a philosophical standpoint and competitive attitude towards the environment is likely to be sub-optimal in terms of such visitors appreciating the natural values and conservation function of a protected area. The rapid increase of adventure racing and its possible impacts on the environment as well as social aspects are considered in the context of research needs and policy development. This analysis demonstrates that there is a lack of data concerning the impacts of adventure racing on conservation values, environmental resilience, wildlife disturbance and ecotourism importance where sporting activities take place in a protected area. Because protected areas, such as parks, play an

Raises awareness about the potential environmental impacts of adventure racing events taking place in protected areas.

important conservation and passive recreation function the issue of appropriate use of such lands is a cause for concern. There is a need to explore the approval process for appropriate park management, capacity, and existing recreational impacts. This study identifies that there is an urgent need for policy guidelines that can assist managers make the best environmental decisions.

**Full Reference**

Newsome, D. (2013). Appropriate policy development and research needs in response to adventure racing in protected areas. *Biological Conservation*, 171, pp. 259–269.

**Contact:** David Newsome, d.newsome@murdoch.edu.au

**Schmidt, et al. (2013) - Integrating Ecosystem Services and Local Government Finances into Land Use Planning**

**Summary:** This work presents a novel approach to assessing the impact of future rapid growth in rural regions. Authors investigated one of the most rural counties on the eastern coast of the U.S. (McIntosh County, Georgia) from the dual

Addressing forested lands development can provide significant gains in revenue, preservation, and hazard reduction through municipal services planning.

perspective of ecosystem services and costs assumed by local government. As land cover in the study was overwhelmingly forest or wetland, estimates were compiled from multiple sources to map the value of timber sales and recreational leases to private landowners and rare species habitat, carbon sequestration, flood control, pollution treatment, water supply, and storm protection. Based on county budgets, expenditures and revenues deriving from major land use categories (residential, commercial/industrial, agricultural/open-space) were quantified. Results indicate that (1) forested wetlands generate relatively little revenue to either private landowners or taxes to the county from extractive uses, but have very high value relative to other land cover types in the provision of ecosystem services, (2) forest lands contribute much more in revenue than they receive in services, whereas residential properties cost more in services, than they generate in revenue, and (3) significant gains in both ecosystem service preservation, hazard reduction, and in lower costs in municipal services could be achieved by restricting new development from within the Flood Insurance Rate Map (FIRM)-determined 500 year floodplain.

**Full Reference**

Schmidt, J. P., Moore, R., & Alber, M. (2014). Integrating ecosystem services and local government finances into land use planning: a case study from coastal Georgia. *Landscape And Urban Planning*, 12256-67.

**Contact:** J.P. Schmidt, jps@uga.edu

**Siikamaki (2015) - Biodiversity Attracts Visitors to National Parks**

**Summary:** To cope with the funding constraints of biodiversity protection, nature-based tourism, which is regarded as an important ecosystem service, is considered as an option for creating revenues for biodiversity conservation. This study showed that Finnish national parks with high biodiversity values are more attractive for visitors, providing evidence on the direct linkage between biodiversity protection and the provisioning of ecosystem services in protected areas. The number of visits the parks received annually, (their attractiveness), was positively associated with the number of habitat types and occurrences of threatened species. Interestingly, recreational use also overlapped spatially with areas containing high biodiversity values. The number of threatened species and habitat types were on average higher closer to recreational routes than among randomly picked control areas within the parks. These results emphasize the need for careful planning and park management in

The human need for and love of nature can be used to engage the public more strongly with biodiversity issues and increase park visits.

protecting biodiversity in parks. These connections are striking examples that “biophilia”, the human need for and love for nature, can be used to engage the public more strongly with biodiversity issues, and increase visits. *Publisher required statement: “The final publication is available at Springer via <http://dx.doi.org/10.1007/s10531-015-0941-5>” (not open source).*

**Full Reference**

Siikamaki, P., Kangas, K. Paasivaara, A., Schroderus, S., (2015). Biodiversity attracts visitors to national parks. *Biodiversity and Conservation*, September, Volume 24, Issue 10, pp 2521-2534.

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## Health and Wellness

### **Edwards (2015) - The Role of Sport in Community Capacity Building**

**Summary:** This article provides a comprehensive review of research around the topics of sports and community/youth capacity building from around the globe. Population health and disease prevention continue to be important global policy goals. Because of the

Sport may be uniquely positioned to enhance sustainable community health and capacity building.

complex nature of health, recent decades have seen increased interest by public health researchers and practitioners in community-level approaches to health promotion. The building of community capacity is seen as critical for supporting and promoting community-level health. Through the sport for development (SFD) model, there is evidence of sport being an important practice for community development. The purpose of this review was to examine sports contribution to community capacity building. The study shows that many SFD practices can effectively facilitate dimensions of community capacity when conducted in intentional, culturally relevant ways. Specifically, sport helps in building local skills, knowledge, and resources, increasing social cohesion, facilitating structures and mechanisms for community dialog, leadership development, and encouraging civic participation. To increase the usefulness of sport to support community health development, SFD principles should be included as part of sport management university curricula. Additionally, practitioners need grounding in community and human development research to support non-sport components of programs. Finally, practitioners should involve users and stakeholders to identify needs. Sport-based development often generates high interest from residents, funders, and policy makers. By applying principles of community capacity building, sport may be uniquely positioned to enhance sustainable community health development initiatives.

**Full Reference**

Edwards, M. B. (2015). The role of sport in community capacity building: An examination of sport for development research and practice. *Sport Management Review*, 18(1), 6–19.

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### **Eyler, et al. (2015) - Physical Activity and Food Environment Assessments for Practice**

**Summary:** There is growing interest in the use of physical activity and nutrition environmental measures by both researchers and practitioners. Built environment assessment methods and tools range from simple to complex. Even though challenges in tool selection and use may exist for non-researchers, there are opportunities to incorporate these measures into practice. As part of the Built Environment Assessment

There is a need for improved collaboration between research and practice to develop tools, collect and analyze data, and use the results to work toward positive food and physical activity environments.

Training Think Tank meeting in July 2013, experts who work with community partners gathered to provide input on conceptualizing recommendations for collecting and analyzing built environment data in practice and research. The methods were summarized in terms of perceived environment measures,

observational measures, and geographic measures for physical activity and food environment assessment. Challenges are outlined and case study examples of successful use of assessments in practice are described. Built environment assessment tools and measures are important outside the research setting. There is a need for improved collaboration between research and practice in forming partnerships for developing tools, collecting and analyzing data, and using the results to work toward positive environmental changes.

**Full Reference**

Eyler, A.A., Blanck, H.M., Gittelsohn, J., Karpyn, A., McKenzie, T.L., Partington, S., & Winters, M. (2015). Physical activity and food environment assessments: implications for practice. *American Journal of Preventive Medicine*, 48(5), 639-645.

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***Hansen & Hartley (2015) - Promoting Active Living in Rural Communities***

**Summary:** This brief funded by the Active Living Research and the Robert Wood Johnson Foundation asserts that rural children and adults have significantly higher rates of obesity than their urban counterparts, even after accounting for differences such as socioeconomic factors,

Provides tools to measure available resources and constraints for active living in rural communities.

eating behaviors, and physical activity. Higher rates of overweight and obesity among rural residents suggests that rural environments themselves may somehow promote obesity. Differences across geographic regions illustrate the complexity of understanding how and where rural residents are physically active. Since active transportation (walking and biking to destinations) is often difficult to achieve in dispersed rural and remote areas where residents live far from schools, worksites and other common destinations, there is a need for environments that support active recreation, even if residents must drive to get to them. Safe playgrounds, parks, bike paths, trails and other recreational facilities can offer rural residents opportunities to be physically active. Efforts should be made to ensure these amenities are accessible, well-marked, adequately maintained, clear of snow, and that they provide adequate shade. Some rural communities may not have a sufficient tax base to support new or existing parks, recreational facilities, and designated open space. Schools, churches, and transportation options may all be important factors and it is important to bring all voices to the table. Rural-specific measures have been tested for assessing active living, perceptions of physical activity opportunities, social-ecological, cognitive, and cultural perspectives. The paper includes a summary of some tools that can measure active living resources (including parks and recreation) and perceptions to help build the rural active living evidence base.

**Full Reference**

Hansen, A.Y. & Hartley, D. (2015). Promoting Active Living in Rural Communities, *Active Living Research Brief*, Active Living, September, accessed at: <http://activelivingresearch.org/promoting-active-living-rural-communities>

**Contact:** Open Source - <http://activelivingresearch.org/promoting-active-living-rural-communities>

***Harnik & Welle (2012) - How Urban Park Systems Can Best Promote Health and Wellness***

**Summary:** The United States is in crisis. Forty-nine percent of Americans get less than the minimum recommended amount of physical activity and 36 percent of U.S. adults engage in no leisure-time physical activity at all. These people are not all obese, but lack of exercise is certainly a risk factor for being

In order for a park system to foster mental and physical well-being, it must be well used by the public, and this can be addressed by focusing on six primary factors.

overweight—and the U.S. is the most overweight nation on Earth. On average, an obese American racks up nearly \$1,500 more per year in health care costs than an American of normal weight, for a national total of \$147 billion in direct medical expenses. With health costs making up between 17 to 18% of the

U.S. gross domestic product, there is no doubt that the population needs to be more fit. It is well established that physical activity helps prevent obesity and related medical problems, and there is mounting evidence that providing places to exercise (parks, primarily) can improve health. Research is also uncovering physical and mental health benefits simply from interacting with nature: reduced levels of attention deficit disorder and aggressive behaviors, improved cognitive ability, and a general recharge of the brain. In April 2008 The Trust for Public Land (TPL) organized a two-day colloquium with twenty-two leading professionals in public health, parks and recreation, landscape architecture, and urban planning. The group agreed on a primary principle that for a park system to foster mental and physical well-being, it must be well used by the public. The attendees concurred on six primary factors that can stimulate public use: maximized programming, traffic and stress reduction, good design, closer proximity, connectivity, and partnerships. That guidance, along with additional research, has yielded this open source booklet.

**Full Reference**

Harnik, P. and Welle, B., (2012). From Fitness Zones to the Medical Mile: How Urban Park Systems Can Best Promote Health and Wellness. *Trust for Public Lands*, Washington, DC.

**Open Source:** <http://cloud.tpl.org/pubs/ccpe-health-promoting-parks-rpt.pdf>

**Heo, et al. (2013) - Serious Leisure Impacts Older Adults**

**Summary:** This study examines the relationships among serious leisure, life satisfaction, and health of older adults. Successful aging is multi-dimensional, where older individuals engage in meaningful activities, avoid disease, and maintain physical and cognitive functions. Successful aging in a broader sense contains components such as life satisfaction, mental and physical health, and quality of life. Engaging in meaningful activities includes circumstances in which individuals express creativity, experience a sense of achievement, feel competent, or find pleasure. For older adults, participating in social activities (e.g., church-related activities, mass activities, social events, and games) and productive activities (e.g., volunteer work, gardening, and yard work) often becomes an important aspect of successful aging. The literature has provided evidence that participation in leisure activities on the part of older adults leads to substantial health benefits, including physical, psychological, cognitive, and social benefits. From the physical perspective, a strong relationship exists between leisure activities and physical health. Older adults, because of a lack of opportunities, are often less involved in active leisure activities. Therefore, leisure service providers need to create a variety of activities for them, such as community-based programs (e.g., arts-related programs, hobby-related gatherings, senior sports clubs, sports-related organizations, volunteering opportunities, Senior Games) so that they may have opportunities for serious leisure experiences. One method by which to increase participation in leisure activities on the part of older adults is to educate them about the importance of serious leisure in their lives and about how to develop leisure careers centered on acquiring and expressing special skills, knowledge, and experience. To disseminate information about the benefits associated with serious leisure participation, leisure service providers might offer leisure education programs that encourage older adults' involvement in such activities.

One method by which to increase participation in leisure activities in older adults is to educate them about the importance of serious leisure in their lives.

**Full Reference:**

Heo, J., Stebbins, R.A., Kim, J. & Lee, I. (2013) Serious Leisure, Life Satisfaction, and Health of Older Adults, *Leisure Sciences*, 35:1, 16-32.

**Contact:** Jinmoo Heo, [jheo@tamu.edu](mailto:jheo@tamu.edu)

**Hipp, et al. (2013) - Address Constraints at all Levels to Increase Parks and Recreation Use**

**Summary:** There is evidence that physical activity, psychological restoration, and social health is correlated

Interventions aimed at increasing park use must address constraints across all socio-ecological levels.

**Relevant Research for Practice Summary - 2015**

to proximity to parks and recreation sites. The purpose of this study was to identify perceived constraints to park use in low-income communities facing significant health disparities, but with nearby access to underutilized parks. The authors used a series of focus groups with families, teens, and older adults in neighborhoods with similar demographics and parks over 125 acres in size. Constraints to park use varied across the age groups as well as perceived constraints across all social-ecological levels (individuals, user groups, communities, and society levels). Policies and interventions aimed at increasing park use must specifically address constraints across all of these levels to be successful.

**Full Reference**

Hipp, J. A., Adlakha, D., & Chockalingam, R. (2013). Social ecological constraints to park use in communities with proximate park access. *Larnet - The Cyber Journal of Applied Leisure and Recreation Research*, 16(4), 23-36.

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**Jennings & Gaither (2015) - Links between Green Spaces and Environmental Health**

**Summary:** Health disparities occur when adverse health conditions are unequal across populations due in part to gaps in wealth. These disparities continue to plague global health. Decades of research suggests that the natural environment can play a key role in sustaining the health of the public. However, the influence of the natural environment on health disparities is not well-articulated. Green spaces provide ecosystem services that are vital to public health. This paper discusses the link between green spaces and some of the nation's leading health issues such as obesity, cardiovascular health, heat-related illness, and psychological health. These associations are discussed in terms of key demographic variables-race, ethnicity, and income. The authors also identify research gaps and recommendations for future research.

Green spaces provide ecosystem services that are vital to public health.

**Full Reference**

Jennings, V. and Gaither, C.J. (2015). Approaching Environmental Health Disparities and Green Spaces: An Ecosystem Services Perspective. *International Journal of Environmental Research and Public Health*, 12, 1952-1968.

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**Open Access** - <http://www.mdpi.com/1660-4601/12/2/1952>

**Kaczynski, et al. (2014) - Association of Street Connectivity and Traffic Speed with Park Usage and Park-Based Physical Activity**

**Summary:** Parks are important settings and destinations within neighborhoods that can encourage physical activity. However, research on access to parks and physical activity has primarily focused on proximity, with little attention paid to other access-related issues. Parks are important destinations in neighborhoods for a variety of physical, psychological, economic, and spiritual benefits and should be available to residents for their use and enjoyment. This study examined how street connectivity and road traffic speed were related to park usage and park based physical activity among adults. Residents in areas with greater street connectivity were more likely to both use parks and engage in park-based physical activity. Those who did not have to travel on or cross a high speed road (>35 mph) to reach their closest park were more likely to report using parks. Despite some limitations, this study is one of the first to provide evidence of how elements of neighborhood design and access are associated with park-related visitation and physical activity. For practitioners and community planners, ensuring direct and safe access to parks through street network design and traffic

Ensuring safe access to parks through street network design and traffic speed reduction may increase park use and greater community health.

speed reduction strategies may facilitate adults' park visitation, active park use, and greater community health.

**Full Reference**

Kaczynski, A.T., Koohsari, M.J., Wilhelm Stanis, S., Bergstrom, R., and Sugiyama, T. (2014). Association of Street Connectivity and Road Traffic Speed with Park Usage and Park-Based Physical Activity, *American Journal of Health Promotion*, January/February, Vol. 28, No. 3.

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***Kaczynski, et al. (2014) - Point-of-Decision Prompts May Increase Park-based Physical Activity***

**Summary:** This study used crowd-sourced information to evaluate the effectiveness of signs (point of decision prompts) in increasing intent for physical activity (PA). 250 respondents from across the U.S. completed an online experiment. They

Point-of-decision prompts have the potential to significantly improve health at the population level.

were randomly exposed to a park photo containing a persuasive, theoretically based message in the form of a sign (treatment) or an identical photo with no sign (control). Differences in intentions to engage in moderate-to-vigorous physical activity were measured. The findings provide preliminary evidence that theoretically-based messages may help improve intentions to be active in parks. Given the large numbers of residents who use parks and the significant amount of sedentary behavior that occurs in parks, this relatively simple strategy has the potential to significantly improve energy expenditure and health at the population level. The effect of viewing a sign was stronger among women but not men, which is important given that women traditionally have lower levels of PA overall and within park settings. Future research is needed to better explain this finding, but some studies suggest that women may be particularly sensitive and responsive to other environmental PA aids (such as identified bike lanes and stair prompt signs).

**Full Reference**

Kaczynski, A. T., Wilhelm Stanis, S., & Hipp, J. A. (2014). Point-of-decision prompts for increasing park-based physical activity: a crowdsource analysis. *Preventive Medicine*, 6987-89.

**Contact:** Andrew Kaczynski, atkaczyn@mailbox.sc.edu

***Kanters, et al. (2014) - Shared Use of School Facilities with Community Organizations and Afterschool Physical Activity Program Participation***

**Summary:** This study provides a cost-benefit assessment of community afterschool programs at schools. Partnerships between school districts and community-based

Partnerships between schools and community agencies are a promising health promotion strategy.

organizations to share school facilities during afterschool hours can be an effective strategy for increasing physical activity. However, the perceived cost of shared use has been noted as an important reason for restricting community access to schools. This study examined shared use of middle school facilities, the amount and type of afterschool physical activity programs provided at middle schools together with the costs of operating the facilities. The results indicated that Policies that permitted more use of school facilities for community-sponsored programs increased participation in afterschool programs without a significant increase in operating expenses. These results suggest partnerships between schools and other community agencies (such as parks and recreation departments) to share facilities and create new opportunities for afterschool physical activity programs are a promising health promotion strategy.

**Full Reference**

Kanters M.A., Bocarro, J.N., Filardo, M., Edwards, M.B., McKenzie, T.L., Floyd, M.F. (2014). Shared use of school facilities with community organizations and afterschool physical activity program participation: a cost-benefit assessment. *Journal of School Health*. 84: 302-309.

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### ***Kardan, et al. (2015) - Neighborhood Greenspace and Health in a Large Urban Center***

**Summary:** Studies have shown that natural environments can enhance health. This study builds upon that work by examining the associations between comprehensive greenspace metrics and health. Researchers focused on a

Having more trees nearby significantly improves health in urban settings.

large urban population center (Toronto, Canada) and related these two domains by combining high-resolution satellite imagery and individual tree data from Toronto with questionnaire-based self-reports of general health perception, cardio-metabolic conditions, and mental illnesses from the Ontario Health Study. Results from statistical analyses suggest that people who live in neighborhoods with a higher density of trees on their streets report significantly higher health perception and significantly less cardio-metabolic conditions (controlling for socio-economic and demographic factors). The study found that having 10 more trees in a city block, on average, improves health perception in ways comparable to an increase in annual personal income of \$10,000 and moving to a neighborhood with \$10,000 higher median income or being 7 years younger. The study also found that having 11 more trees in a city block, on average, decreases cardio-metabolic conditions in ways comparable to an increase in annual personal income of \$20,000 and moving to a neighborhood with \$20,000 higher median income or being 1.4 years younger.

#### **Full Reference**

Kardan, O., Gozdyra, P. Misic, B. Moola, F. Palmer, L.J., Paus, T., and Berman, M.G. (2015). Neighborhood greenspace and health in a large urban center, *Nature*, Scientific Reports. Accessed 10/28/2015.

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**Open Access:** [www.nature.com/scientificreports/](http://www.nature.com/scientificreports/)

### ***Lee, et al. (2013) - Objective Evaluation of Recreational facilities with RecFAT***

**Summary:** The characteristics of recreational facilities are determinants of facility use and physical activity, yet there are few validated and extensive audit tools gauging characteristics of recreational facilities. This study based in Hong Kong and Australia aimed to describe the development of a site-specific audit tool, the Recreational Facility Audit

This audit tool can be used by recreation practitioners and researchers to promote facility use and active healthy lifestyles by identifying the strengths and weaknesses of a recreation facility.

Tool (RecFAT), that objectively evaluates the characteristics of recreational facilities across 10 domains, including the availability of sports facilities, accessibility to the facility, availability of supportive amenities, conditions of changing rooms, conditions of toilets, management, policy, environmental safety, aesthetics, and social environment. The study builds upon similar site audit tools published prior to 2012 (e.g. EAPRS, BRAT, and PEAT). The reliability was assessed showing good reliability acceptable for use in most situations. Subjective and time-sensitive audit items may need clearer descriptions and multiple repeated measures to improve their reliability. The audit tool can be used to reliably assess indoor sports centers, parks, sports grounds, playgrounds and swimming pools. The objective data collected by this audit tool can contribute to the understanding of relationships between characteristics of recreational facilities, usage and physical activity. The audit tool can be used by recreation practitioners and researchers who aim to promote facility use and active healthy lifestyles. Using this audit tool, the strengths and weaknesses of a recreation facility may be identified, and the results may assist resource allocation for specific areas.

#### **Full Reference**

Lee, K., Macfarlane, D., & Cerin, E. (2013). Objective evaluation of recreational facilities: development and reliability of the Recreational Facility Audit Tool. *Journal of Park and Recreation Administration*, 31(4).

**Contact:** Ka Yiu Lee, kyle2012@hku.hk

### **Moore (2014) - Creating and Managing Places Where Children Engage with Nature**

**Summary:** This publication by the Natural Learning Initiative and the National Wildlife Federation offers a set of guidelines for those who create, manage or promote development of nature spaces in the everyday environments of children, youth, and families, especially in urban/suburban communities. The goal is to attract kids and families outdoors to interact directly with nature. Seven chapters cover topics such as why nature play and learning is important for health and human development; the historical precedents of community-based, children's outdoor facilities dedicated to free play and learning; how playing with and learning through nature can be a vehicle for environmental literacy and advance educational missions; locating, designing, and implementing nature play areas; along with how to address risk management and other related factors.

Nature play and learning is important for health and human development, and needs to be well-managed.

#### **Full Reference**

Moore, R.C. (2014). *Nature Play & Learning Places. Creating and managing places where children engage with nature*. Version 1.1. Natural Learning Initiative and National Wildlife Federation.

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### **Moreland-Russel, et al. (2013) - Spread of Complete Streets Policies across U.S. Communities**

**Summary:** Complete Streets policies guide planning in communities by making transportation systems accommodating to all users including vehicle drivers, pedestrians, and bicyclists, as well as those using public transportation. For parks and recreation agencies, these policies can help provide access to parks and facilities, trail management, and increasing community physical activity. While the number of Complete Streets policies has increased over the past decade, no previous research had explored the factors attributing to the widespread diffusion of these policies. The purpose of this study was to identify potential patterns, with the main outcome being policy adoption. The researchers identified several factors that had the potential to affect the rate of Complete Streets policy diffusion: rural/urban status, state obesity rate, state funding for transportation, state obesity prevention funding, percentage of people who walk or bike to work in the state, presence of a state Complete Streets policy, and the number of bordering communities with Complete Streets policy. Data from 49 community-level policies were analyzed, with a "community" defined as a city, a county, or a regional/Metropolitan Planning Organization. Variables which were determined to be significant predictors of Complete Streets policy adoption were state obesity rates, the percentage of people who bike or walk to work in the state, and the presence of a nearby community with a Complete Streets policy. Communities with Complete Streets policies varied in geographic and demographic factors. This information about communities that are more likely to adopt a policy can be a tool for advocacy and justification for policy makers interested in this topic. Because adoption of a policy does not imply implementation or results, further research is needed to study overall outcomes of Complete Streets policies.

For P&R agencies, Complete Streets policies can help provide access to parks and facilities, trail management, and increase community physical activity.

#### **Full Reference**

Moreland-Russell, S., Eyler, A., Barbero, C., Hipp, J.A., & Walsh, H. (2013). Diffusion of complete streets policies across US communities. *Journal of Public Health Management and Practice*, 19 (Suppl. 1), S89-S96.

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### **Sallis, et al. (2014) - The Role of Built Environments in Physical Activity, Obesity, and Cardiovascular Disease**

**Summary:** In industrialized nations like the United States and Sweden, the vast majority of adults do not meet the physical activity guidelines of 150 minutes per week. Inactive lifestyles put most adults at risk of cardiovascular diseases (CVDs), diabetes, obesity, some cancers, osteoporosis, and psychological disorders. Physical activity can be

Describes behaviors, key concepts, evidence, and recommendations around the relationships between the built environment, physical activity, and obesity.

effective at all phases of disease management, from prevention of risk factors through treatment and rehabilitation. There is potential for physical activity to prevent chronic diseases, thereby improving quality of life and reducing healthcare costs. In the past decade, limitations of prevention approaches that target mainly individuals with educational and motivational programs have been recognized, triggering a trend to consider influences on behavior that are outside the person, such as the built environment. This report describes multilevel ecological models of behavior as they apply to physical activity, describes key concepts, summarizes evidence on the relation of built environment attributes to physical activity and obesity, and provides recommendations for built environment changes that could increase physical activity. The intent of this non-systematic review was to present conclusions from previous reviews, then illustrate results by highlighting selected studies. The summary shows that interdisciplinary research has generally supported hypotheses from ecological models and identified specific built environment attributes and combinations of attributes that are related to physical activity, mainly for recreation and transportation purposes, and obesity. It is becoming clear that racial/ethnic minority and low-income communities are disadvantaged in access to recreation facilities, positive aesthetics, and protection from traffic. These results provide an empirical rationale for intervention at all levels.

#### **Full Reference**

Sallis, J.F., Floyd, M.F., Rodriguez, D.A., and Saelens, B.E., (2014). Role of Built Environments in Physical Activity, Obesity, and Cardiovascular Disease, *Circulation – Journal of the American Heart Association*, 125:729-737.

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**Open Source:** <http://circ.ahajournals.org/content/125/5/729.full.pdf+html>

### **Schoffman, et al. (2015) - Physical Activity Increases and Better Social Factors Are Shown in those Using Outdoor Recreation Areas**

**Summary:** Outdoor recreation areas (ORAs) are important resources for physical activity (PA) and health promotion. While past research has identified a correlation between ORA use and increased PA,

Use of outdoor recreation areas is associated with higher levels of physical activity, self-efficacy, and social support.

few studies have examined predictors of long-term changes in park- and trail-based PA in community settings. Using data from a 6-month community-based walking intervention study, researchers examined cross-sectional and longitudinal predictors of PA in ORAs, evaluating 295 participants in a group walking intervention in South Carolina. They also evaluated social support, self-efficacy for PA, perceptions of neighborhood environment, and adjusted for gender. There was a mean increase in group ORA use from baseline to 6 months. Higher levels of PA, self-efficacy, and social support were associated with ORA use. Longitudinally, increased social support from friends and rating of lighter motorized traffic were associated with increased group ORA use. Additionally, increases PA and more favorable rating of the neighborhood as a place to walk were both associated with decreased group ORA use. Better understanding of how social and the physical environmental impact ORA use for PA can lead to more effective intervention strategies, and warrants future research and promotion efforts.

**Full Reference:** Schoffman, D.E., Kaczynski, A.T., Forthofer, K., Wilcox, S., Hutto, B., Child, S., & Hughey, M. (2015). Longitudinal associations with changes in outdoor recreation area use for physical activity during a community-based intervention, *Preventive Medicine*, 78, 29–32.

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***Sibold, et al. (2015) - Physical Activity Reduces Suicidal Thoughts from Bullying in Adolescents***

**Summary:** The consequences of bullying are well described, yet little is known about protective factors that may help youth cope. The authors stated that one possible factor, physical activity (PA), improves mental health in general and clinical populations. The purpose of this study was to examine relationships among PA, sadness, and suicidality in bullied US adolescents. The authors hypothesized that physically active students would be less likely to feel sad or to report suicidal ideation or attempts, including bullied students. Using the 2013 National Youth Risk Behavior Survey, the researchers performed regression models adjusted for age, sex, and race estimated the odds ratios among PA, sadness, suicidal ideation, and suicide attempts, stratified by whether students were bullied. The results showed that overall, 30.0% of students reported sadness for two or more weeks, 22.2% reported suicidal ideation, and 8.2% reported suicide attempt in the previous 12 months. Bullied students were twice as likely to report feeling sad and three times as likely to report suicidal ideation or attempt. Students who reported exercising 4 to 5 days a week had lower adjusted odds of sadness, suicidal ideation, or suicide attempts than students who exercised 0 to 1 day a week. Overall, exercise for four or more days per week was associated with an approximate 23% reduction in thoughts or attempts of suicide in bullied students. The authors concluded that PA is inversely related to sadness and suicidality in adolescents, highlighting the relationship between PA and mental health in children, and potentially implicating PA as an option in the response to bullying.

Exercise for four or more days per week was associated with an approximate 23% reduction in thoughts or attempts of suicidal in bullied students.

**Full reference**

Sibold, J., Edwards, E., Murray-Close, D., & Hudziak, J.J. (2015). Physical Activity, Sadness, and Suicidality in Bullied US Adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 54(10), 808–815. <http://doi.org/10.1016/j.jaac.2015.06.019>

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***Tsaur, et al. (2014) - Creating a Model to Address Perceptions of Challenge Experiences***

**Summary:** Perceiving challenge is an important aspect of adventure recreation. Few studies had previously considered the potential outcome of challenge perception among participants

Perception of challenge has a positive impact on participant experience, satisfaction, and psychological well-being.

in adventure recreation. This study from Taiwan

sought to address this topic by establishing a comprehensive model of challenge perception in adventure recreation that additionally models the relationship between the challenge and its outcome. A self-administered questionnaire was designed to collect empirical data from recreationists who engaged in scuba diving, high-altitude mountaineering, or white-water rafting in Taiwan. The findings indicated that perception of challenge among recreationists has a positive impact on flow experience and, by extension, on satisfaction, and psychological well-being. Practitioners may want to use this information to focus on appropriate perception of challenge for programmed activities.

**Full Reference**

Tsaur, S., Lin, W., & Cheng, T. (2015). Toward a structural model of challenge experience in adventure recreation. *Journal of Leisure Research*, 47(3), 322-336

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## Social Equity

### ***Afzalan, et al. (2014) - From Big to Little Data for Natural Disaster Recovery: How Online and On-the-Ground Activities are Connected***

**Summary:** Following a major natural disaster, many turn to social media to communicate about their situation and try to seek help in disaster recovery. With millions of social media posts, it can be difficult for disaster management organizations to tap into these immense social networks to find the data needed and to connect individuals to networks that can provide assistance. This study took big data analytics methods and applies them to a specific context, examining how active and influential members of Facebook groups aided in disaster recovery following Hurricane Sandy. It used network analysis methods for finding influential members and a web-survey for learning about their background and volunteer activity inside and outside of their Facebook groups. The findings show that the majority of the active online members are also actively involved in on-the-ground recovery activities. They also have the capacity and willingness to work as volunteers. These members have important roles in the integration of online and on-the-ground disaster recovery efforts. Local governments and disaster management organizations should be prepared to incorporate social media data in their formal disaster recovery processes. This incorporation can require the integration of big data analysis methods with social science theories and methods.

Local governments should be prepared to incorporate social media data in their formal disaster recovery processes.

#### **Full Reference**

Afzalan, N., Evans-Cowley, J.S. & Barijough, M. (2014). From Big to Little Data for Natural Disaster Recovery: How Online and On-the-Ground Activities are Connected (Nov). Social Science Research Network, available at SSRN:<http://ssrn.com/abstract=2526177>.

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**Open Access** - [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2526177](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2526177)

### ***Bruton & Floyd (2014) - Disparities in Built and Natural Features of Urban Parks: Comparisons by Neighborhood Level Race/Ethnicity and Income***

**Summary:** Known associations between the built environment and health outcomes have accelerated research on racial/ethnic and income disparities related to parks and other community features that support physical activity. Currently, it cannot be concluded that park characteristics are equal in quantity or condition across areas of disparate race/ethnicity and income composition. This study examined natural and built park characteristics across areas of different race/ethnicity and income composition to identify potential disparities. Twenty-one parks in Greensboro, NC, were inventoried using a park audit tool and GIS. Parks were compared on number of activity areas, features, amenities, size, percent tree canopy, cleanliness, and condition. Statistical tests were used to compare means of outcome variables. Results were that fewer wooded areas and more trash cans were found in low-income and minority areas as compared to medium-high income and non-minority areas. Low-income areas were found to have more picnic areas than their counterparts. Sitting and resting features in non-minority areas were found to be cleaner than those in minority areas. There was some evidence of disparities in park characteristics. Findings can inform park policy and design as well as renovations and maintenance procedures, particularly in specific areas where existing disparities were identified.

Examining park characteristics to identify social disparities.

#### **Full Reference:**

Bruton, C. and Floyd, M.F. (2014) Disparities in Built and Natural Features of Urban Parks: Comparisons by Neighborhood Level Race/Ethnicity and Income, *Journal of Urban Health*, July; 91(5).

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### **Cohen, et al. (2013) - Use Of Neighborhood Parks: Does Socio-Economic Status Matter?**

**Summary:** Higher socio-economic status (SES) has been found to be an important correlate of greater leisure time physical activity (PA), yet whether differences in leisure time PA between high and low-income populations are due to individual preferences

Suggests that park programming is the most important correlate of park use and park-based physical activity.

or other factors is still unknown. Prior studies have been limited geographically, did not account for differences in individual access to parks and other recreational facilities, and did not use objectively measured data. To overcome these limitations, this study surveyed populations with similar access to parks in four disparate geographic locations using both direct observation and self-report. This study examined whether neighborhood SES was an independent correlate of park-based PA, given equal access. Because PA is a critical contributor to health and a determinant of well-being and longevity, understanding the social and contextual factors that promote or hinder activity engagement is critical to developing interventions or remedies. The study used the System for Observation of Play and Recreation in Communities (SOPARC) to measure neighborhood park use, along with intercept surveys of users and neighborhood surveys. Results were that the size and number of facilities in high poverty neighborhood parks were similar to those in low poverty neighborhood parks, but the former had more hours of programming. Neighborhood poverty level, perception of safety, and the presence of incivilities were not associated with the number of observed park users. However, programmed activities and the number of activity facilities were strongly correlated with park use and energy expended in the park. The authors concluded that park programming is the most important correlate of park use and park-based physical activity, suggesting that there are considerable opportunities for facilitating increased PA among both high and low poverty area populations.

#### **Full Reference:**

Cohen, D. A., Lapham, S., Evenson, K. R., Williamson, S., Golinelli, D., Ward, P., & McKenzie, T. L. (2013). Use of neighbourhood parks: does socio-economic status matter? A four-city study. *Public Health, 127*(4), 325-332.

**Contact:** Patti Hokanson, phokanson@bhrcs.org

### **Crompton & Howard (2013) - Costs: The Rest of the Economic Impact Story**

**Summary:** Economic impact studies are frequently commissioned to justify investments in sport projects. However, decisions also should include a consideration of a project's costs since it is the net return on investment that should drive decisions. Whenever taxpayer funds are

Provides an overview of considerations when determining economic impact and costs

expended on a sports project there is an opportunity cost. Three types of opportunity cost are discussed. Explicit costs are those for which a government entity "writes a check." They are comprised of event costs, land and infrastructure costs, and operations and maintenance costs. Implicit costs are those which remain "hidden" from most taxpayers: foregone property taxes, strategic underestimation of capital costs, displacement costs, and an inequitable nexus between payers and beneficiaries. External costs are those incurred by taxpayers beyond the boundaries of a local jurisdiction. This study provides an overview of considerations when determining economic impact and costs.

#### **Full Reference**

Crompton, J. L., & Howard, D. R. (2013). Costs: the rest of the economic impact story. *Journal of Sport Management, 27*(5), 379-392.

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### **Floyd (2014) - Social Justice as an Integrating Force for Leisure Research**

**Summary:** Over the past three decades, the literature on race and ethnicity in leisure research has expanded significantly. As a whole it has provided better understanding of the ways historical, social, cultural, and economic factors

Our field must engage with communities through methods that afford opportunities for building trust and bridge social divides.

shape leisure experiences among racial and ethnic minorities. It has also informed on how contemporary racism and discrimination continue to affect leisure experiences. As enthusiasm for social justice inquiry in leisure studies builds, this essay summarizes other findings to identify three concerns related to the practice of social justice research involving race and ethnicity in leisure. First, social justice research must respond to urgent social problems facing communities of color. Second, researchers must acknowledge the moral dimension in social justice inquiry. Third, power differentials between researchers and communities of practice and the community members involved in studies should be recognized and minimized when possible. The author argues that our field must engage with communities through methods that afford opportunities for building trust and bridging social divides. These concerns were highlighted to bring attention to ways research can compromise efforts to promote social justice in the communities seeking to assist and to help envision and expand the range of possibilities for promoting social justice through leisure research on race and ethnicity.

#### **Full Reference:**

Floyd, M.F. (2014). Social Justice as an Integrating Force for Leisure Research, *Leisure Sciences: An Interdisciplinary Journal*, 36:4, 379-387.

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### **Fordham, et al. (2013) - Open Space Planning and Design Guide**

**Summary:** The term “open space” means different things in differing communities, but this compiled Australian guide to planning public parks, recreation, trails, and other amenities is one of the more comprehensive resources published in recent years.

Local government plays a critical role in setting policy and planning the future of public space for the benefit of all residents within their communities

The guide includes focus on the environmental, social, health, and economic benefits of parks and facilities. This document sits in a broader industry context to achieve quality non-contested outcomes for open space provision in changing communities. Local government plays a critical role in setting policy and considering planning applications that determine the future of public space for the benefit of all residents within their communities. The document guides: Development of sound and consistent policy across all local governments to inform open space contributions through planning provisions at a local level; Assessment of planning applications that statutory planners will consider as new communities are planned and existing communities are regenerated; Strategies to assist local government prepare planning scheme amendments and defend local planning decisions for open space contributions at Council and Commission level; Approaches that can be applied to the numerous settlement types that are determined by government policy and the urban, regional and rural nature of the state; and Planning processes that Councils can undertake to plan and develop open space and achieve the best outcomes from land that is available.

#### **Full Reference**

Fordham, B., Kiss, C., and Sykes, S. (2013). Open Space Planning and Design Guide – “launched”, *Australasian Parks & Leisure*, Spring, Vol. 16 Issue 3, p12.

**Open Source:** <https://www.parksleisure.com.au/documents/item/2091>

### **Harnik & Crompton (2014) - Measuring the Total Economic Value of a Park System**

**Summary:** In the political arena, it is almost always advantageous to frame an issue in economic terms when seeking support from a legislative body. This paper describes, measures, and provides illustrative examples for estimating the economic value of twelve benefits associated

Illustrative examples for estimating the economic value of benefits associated with urban parks.

with urban parks. Seven of these constitute a template for measuring the economic value of an urban parks system that has been developed and refined by empirical studies undertaken in twelve U.S. urban areas by the Trust for Public Land. The remaining five are suggested measures that might be added to the template. The paper concludes by identifying five other park benefits for which no measure of economic value appears to exist at this point. These include protecting drinking water, biosystem diversity, land productivity, stress reduction, and increased levels of education.

#### **Full Reference**

Harnik, P., & Crompton, J.L. (2014). Measuring the total economic value of a park system to a community. *Managing Leisure*, 19(3), 188-211.

**Open Source:** <http://agrifilecdn.tamu.edu/cromptonrpts/files/2011/06/Measuring-the-total-economic-value-of-a-park-system-to-a-community.pdf>

### **Henderson, J. (2014) - Why Leisure Organizations Fail to Seize Community Development Opportunities: Suggestions for Improving Collaborative Success**

**Summary:** The prevailing organizational culture within local government often inhibits the ability to maximize opportunities to collaborate with other entities such as other government agencies, non-profit organizations, and civic associations. The most prominent characteristics that prevent collaboration are customer

Examines how P&R agencies can leverage resource investments in a community center to create synergies to benefit the larger community.

service orientation, slow deliberative decision-making, and risk aversion. Even with an avowed interest and willingness to collaborate, the cultural differences among collaborators can be difficult to bridge. The research brief focuses on the typical community center operated by a park and recreation agency, using two case studies to examine how park and recreation agencies can leverage resource investment in a community center to create synergies to benefit the larger community beyond benefits received by individuals participating in programs and events at the centers. The overview includes examining aspects of social capital, capacity building, social connectedness, leadership and political action, along with recommendations for improving community capacity and collaboration.

#### **Full Reference**

Henderson, J. (2015). Why Leisure Organizations Fail to Seize Community Development Opportunities: Suggestions for Improving Collaborative Success, *GP RED Research Brief*, (5) August, [www.gpred.org](http://www.gpred.org).

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**Open Access** - <http://www.gpred.org/wp-content/uploads/2015/08/GP-Red-ResearchBrief-No-5.pdf>

### **Henderson K.A. (2014) - The Imperative of Leisure Justice Research**

**Summary:** Leisure justice is an approach to how the right to leisure can be facilitated through a social and environmental justice lens. In this integrative review, leisure justice research is described along with the challenges that it manifests. Questions are raised about what becomes of leisure research if justice is discounted as well as what research will embody if justice is an imperative. Further suggestions about what leisure

Suggestions about what leisure justice research entails, as well as how and why all research about leisure can have implications for justice.

justice research entails and the ongoing issues are proffered as well as how and why all research about leisure can have implications for justice. The challenge is to use justice research for addressing emerging questions about leisure leading to social change. Leisure justice research is also a basis for social action and can be a guiding focus for parks and recreation administrators. The article includes an extensive reference list for those interested in further reading on social equity and the potential role of leisure, parks, and recreation.

#### **Full Reference**

Henderson, K. A. (2014). The imperative of leisure justice research. *Leisure Sciences*, 36(4), 340-348.

**Contact:** Karla Henderson, karla\_henderson@ncsu.edu

#### **Hockings, et al. (2013) - A Draft Code of Practice for Research In Protected Areas**

**Summary:** Protected areas are favored sites for ecological research and monitoring. Responsible, well managed research can help to improve management effectiveness and enhance conservation outcomes. Many countries have

Suggests a draft code for practice and research in protected areas.

formalized processes for approving and monitoring research within their protected area systems. There are already a number of codes addressing ethical and social issues with respect to research in protected areas, sacred natural sites and in the traditional territories of indigenous peoples and local communities. However, less attention has been paid at a global scale to the ecological impacts of and access to information from ecological research within protected areas. There are numerous examples of research that is of little value to management or is poorly planned, where the results are not shared with the protected area, and even where research causes significant ecological (and/or social) damage. This paper contains a draft code of practice for those carrying out research or other work in protected areas, which the authors believe should provide a basis for discussions on minimum standards for academic research and practice in the future.

#### **Full Reference**

Hockings, M., Adams, W.M., Brooks, T.M., Dudley, N., Jonas, H., Lotter, W., Mathu, V., Väisänen, R. and Woodley, S. (2013). A draft code of practice for research and monitoring in protected areas. *PARKS: The International Journal of Protected Areas and Conservation*, International Union for Conservation of Nature, Vol. 19.2.

**Contact:** Marc Hockings, m.hockings@uq.edu.au

**Open Source:** [https://cmsdata.iucn.org/downloads/parks\\_19\\_2\\_hockings.pdf](https://cmsdata.iucn.org/downloads/parks_19_2_hockings.pdf)

#### **Howard, K. et al. (2013) - Strategies for Creating Successful Joint Use Agreements**

**Summary:** As financial resources diminish and the cost and development of land increases, community-school partnerships have received growing attention. Although joint use is not a new concept, its resurgence as an effective way to deliver recreational services comes at a time when researchers, practitioners, and

For joint use agreements to work, there must be cooperation by all parties involved, clearly stated objectives, and the pursuit of mutually beneficial outcomes.

policy makers are examining ways to address challenges. Although there are examples of successful joint use partnerships, many entities are reluctant to engage in them due to fears of vandalism, liability, over use of facilities, cost, and lack of knowledge about how to develop joint use agreements. The purpose of this study was to use a case study approach to understand factors that resulted in a successful joint use agreement. The school and parks and recreation department used in this case study were purposefully selected due to the high amount of community and school-related use during after school hours. Interviews yielded four major themes that were identified as reasons for the success of the joint use agreement: deliberate formation and continued maintenance of relationships, shared vision, agreements set up to be mutually beneficial, and resources to address community demands. Results revealed patterns that might be useful for practice. In this case, the strengths of the parks and

recreation administrators were their willingness to maintain constant communication with school personnel, and their emphasis on being respectful of the needs of the school administrators and their programs. Parks and recreation personnel understood the importance of establishing and maintaining positive relationships, and how these relationships are directly linked to their ability to offer quality recreational programs. However, the development and maintenance of joint use agreements is not easy. For joint use agreements to work, there must be cooperation and effort by all parties involved, clearly stated objectives, and the pursuit of outcomes that are beneficial to both sides.

**Full Reference:**

Howard, K., Bocarro, J.N., & Kanters, M.A. (2013). Strategies for creating successful Joint Use agreements: A case study. *Journal of Park and Recreation Administration*, 31(1), 98-107.

**Contact:** Keith Howard, kphoward@ncsu.edu

**Mboup (2012) - Streets as Public Spaces and Drivers of Urban Prosperity**

**Summary:** In 2012 UN-Habitat presented to the world the notion of city prosperity, which implies success, wealth, thriving conditions, and wellbeing, as well as opportunity for all. Cities that foster

Citizens are now reclaiming their streets as public spaces in many corners of the world.

infrastructure development, environmental sustainability, high productivity, quality of life, and equity and social inclusion are considered prosperous cities. Building on the notion of prosperity, UN-Habitat emphasizes that for a city to be prosperous, it must have a generous and well-designed street pattern. In this 168-page detailed open source report, UN-Habitat advocates for a holistic approach to streets as public spaces that embraces the concept of livability and completeness. The report asserts that global needs in developed countries are somewhat similar. Streets as public space are often overlooked. When planning the city, the multiple functions of streets are poorly integrated and, in the worst cases, are neglected. Citizens are now reclaiming their streets as public spaces in many corners of the world. The planning and design of streets should take into consideration the needs of all users: age groups, gender, economic status and modal means. A good street pattern boosts infrastructure development, enhances environmental sustainability, supports higher productivity, enriches quality of life, reduces obesity, and promotes equity and social inclusion. The report highlights the U.N.'s City Prosperity Index, which includes many of the functions that parks and recreation responsibilities uphold within communities, along with many pages of elements for consideration for comprehensive community planning, complete streets, and the management of these aspects for increased quality of life.

**Full Reference**

Mboup, G. (2013). Streets as public spaces and drivers of urban prosperity. *United Nations Habitat Report by the Global Urban Observatory's Research and Technical Team*. Accessed at: <http://unhabitat.org/books/streets-as-public-spaces-and-drivers-of-urban-prosperity/>

**Open source:** <http://unhabitat.org/books/streets-as-public-spaces-and-drivers-of-urban-prosperity/>

**Sotomayor, et al. (2014) - Motivations for Recreating on Farmlands, Private Forests, and State or National Parks**

**Summary:** This study explored the importance of different motivations to visit three types of recreational settings - farms, private forests, and state or national parks. Analysis revealed both similarities and differences in motivations for

Individuals expect distinctly different outcomes from their visits to farmlands, private forests, or state or national parks, which can impact methods for attracting new visitors.

visiting these settings. Being with family, viewing natural scenery, and enjoying the smells and sounds of nature were all highly important motivations. However, all 15 motivations examined were perceived to be significantly more important for visits to state or national parks than to farms or private forests.

Findings suggest that individuals are more strongly motivated to recreate at state and national parks relative to farmlands or forests. Comparing motivations between both agricultural settings (farms and

private forests) revealed significant differences in eight different recreational motivations. Individuals tended to place more importance on the ability to use equipment and test their skills when considering recreating on private forests. Conversely, social motivations (e.g., doing something with the family) were more important when individuals were considering recreating on farmland. Collectively, the findings suggest individuals expect distinctly different outcomes from their visits to farmlands, private forests, or state or national parks. Consequently, all three types of recreational settings have competitive advantages that their managers could capitalize on when making decisions about how to attract new visitors or produce the most desirable experiences for current users.

**Full Reference**

Sotomayor, S., Barbieri, C., Wilhelm Stanis, S., Aguilar, F. X., & Smith, J. W. (2014). Motivations for recreating on farmlands, private forests, and state or national parks. *Environmental Management*, 54(1), 138-150.

**Contact:** Carla Barbieri, carla\_barbieri@ncsu.edu

***Sui (2013) - Accessible Park Environments and Facilities for the Visually Impaired***

**Summary:** This paper discusses that parks, as one kind of open space, must be open not only for some people, but for everyone, including those with special needs such as visually impaired people. Although the paper was based on a case study in Hong Kong, its practical and social implications are also important to

Although barrier-free concepts have been enforced in many places for years, people with special needs still face a lot of “barriers” in their daily lives.

other places. Although barrier-free concepts have been enforced in many places for some years, people with special needs (in particular visually impaired people) still face a lot of “barriers” in their daily life. The paper identifies a number of key directions for the policy, design and management of park environments and facilities that will promote openness and social inclusion. Findings include three areas that require attention to improve the accessibility of parks: ways of identifying and approaching the parks; overall environmental setting of the parks; and facilities inside the parks. Assistance to visually impaired people can be further categorized into information provided in advance and information provided on-site. The findings provide reference and direction for the governments, designers and management to plan, design and manage parks for the needs of visually impaired people. The findings also advocate inclusive and universal approach in planning, implementation, and management of parks.

**Full Reference**

Siu, K.W.M. (2013), Accessible park environments and facilities for the visually impaired, *Facilities*, Vol. 31 Issue 13/14, pp. 590 – 609.

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***Tummer & Knies (2015) - Measuring Public Leadership Using Scales for Key Leadership Roles***

**Summary:** This article on public leadership contributes to the literature by focusing on the “public” aspect of leadership and developing quantitative scales for measuring four public leadership roles. These roles all refer to the extent to which public leaders actively support their employees in dealing with public sector issues: (1) accountability leadership, (2) rule-following leadership, (3) political loyalty leadership, and (4) network governance leadership. The authors tested the scales for validity with satisfactory results. Also, as expected, the scales for public leadership relate to transformational leadership and leadership effectiveness. The scales also correlate with organizational commitment, work engagement and turnover intention. The authors conclude with suggestions for how the scales can be used.

Provides quantitative scales for measuring public leadership effectiveness.

**Full Reference**

Tummers, L.G. & Knies, E. (2015). Measuring Public Leadership: Developing Scales for Four Key Public Leadership Roles. *Public Administration*.

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**Wood, et al. (2015) - Using Social Media to Quantify Nature-based Tourism and Recreation**

**Summary:** Recreation and tourism are important components of many national and local economies and they contribute in innumerable ways to quality of life, sense of place, social connection, physical wellbeing, learning, and other intangibles. Information on patterns of recreation and tourism and the factors that influence behavior in these realms is typically collected using site-specific surveys or interviews. The recent emergence of social media creates exciting alternative possibilities to assess how people use and respond to nature and other cues for recreation and tourism. One problem, however, is that while they generate “big data”, it is often unclear how to tease meaning and useful information from social media. This study assessed the relationship between the locations of photographs from the image-sharing website Flickr and empirically derived visitation rates at sites around the world. This is the first study to ground-truth the use of data from social media to predict visitation rates, freeing researchers from time- and labor-intensive surveys and revolutionizing the use of social media to understand where people recreate. The study concluded that the crowd-sourced information can indeed serve as a reliable proxy for traditional methods of determining visitation rates. This new approach offers opportunities to understand which elements of nature attract people to locations around the globe, and whether visitation rates are altered by changes in ecosystems.

Crowd-sourced information from social media can serve as a reliable proxy for traditional methods of determining visitation rates.

**Full Reference**

Wood, S. A., Guerry, A. D., Silver, J. M., & Lacayo, M. (2013). Using social media to quantify nature-based tourism and recreation. *Scientific Reports*, 3(2976).

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## Appendix - List of Journals and Sources

*Open Sources include website*

Active Living Research - <http://activelivingresearch.org>  
American Journal of Health Promotion  
Australasian Parks & Leisure <https://www.parksleisure.com.au>  
Biodiversity and Conservation  
Circulation – Journal of the American Heart Association – [www.circ.ahajournals.org](http://www.circ.ahajournals.org)  
Environmental Management  
Facilities  
Frontiers in Ecology and the Environment  
GP RED – <http://www.gpred.org/resources/research/>  
International Journal of Environmental Research and Public Health  
Journal of Interpretation Research  
Journal of Landscape Research  
Journal of Leisure Research  
Journal of Parks and Recreation Administration  
Journal of Preventive Medicine  
Journal of Public Health Management and Practice  
Journal of School Health  
Journal of Sport Management  
Journal of Urban Health  
Journal of World Leisure Organization  
Koedoe  
Landscape and Urban Planning  
Larnet - The Cyber Journal of Applied Leisure and Recreation Research  
Leisure Sciences  
Leisure Studies  
Managing Leisure  
Michigan Journal of Sustainability  
Nature  
PARKS: The International Journal of Protected Areas and Conservation  
Public Health  
Preventative Medicine  
ResearchGate – [www.researchgate.com](http://www.researchgate.com)  
Scientific Reports  
Social Science Research Network - <http://papers.ssrn.com/>  
Society & Natural Resources  
Sport Management Review  
Trust for Public Lands – [www.tpl.org](http://www.tpl.org)