


Research 201



## SECONDARY DATA ANALYSIS

Reanalyzing data originally collected for another purpose

Kari Bernard, PhD, PA-C: Director, DMSc program  
The College of Idaho

Robert E. McKenna, DMSc, MPH, PA-C: Director of Accreditation  
Marshall B. Ketchum University

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### Faculty and Disclosure Statements



Dr. McKenna is the Interim Program Director, Director of Accreditation, and an Assistant Professor at Marshall B. Ketchum University's School of Physician Assistant Studies in Fullerton CA. He teaches evidence-based medicine, is a Capstone advisor and serves on numerous committees.

He began his medical career as a U.S. Navy Corpsman and later served as a PA in emergency medicine/urgent care prior to a 32-year career in the biopharmaceutical industry as a Medical Science Liaison or Director of Field Medical affairs for Merck & Co., Sanofi Genzyme, and Radius Health.

Therapeutic areas he was active in include cardio-renal diseases, pain & inflammation, rheumatology, asthma, allergy and immunology, and metabolic bone diseases. He is also the former Internal Medicine Editor for Audio-Digest, Wolters Kluwer Health. Bob is a Fellow of the American Academy of Physician Associates, the California Academy of PAs and is also a current or former member of multiple other professional societies.

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### Faculty and Disclosure Statements



Dr. Kari Bernard has practiced medicine as a PA since 2004 in the areas of cardiology, emergency medicine, and psychiatry. In 2020, she completed a doctoral program in Industrial and Organizational Psychology with a focus on the professional well-being of the workforce. To complete her dissertation, Dr. Bernard utilized secondary data to examine the relationship between PA career length, autonomy, leadership responsibility, and professional fulfillment and burnout.

Between 2022 and 2024, Kari developed, launched, and supported a staff wellness program for 2000 clinical and nonclinical employees at the Alaska Native Medical Center. She has taught PAs and PA students since 2014 and is currently The College of Idaho's founding program director for their new Doctor of Medical Science program.

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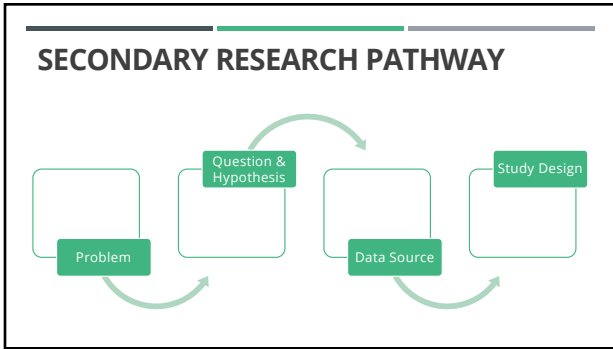
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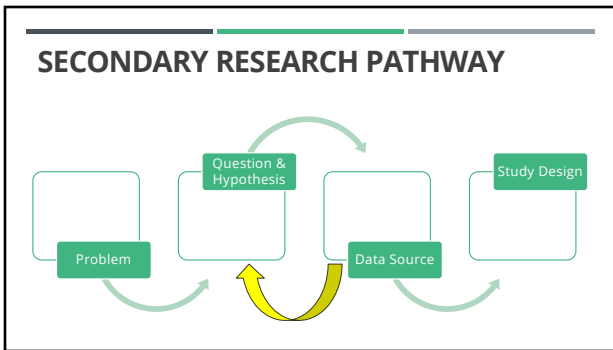
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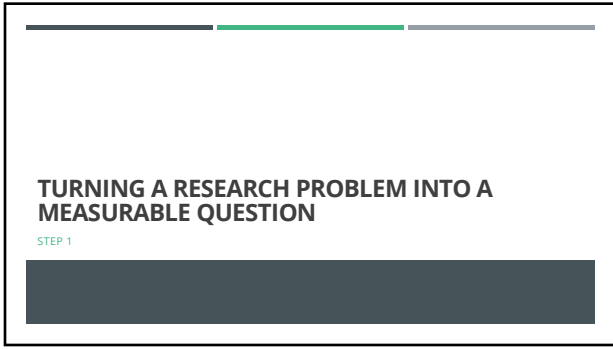
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**YOUR PROBLEM**

- Personally or professionally meaningful topic
- Driving force behind your study
- Types of research problems:
  - 1) Existing research is lacking
  - 2) Seeking practical solutions

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**YOUR QUESTION**

- Frames problems as answerable
- Guides your study's anticipated contribution
- Informs exploration of the literature for gaps, unmet needs, and foundational knowledge
- Dictates your study design, including the data you will use to answer the question




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**STRATEGIES TO IDENTIFY KEY ELEMENTS OF A RESEARCH QUESTION**

- PICO: Population, Intervention, Comparison, Outcome
- SPICE: Setting, Population/Perspective, Intervention, Comparison, Evaluation
- SPIDER (qualitative): Sample, Phenomenon of Interest, Design, Evaluation, Research type

Brar. 2024. <https://library.nd.edu.au/evidencebasedpractice/ask/question>

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**KEY ELEMENTS BASED ON STUDY DESIGN**

<b>Quantitative research:</b>	<b>Qualitative research:</b>
Explain what variables you will study, identifying independent and dependent variables.	Describe the phenomenon that will be explored, developed, or discovered, specifying the participants and research site.

Creswell JW, Creswell JD. 5th ed. SAGE; 2018

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**QUANTITATIVE QUESTION USING SPICE STRATEGY:**

Does knowledge of patient satisfaction survey results influence emergency medicine PA job satisfaction?

- Setting – emergency department
- Population – PAs
- Intervention – knowledge of patient satisfaction survey results
- Comparison – none
- Evaluation – PA job satisfaction

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**QUALITATIVE QUESTION USING SPIDER:**

How do PA students with disabilities experience simulated patient scenarios during didactic training?

- Sample – PA students with disabilities
- Phenomenon of Interest – Simulated patient scenarios during didactic training
- Design – Interviews
- Evaluation – Experiences
- Research type – Qualitative

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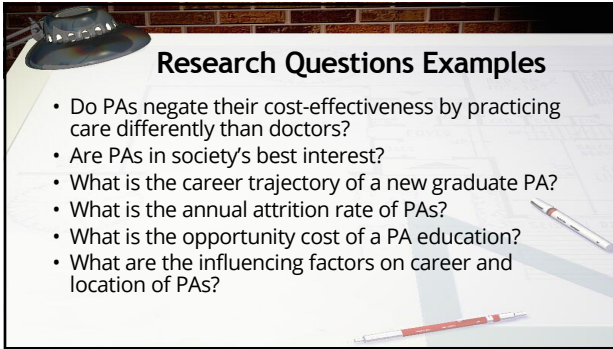
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**Research Questions Examples**

- Do PAs negate their cost-effectiveness by practicing care differently than doctors?
- Are PAs in society's best interest?
- What is the career trajectory of a new graduate PA?
- What is the annual attrition rate of PAs?
- What is the opportunity cost of a PA education?
- What are the influencing factors on career and location of PAs?

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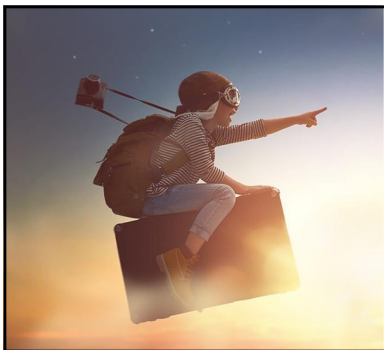
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**WHAT ARE YOUR HYPOTHESES OR GOALS/OBJECTIVES?**

What do you think will happen?  
Requires preliminary review of the literature to inform your opinion.

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**QUANTITATIVE HYPOTHESIS:**

**RQ: Does knowledge of patient satisfaction survey results influence emergency medicine PA job satisfaction?**

- Hypothesis: Knowledge of patient satisfaction survey results will decrease emergency medicine PA job satisfaction.

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**QUALITATIVE HYPOTHESIS:**

RQ: How do PA students with disabilities experience simulated patient scenarios during didactic training?

- Hypothesis: PA students with disability experience challenges that adversely impact learning during simulated patient scenarios during didactic training.

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**IDENTIFY A DATASET TO ANSWER THE RESEARCH QUESTION**

STEP 2



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**WHAT DATA IS NEEDED TO ADDRESS YOUR RESEARCH QUESTION?**



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## Secondary Data

- Definition: Data collected for one purpose and reanalyzed to answer research questions
- Common types
  - Administrative (billing data)
  - Surveys
  - Electronic Medical records
- Observational research: No control of how or what data collected
- Primary data is specifically collected by the investigator per their specifications

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## Sources of Secondary Data

- Federal agencies
- National and State agencies
- Professional societies & Support Organizations (i.e., AAPA, NCCPA)
- Medical groups
- Hospitals
- Think tanks
- Private sources
- PA & NP Program Alumni
- Other



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Health Resources & Services Administration

**HRSA**  
Health Resources & Services Administration

Call or Text the Maternal Mental Health Hotline

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Data Warehouse Overview  
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**Who We Are**

The Health Resources and Services Administration (HRSA) provides equitable health care to the nation's highest-need communities. Our programs support people with low incomes, people with HIV, pregnant people, children, parents, rural communities, transplant patients, and the health workforce.

This includes:

- More than 30.5 million people in underserved communities.
- More than 58 million pregnant people, infants, and children.
- More than 560,000 people with HIV.
- More than 1,900 rural counties and municipalities across the country.
- Nearly 22,000 health care providers through loan repayment and scholarship programs.

<https://www.hrsa.gov/>

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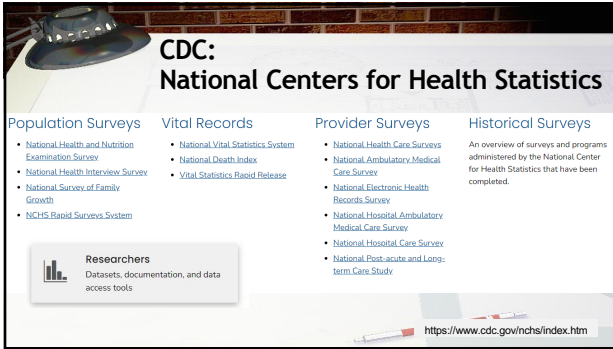
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**CDC: National Centers for Health Statistics**

**Population Surveys**

- National Health and Nutrition Examination Survey
- National Health Interview Survey
- National Survey of Family Growth
- NCHS Rapid Surveys System

**Vital Records**

- National Vital Statistics System
- National Death Index
- Vital Statistics Rapid Release

**Provider Surveys**

- National Health Care Surveys
- National Ambulatory Medical Care Survey
- National Electronic Health Records Survey
- National Hospital Ambulatory Medical Care Survey
- National Hospital Care Survey
- National Post-acute and Long-term Care Study

**Historical Surveys**

An overview of surveys and programs administered by the National Center for Health Statistics that have been completed.

**Researchers**  
Datasets, documentation, and data access tools

<https://www.cdc.gov/nchs/index.htm>

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**Centers for Medicare & Medicaid Services (CMS)**

Medicare | Medicaid/CHIP | Marketplace & Private Insurance | Priorities | Training & Education

**Data & research**  
Learn about the data, systems, and research behind the programs that provide health coverage to more than 100 million people.

**Data & Research Topics**

CMS information technology | Computer data & systems | Files for order | Monitoring programs | [see fewer](#)

**Research** | Statistics, trends & reports | Archives

<https://www.cms.gov/data-research>

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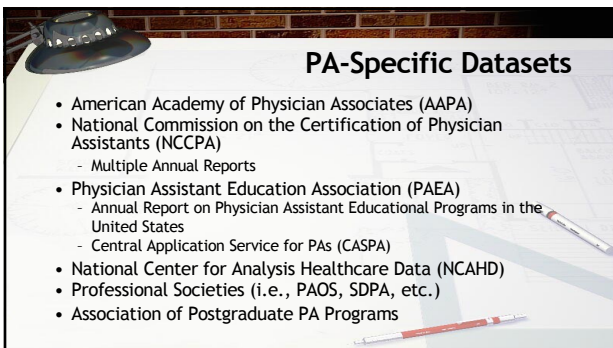
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**PA-Specific Datasets**

- American Academy of Physician Associates (AAPA)
- National Commission on the Certification of Physician Assistants (NCCPA)
  - Multiple Annual Reports
- Physician Assistant Education Association (PAEA)
  - Annual Report on Physician Assistant Educational Programs in the United States
  - Central Application Service for PAs (CASPA)
- National Center for Analysis Healthcare Data (NCAHD)
- Professional Societies (i.e., PAOS, SDPA, etc.)
- Association of Postgraduate PA Programs

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### American Academy of Physician Associates (AAPA)

- Data collection mostly through surveys
- Multiple Reports that Address PA's:
  - Value
  - Workforce
  - Role & Practice
  - Education
- Process for requesting data for research
  - Salary Survey 2018 - 2022
  - PA Practice Survey 2019- 2020
  - PA & NP Workplace Experiences Documentation 2018

#### Research

AAPA conducts original research on and writes about the PA profession, monitors PA compensation and benefits, and provides support to PAs interested in research.

<https://www.aapa.org/research/>

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### National Commission on the Certification of Physician Assistants

- National PA Profile Dataset collects information as part of recertification
  - Age, gender, year of (re)certification
  - PANCE/PANRE scores
  - Medical education information
  - Practice profiles
- Includes all current NCCPA certified PAs
- Generates several annual reports:
  - Statistical Profile of Board-Certified PAs
  - Statistical Profile of *Recently* Board-Certified PAs
  - Statistical Profile of Board-Certified PAs *by State*
  - Statistical Profile of Board-Certified PAs *by Specialty*
  - Others

<https://www.nccpa.net/resources/nccpa-research/>

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### Physician Assistant Education Association

- Multiple annual surveys of PA Programs, Students, and PAs
- Centralized Application Service for Physician Assistants (CASPA)
- Multiple Reports on PA Education
  - Programs
  - Faculty & Directors
  - Curriculum
  - Students
  - Other
- May Request Data



Membership • Our Work • How We Can Help • Assessment

#### Research Surveys and Reports

<https://paeonline.org/resources/public-resources/research-reports>

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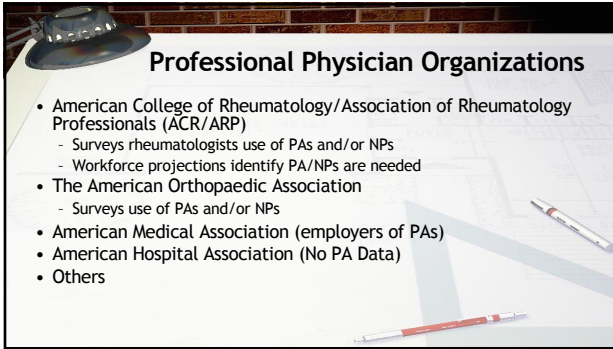
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**Professional Physician Organizations**

- American College of Rheumatology/Association of Rheumatology Professionals (ACR/ARP)
  - Surveys rheumatologists use of PAs and/or NPs
  - Workforce projections identify PA/NPs are needed
- The American Orthopaedic Association
  - Surveys use of PAs and/or NPs
- American Medical Association (employers of PAs)
- American Hospital Association (No PA Data)
- Others

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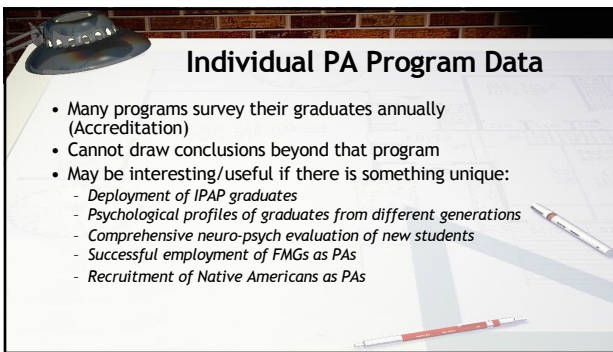
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**Individual PA Program Data**

- Many programs survey their graduates annually (Accreditation)
- Cannot draw conclusions beyond that program
- May be interesting/useful if there is something unique:
  - *Deployment of IPAP graduates*
  - *Psychological profiles of graduates from different generations*
  - *Comprehensive neuro-psych evaluation of new students*
  - *Successful employment of FMGs as PAs*
  - *Recruitment of Native Americans as PAs*

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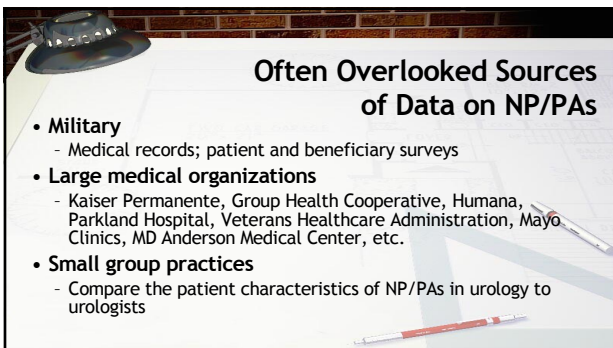
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**Often Overlooked Sources of Data on NP/PAs**

- **Military**
  - Medical records; patient and beneficiary surveys
- **Large medical organizations**
  - Kaiser Permanente, Group Health Cooperative, Humana, Parkland Hospital, Veterans Healthcare Administration, Mayo Clinics, MD Anderson Medical Center, etc.
- **Small group practices**
  - Compare the patient characteristics of NP/PAs in urology to urologists

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### Other Overlooked Data Sources

- Federation of State Medical Boards
- National Practitioner Data Bank
- National Rural Health Clinics
- State licensing information
  - Location, age, duration, etc.
  - Allows for comparisons with doctors, PAs, NPs, CNMs and other practitioners

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### Think Tanks

- National Centers for Health Professions
- The Cecil G. Shep Center at University of North Carolina
- Kaiser Permanente Center for Health Research
- The Center for the Health Professions, University of California, San Francisco.
- Center for Health Workforce Studies, University at Albany School of Public Health

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### Private Data

- Licensure data:
  - Optum Provider Databases
  - IQVIA Healthcare Databases
  - National Center for the Analysis of Healthcare Data
- Prescribing details of various agencies
- Pharmaceutical manufacturer information on "prescribers"
- Career placement agencies
- Hedge funds from private research sources
- **EXPENSIVE!!**

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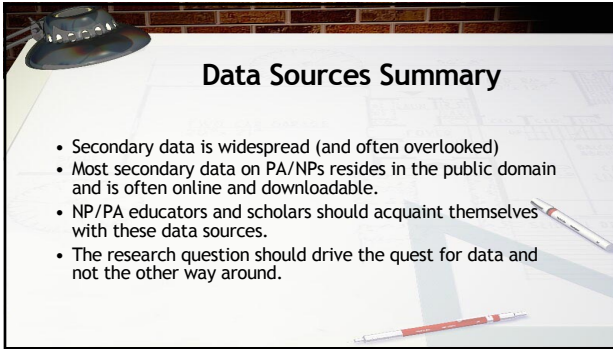
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### Data Sources Summary

- Secondary data is widespread (and often overlooked)
- Most secondary data on PA/NPs resides in the public domain and is often online and downloadable.
- NP/PA educators and scholars should acquaint themselves with these data sources.
- The research question should drive the quest for data and not the other way around.

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### EXAMPLE: Rural Hospital Data

Study: "Comparing physicians and PAs as solo providers in a rural ED: A pilot study" by Moore. JAAPA. 2021;34(7):1-6  
 Purpose: "To examine the use of physician assistants (PAs) as solo providers in rural EDs"  
 Methods: Assess characteristics of ED visits completed by physicians and PAs at a rural hospital in Arizona  
 Results: 26,000 patient visits analyzed, no statistically significant differences between physicians and PAs noted for transfers, 72-hour returns, and death rates

Moore SJ. JAAPA. 2021;34(7):1-6. doi:10.1097/01.JAA.0000753812.30975.43

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### EXAMPLE: National Practitioner Data Bank

Study: "Medical Malpractice Payment Reports of PAs Related to State Practice Laws and Regulations" by DePalma et al. J Med Regul. 2023; 109(4):27-37  
 Purpose: "to determine if states with permissive compared to restrictive PA scope of practice laws and regulations had higher instances of medical malpractice payment reports (MMPR), a proxy of patient harm"  
 Methods: Observational study examined 10 years (2010-2019) of medical malpractice payment reports data from the NPDB compared to the laws and regulations of states for the same period  
 Results: No statistically significant differences in MMPR rates were identified between states with permissive versus restrictive PA practice laws and regulations

DePalma SM, et al. J Med Regul. 2023;109(4):27-37. doi:10.30770/2572-1852-109.4.27

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ASSESS DATASET QUALITY

STEP 3

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SECONDARY DATA SOURCE CONSIDERATIONS

Johnston MP. Quant Qual Methods L. 2014;3(3):619-626

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Design the study

STEP 3

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### DESIGN OPTIONS

Quantitative	Qualitative	Mixed Methods
<ul style="list-style-type: none"> <li>Data: continuous, ordinal, categorical</li> <li>Examples: descriptive, correlation, group comparison, pilot study</li> </ul>	<ul style="list-style-type: none"> <li>Data: narrative</li> <li>Examples: interviews, focus groups, free-text data on surveys</li> </ul>	<ul style="list-style-type: none"> <li>Contains aspects of quantitative and qualitative design</li> <li>Survey with fixed response options and free-text response options</li> </ul>

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### QUESTIONS ALIGNED WITH A QUANTITATIVE APPROACH:

- What is the impact of patient satisfaction surveys on job satisfaction?
- How do wound healing rates differ by discipline on a multidisciplinary wound care team?
- What is the relationship between alcohol consumption among adults in Alaska and becoming unintentionally unemployed during the COVID-19 pandemic?
- What factors predict PA turnover in an urban nonprofit hospital?

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### Example of Cross-Sectional & Trend Analysis Using Secondary Data

**Office-Based Procedures by Physician Associates and Nurse Practitioners are Outpacing Family Physicians**

**Purpose:**  
 To what extent do FPs, PAs, and NPs perform core primary care procedures for older adults?  
 How have the procedural roles of FPs, PAs, and NPs, changed between 2014 and 2021 for older adults?

**Population:** Family physicians, PAs and NPs who billed Medicare under their NPI numbers

**Methods:** Cross-sectional Analysis of 2022 and Trend analysis of 2014 - 2022 Medicare Part B claims  
 Since 2014 FPs in clinical practice declined by 17% and submitted 42% fewer mCAFM claims  
 The number of PAs & NPs in clinical practice have increased by 72% and submitted 87% more mCAFM claims

McKenna, RE, et al. AAPA Research in Action, May 18, 2024

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**EXAMPLE OF CROSS-SECTIONAL SECONDARY ANALYSIS**

Study: "The opportunity to lead facilitates PA professional well-being" by Bernard KB, Bostain N. *JAAPA*. 2024;37(6):1-10.

Purpose: "This study sought to broaden what is known about the influence of leadership task responsibility on PA professional well-being."

Methods: Secondary analysis of a dataset gathered in 2018 by the American Academy of Physician Associates (AAPA)

Results:

- o The longer respondents had practiced as a PA, the more leadership tasks they reported, the more likely they were to meet professional fulfillment criteria, and the less likely they were to meet burnout criteria.
- o Aggregate leadership task score both directly predicted PA well-being and partially mediated the relationship between years of experience and PA well-being.

Bernard KS, et al. *JAAPA*. 2024;37(6):1-10. doi:10.1097/01.JAA.0000000000000022

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**EXAMPLE OF A RETROSPECTIVE SECONDARY ANALYSIS**

Study: "Tethered to the EHR" by Arndt et al. *Ann Fam Med*. 2017;15(5):419-426

Purpose: "The goal of this study was to assess time allocated by primary care physicians within the EHR as indicated by EHR user event log data, both during clinic hours (defined as 8:00 am to 6:00 pm Monday through Friday) and outside clinic hours."

Methods: Retrospective review of 3 years of EPIC event logs from 142 family physicians in a single system

Results: Actual average workday: 11.4 hours, including 5.4 hours of direct patient care and 6 hours of EHR time per day

Arndt BG, et al. *Ann Fam Med*. 2017;15(5):419-426.

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**QUESTIONS ALIGNED WITH A QUALITATIVE APPROACH**

What are perceived barriers to leadership for female PAs?

What are the lived experience of pediatric patients with symptoms of prolonged COVID-19 illness?

How do PA students with disabilities experience simulated patient scenarios during didactic training?

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**Options for Qualitative Secondary Analysis**

Re-evaluating qualitative data collected for other research purposes

Reviewing:

- Free text responses on surveys
- Patient encounter notes
- Workplace incident reports
- Police reports

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**Example of Qualitative Study Derived from Secondary Data Source**

**A Qualitative Pilot Study of Physician Associates in Leadership Positions: Exploring the Pathways, Barriers, and Support Systems**

**Purpose:** To better understand how to facilitate growth of PAs in leadership.

**Methods:** Qualitative phenomenological study using one-hour semi-structured interviews of 20 PA leaders *recruited from the AAPA 2022 PA Practice Survey*; transcripts were coded, & rich saturation of themes were identified

**Conclusions:** This pilot study shows that dedication, training, and networking are important pathways for leadership. Removing corporate and legal barriers to PA leadership is needed.

Boulton M, et al. AAPA Research in Action ePoster, AAPA May 18, 2024. JAPPA. In press.

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**STRENGTHS OF SECONDARY RESEARCH**

- Cost-effective
- Convenient
- Greater representativeness of larger datasets will afford greater validity and more generalizability of findings
- Quicker completion of study projects
- Able to test new ideas, theories, frameworks, and models of research design

Johnston MP. Quant Qual Methods L. 2014;3(3):619-626

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### LIMITATIONS OF SECONDARY RESEARCH

- Data originally collected for another purpose besides the secondary research question
- Deidentification of data may negatively impact analysis
- Secondary researchers had no control over data collection but are still accountable for the methodology

Johnston MP. Quant Qual Methods L. 2014;3(3):619-626

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*Neither reliable nor valid*    *Reliable, but not valid*    *Valid*

**VALIDITY AND RELIABILITY**

Reliability = Consistent  
Validity = Accuracy

Creswell JW, Creswell JD, 5th ed. SAGE, 2018

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### THREATS TO SECONDARY DATA RELIABILITY

- Not established
- Poor reliability on measurement tools



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### THREATS TO SECONDARY DATA VALIDITY

- Content and construct validity misalignment
- Lack of convergent or discriminant validity established with original researchers




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### Example of Invalid Secondary Data Analysis

Study: "Well-being and the early-career PA: Influence of the collaborative physician relationship" by Bernard KS. *JAAPA*. 2023;36(2):35

Purpose: "This study examined the influence of autonomy, career length, and the quality of the collaborative physician (CP) relationship on PA well-being."

Methods: item measuring autonomy "What percentage of your clinical time do you spend consulting with your CP?" (measured as a raw percentage)

Results: The direct effects of the percentage of clinical time that PAs spent consulting with a CP on professional fulfillment and burnout were not significant.

Discussion: Autonomy is a well-established satisfier for PAs, NPs and physicians. The item used was not a valid indicator of PA autonomy.

Bernard KS. JAAPA. 2023;36(2):35. doi:10.1097/01.JAA.0000911228.85787.82

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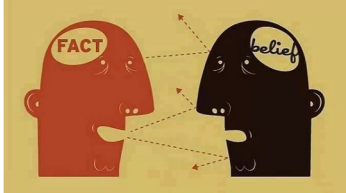
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### THREAT OF BIAS ON QUALITATIVE RESEARCH

Interpretation of data may be influenced by researcher's background, culture, experiences, and values

Absence of triangulation, member checking, peer debriefing, external audits, etc.



Johnston MP. *Qual Qual Methods L*. 2014;3(3):1819-626; Sherif V. *Forum: Qualitative Social Research*. 2018;19(2):1-17.

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**"SAMPLING"**

Definition: selection process for participation in your sample



Creswell JW, Creswell JD. 5th ed. SAGE; 2018

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**FROM POPULATION TO SAMPLE**



Creswell JW, Creswell JD. 5th ed. SAGE; 2018

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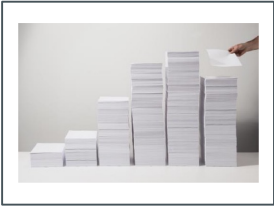
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**SAMPLE SIZE**



**Quantitative**

- Large enough to detect a significant association between variables of interest

**Qualitative**

- Enough to reach saturation

Creswell JW, Creswell JD. 5th ed. SAGE; 2018

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## SAMPLING CONCERNS

Representativeness  
Selection bias  
Underpowered study



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## ETHICAL CONCERNS

Nurenborg Code, Belmont Report, Declaration of Helsinki  
Core Principles

**Respect for Persons:** informed consent, privacy, autonomy  
**Beneficence:** maximize benefit & minimize harm  
**Justice:** Equitable subject selection, fairness

Federal Common Rule (45 CFR 46): Exempt criteria  
Institutional Review Boards



Johnston MP. *Qual Qual Methods L*. 2014;3(3):19-26;  
Sherif V. *Forum: Qualitative Social Research*. 2018;19(2):1-17.

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## Additional Talks

- Baseline Evidence-Based Medicine
- Introduction to Quality Improvement
- Introduction to Outcomes Research
- Mentorship: See 1 – Do 1 – Teach 1
- The Ins and Outs of Networking
- Using Advanced Excel Tools for Managing Your Data

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## For additional information

Contact AAPA at  
[research@aapa.org](mailto:research@aapa.org)

Contact the faculty at  
[kbernard@collegeofidaho.edu](mailto:kbernard@collegeofidaho.edu)  
[rmckenna@ketchum.edu](mailto:rmckenna@ketchum.edu)

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