

# The Effect of the Every Kid in a Park Program on National Park Visitation

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Amelia Rhodewalt  
Research Methods  
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# Outline

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- Overview of Every Kid in a Park (EKIP) program
- Objective of study
- Relevance of study -- Literature Review
- Model, Study Design, Measurement
- Endogeneity & Solutions

# What is the Every Kid in a Park Program?

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- Launched Fall 2015
- Fourth graders get free interagency pass
  - Covers fourth graders and their families
  - Covers National Parks (entrance fees), National Forests (parking fees), and other federally managed lands

# Goal

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Test how the implementation of the Every Kid in a Park (EKIP) program has affected visitation of national parks.

***Null Hypothesis:*** Visitation was unaffected by implementation of EKIP.

***Alternative Hypothesis:*** Visitation was affected by implementation of EKIP, and the two are positively correlated.

# Literature Review

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- ***Last Child in the Woods: Saving Our Children from Nature-deficit Disorder***: Louv, R. (2005).
- ***Repositioning Children's Developmental Needs in Space Planning: A Review of Connection to Nature***: Mustapa, N. D., Maliki, N. Z., & Hamzah, A. (2015).
- ***Is love of nature in the US becoming love of electronic media? 16-year downtrend in national park visits explained by watching movies, playing video games, internet use, and oil prices***: Pergams, O. R. W., & Zaradic, P. A. (2006).
- ***Evidence for a Fundamental and Pervasive Shift Away from Nature-Based Recreation***: Pergams, O. R. W., & Zaradic, P. A. (2007).
- ***Outdoor Recreation Constraints: An Examination of Race, Gender, and Rural Dwelling***: Johnson, C. Y., Bowker, J. M., & Cordell, H. K. (2001).
- ***National Park Service Fees: An Examination of Public Attitudes (Technical Report)***: Solop, F. I., Hagen, K. K., & Ostergren, D. (2003)

# “Nature Deficit Disorder”

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Louv (2005)

- “Last Child in the Woods”
- Definition: Behavioral problems resulting from a lack of exposure to nature, especially in children
- Oft-cited, unrecognized by medical communities
- Related terms: biophilia hypothesis, forest bathing, Vitamin N

# Importance of outdoor play in childhood development

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Mustapa, Maliki, Hamzah (2015)

- Synthesize research from mid-1990s to 2013
- Aim to understand importance of nature for children's development

## Results:

- Children spend less time in nature
- Urbanization, scheduled activities, and technology
- Children experience physical and health problems as a result

# Role of national parks in outdoor recreation

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Pergrams & Zaradic (2006, 2007)

## 2006:

- Identified decline in per capita visits to US national parks (1988 - 2003)
  - Correlated this decline with entertainment consumption > “videophilia”

## 2007:

- Showed that national park visitation is a proxy for nature recreation
  - Compared national park visitation to other outdoor recreation variables



# Barriers to outdoor recreation

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Johnson, Bowker, Cordell (2001)

- National Survey on Recreation and the Environment (NSRE)
  - 1991-1994, USDA Forest Service and National Oceanic & Atmospheric Administration
- 17,000 people; 2000 were asked about “constraints” to outdoor recreation

## Results:

- Time & money: common, universal constraints

# Barriers to national park visitation

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Solop, Hagen, Ostergren (2003)

- 2000 NPS Comprehensive Survey of the American People
  - 3515 households, visitors and non-visitors

## Results:

- National park entrance fees not a significant barrier for most
  - But they are a barrier for some subgroups, such as younger groups, those with less education, and Hispanics and African Americans

# Model

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**Alternative Hypothesis:** Visitation is positively correlated with implementation of EKIP.

→ **Regression:**  $NP = a + b(EKIP) + e$

**Dependent Variable:** NP, the total number of national park visitors in a given year

**Independent Variable:** EKIP, a dummy variable where EKIP=1 when the program is present, and EKIP=0 when the program is absent

**b:** the difference in NP visitation before and after the EKIP program

**a:** NP visitation prior to the EKIP program

**e:** error

# Sample and Study Design

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- “Annual Visitation Report by Years: 2007 to 2017” from NPS’s “Parks Visitor Use Statistics”
  - Secondary administrative data
  - Sample: Census, captures the population of interest
  - Unit of analysis: National, Variation: Longitudinal
- Presence of EKIP
  - EKIP implemented in 2015, so EKIP=1 for 2015 and after
- Sum of annual visitation for each national park
  - Quantitative variable
  - Park staff using handheld clickers and infrared vehicle trackers at entrances

# Measurement

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- Variables are manifest constructs -- directly observable
- Validity
  - Face validity, content validity
  - Captures construct of interest (national park visitation)
- Error
  - Human element and regressions to deduce visitation by vehicle numbers
  - Could introduce noise or bias
- Reliability
  - Sources of potential noise or bias could introduce poor reliability

# Endogeneity

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- **Self-selection bias** is not present
  - Population of interest is all potential national park visitors; measurement of annual park visitation captures this completely
- **Reverse causation** may be present
  - Growing interest in or visitation of national parks may have inspired the creation of EKIP
- **Confounding variables** may be present
  - US population may be growing
  - Interest in national parks may be growing, creating a natural increase in visitation
  - Advertisement of EKIP may have increased visitation by those outside the program

# Solutions

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Reduce omitted variable bias by controlling for confounding variables

1. US population growth → add variable for US population by year
2. Growing interest in national parks → add variable for Google searches with national parks-related terms by year
3. Effect of EKIP advertisement and media coverage → add variable that counts the readership of EKIP-related news coverage

# Conclusion

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- Relevance
  - Children need outdoor play
  - Children today don't do enough of it (nature deficit disorder)
  - National park visitation is a proxy for outdoor recreation at large
- Every Kid in a Park program benefits
  - Encourages fourth graders and others to visit public lands
  - Removes entrance fee barriers