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Office of Educational Innovation and Evaluation

Synthesis Project Utilizing Citation Analysis to Document Decade of Program Impact

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October 18, 2013

American Evaluation Association (AEA) Annual Conference 2013

Project Details

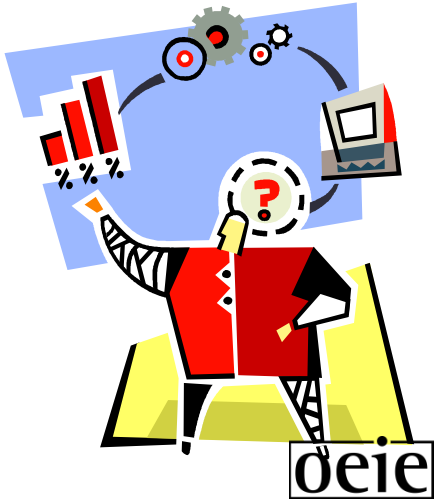
Research in Disabilities Education Synthesis Project (RDE-SP):

- National Science Foundation
- Three-year research project (2011-2015) Award HRD-1145541

Purpose: summarize/synthesize findings of the initiatives aimed at broadening participation and achievement of individuals with disabilities in STEM education and associated professional careers.

Scope:

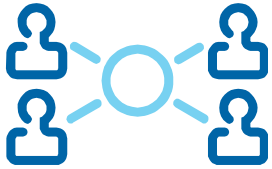
- RDE Program
- 2001 - 2011
- 117 projects; 97 unique PIs



Purpose

Citation analysis is:

- a form of bibliometric analysis that "consists of tracking the number of citations to published works typically using a citation database **and** then analyzing the data using statistical, content, or network analyses" (Greenseid & Lawrenz, 2011)
- used to identify contributions of project team members (e.g., researchers, grant partners)
  - individually or collectively
  - within or across projects



- one component of our synthesis efforts to identify the collective impact or reach of the RDE PIs across the 117 RDE projects

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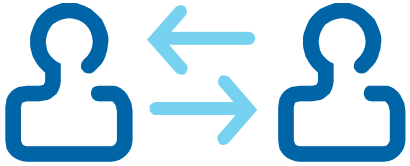
Setting Parameters

- **<u>Who</u> should you include?**
  - PIs, co-PIs, originally funded or replacement PIs
- **<u>What</u> publications should you include?**
  - All or a sample (based on type, topic, date, etc.)
  - Type: Journal articles, books, conference presentations
  - Topic: Disability, education, evaluation
  - Date: 2001 – 2011



- **<u>Where</u> will you locate the list of publications?**
  - Direct request to individual for vita or list of publications
  - Internet research for vita, bio, or publications
  - If you receive a low response rate to the direct request, do you supplement with Internet research?
- **<u>When</u> are you collecting and verifying the data, and conducting the analysis (what is your time frame)?**

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Process

- **Compile the publications list**
  We conducted Internet research to compile our list by
  -locating available vitas and biographies
  -supplementing with citation database searches

- **Search for each publication in selected citation database(s)**
  We searched for publications in Scopus,
  Web of Science, and Google Scholar

- **Record all citing works for each publication**
  We recorded the citation of each citing work, and in which database(s) we located each citing work

- **Analyze data**
  We conducted descriptive statistical and network analyses

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Presenting Results

Descriptive Statistics

- Total Publications Produced = 675
- Publications by PI
  - Average = 7.0 (SD = 11.5)
  - Median = 3.0
  - Min/Max = 0 - 78
- Total Citing Works = 9,001
- Citing Works by Publication
  - Average = 13.3 (SD = 29.8)
  - Median = 3.0
  - Min/Max = 0 - 414
- Citing Works by PI
  - Average = 92.8 (SD = 196.8)
  - Median = 10.0
  - Min/Max = 0 - 1021

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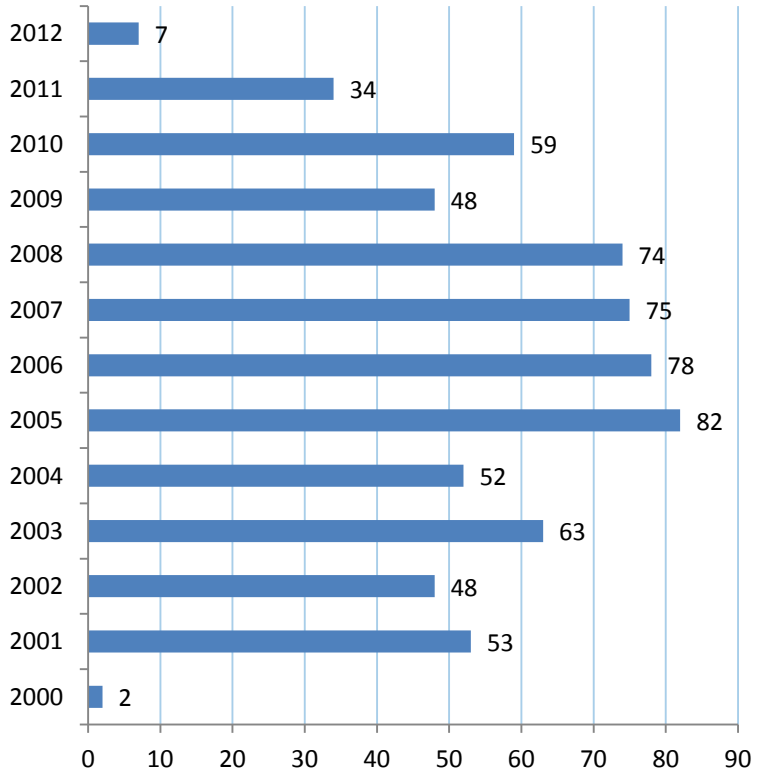
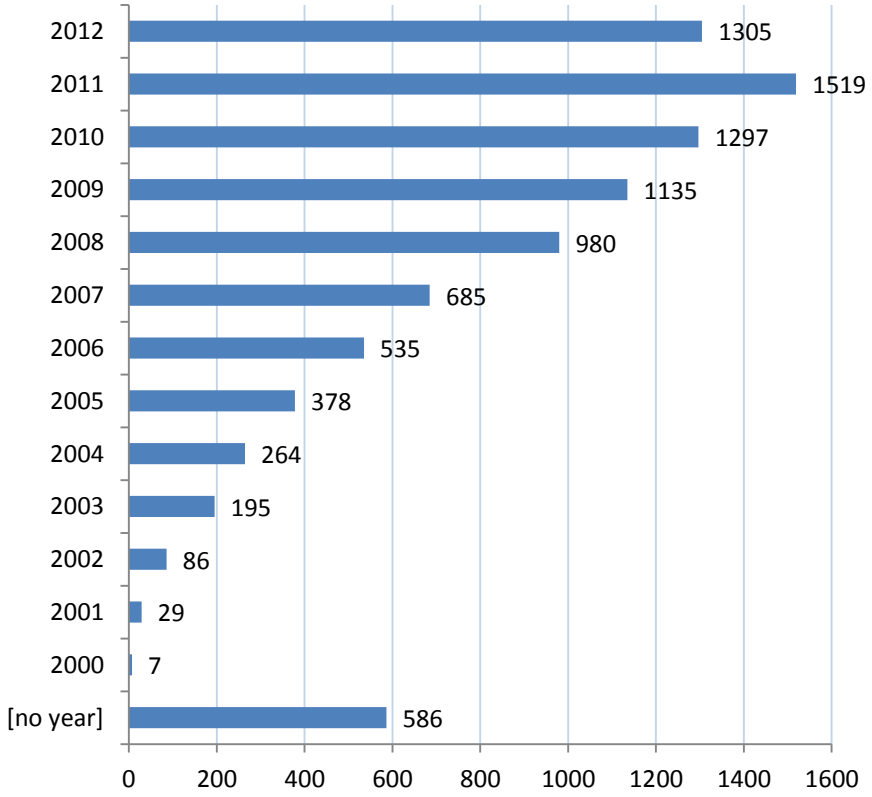
Descriptive Statistics

Publications by Year



Citing Works by Year



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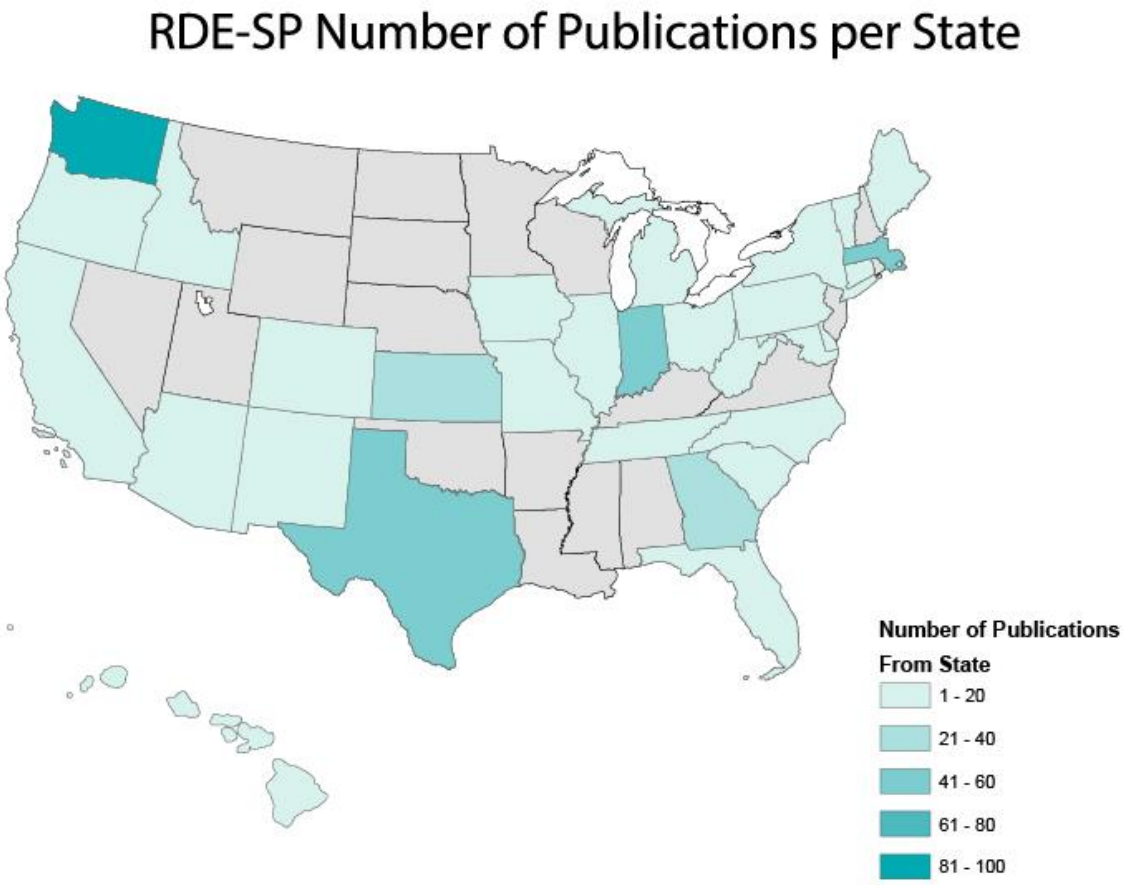
GIS Mapping/Infographic



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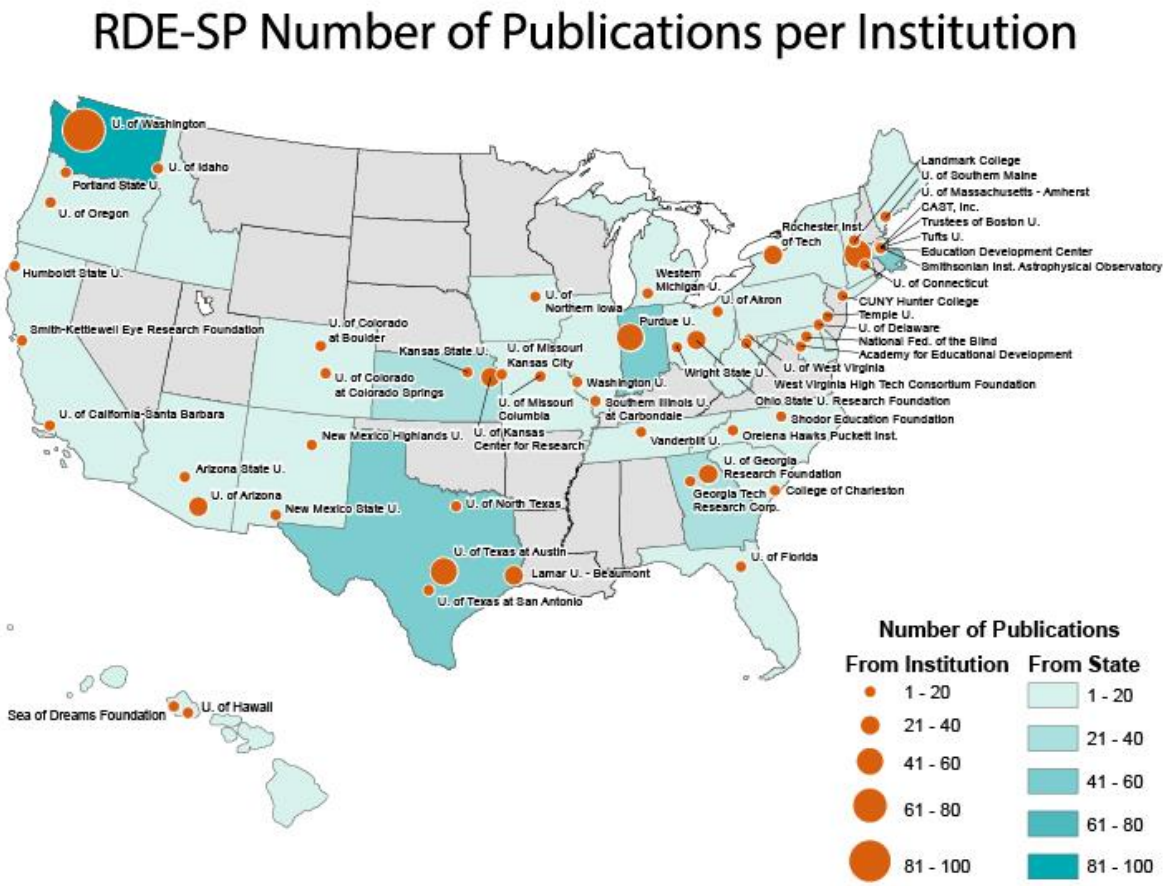

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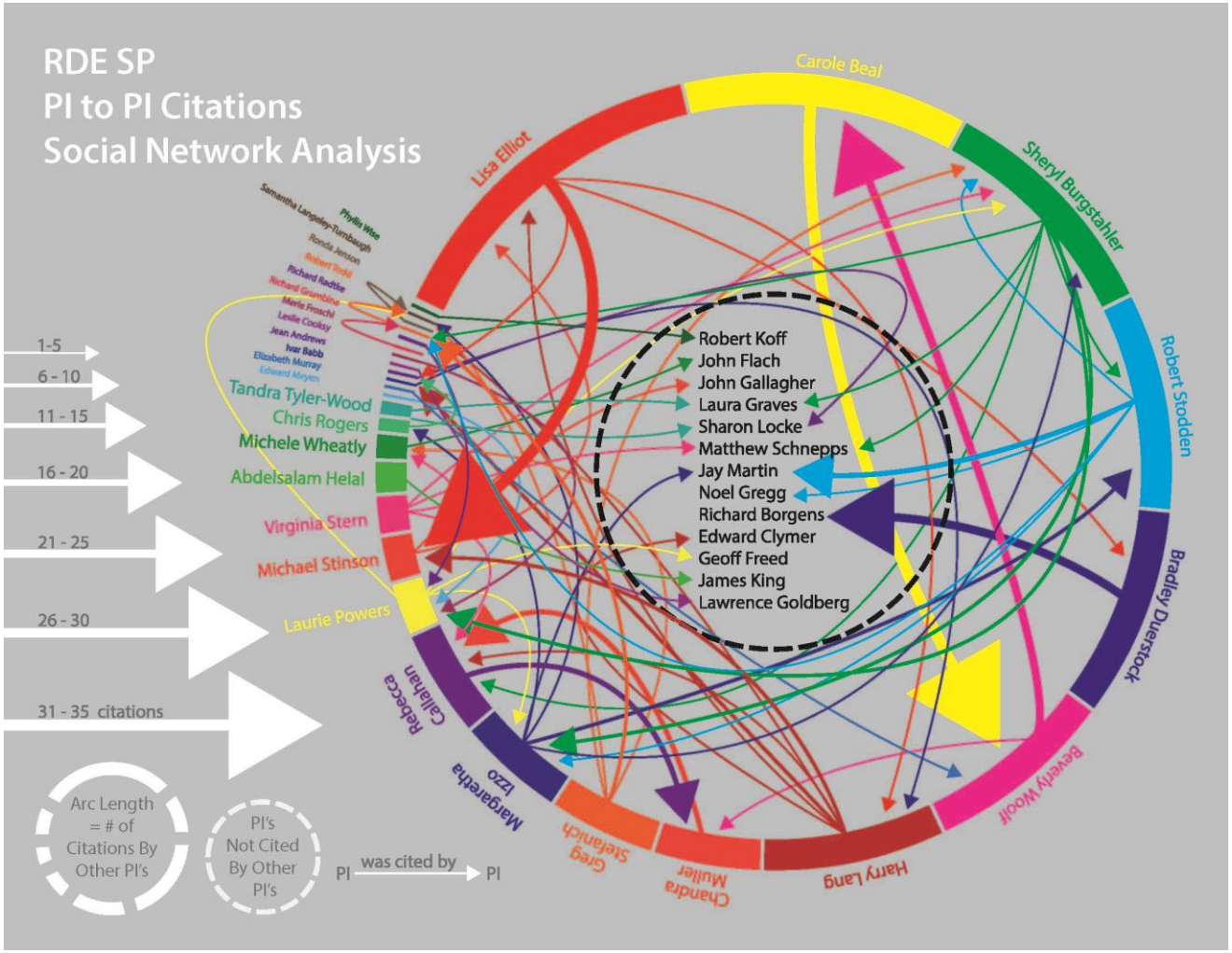
Network Mapping



Presenting Results

Other Possible Analyses

- Number of publications by topic area (e.g., disability type), and corresponding number of citing works
- Number of publications by journal impact level (low, medium, high), and corresponding number of citing works
- Number of publications by product type (e.g., journal article, conference presentation, print resource), and corresponding number of citing works

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Considerations

The amount of work required for a citation analysis is based on several factors, including:

- Number of authors
- Data collection method - Do you have to locate the original publications, or will a list be provided to you?
- Number and type of databases you use
  - Google Scholar changes daily (things appear, even disappear, makes verifying data difficult)
  - Choose the database based on topic of project (not all databases are applicable to all topics)
- Presentation format of the results
  - Are you presenting descriptive statistics only or mapping GIS for publications and creating infographics?
- GIS-related decisions
  - Will you assign GIS coordinates based on the author's location when that work was published or the author's most recent location?
  - Do you want to capture co-authors' locations as well?
  - Do you want to identify GIS for citing works?

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Lessons Learned

- **Consider what data best fits your client's needs**
  - Plan specific analyses and data formats prior to data collection to streamline the process.
- **Start on a small scale**
  - You can't do it all – define your parameters and stick to them.
  - For example, one database, small group of authors
- **Obtain the list of publications directly** (from client or authors) rather than building the list through Internet research.
- **Learn about the databases' focus and features.**
  - Determine which databases are appropriate to your project topic. There are many databases to choose from.
  - Identify any helpful searching tips/tricks.
    - For example, some databases allow you to set up a reminder for publications of interest that will email you if new citing works are added.

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Questions/ Comments?

October 18, 2013

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This material is based upon work supported by the National Science Foundation under Grant No. HRD-1145541. Any opinions, findings and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

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