

Medical Education Scholars in Pediatrics

Text: 608-260-7097

Code: YELMUY

Please text to record your attendance and claim credit.



Department of Pediatrics
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

Text: 608-260-7097
Code: YELMUY



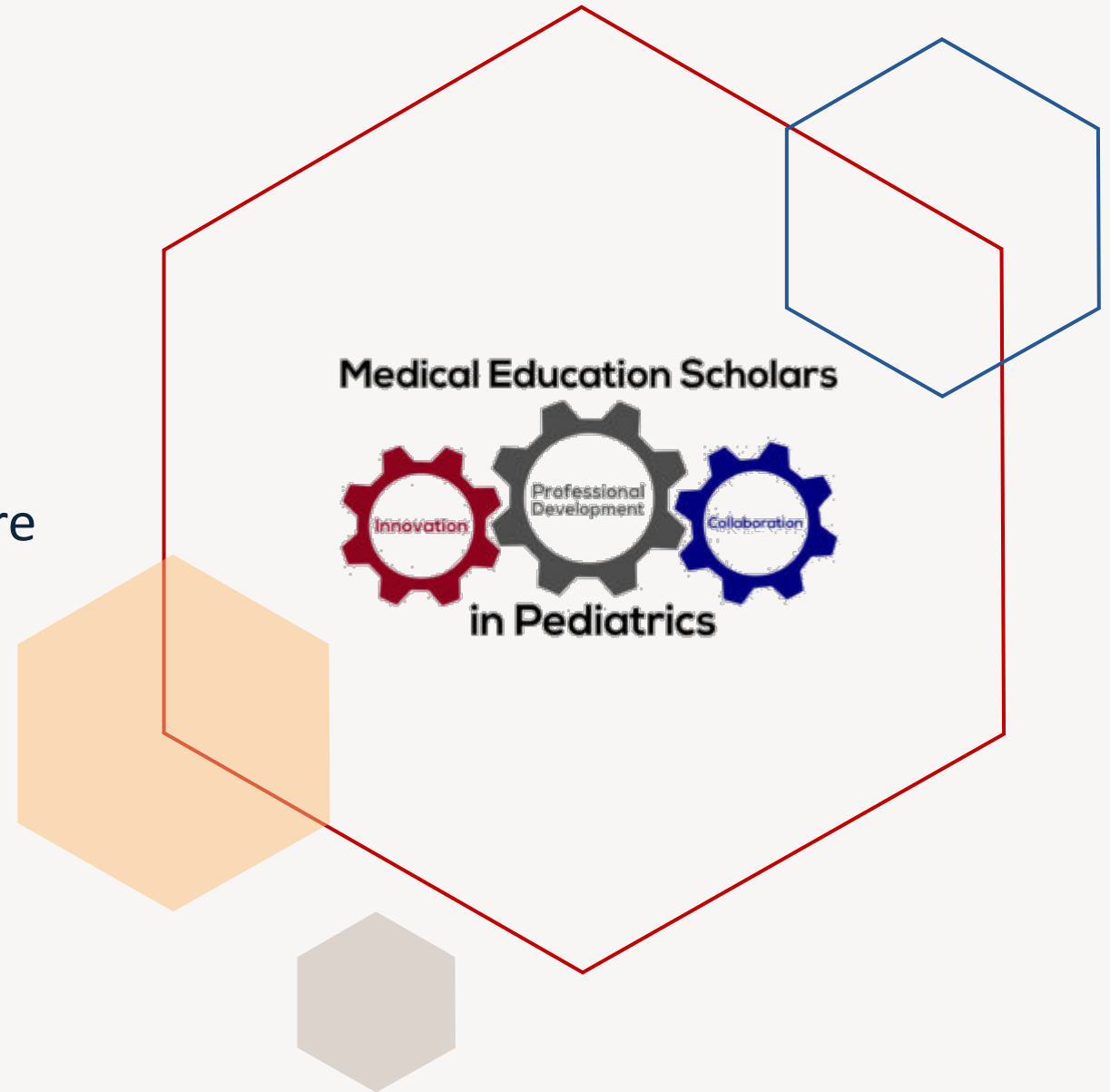
**School of Medicine
and Public Health**
UNIVERSITY OF WISCONSIN-MADISON



Research support for Scholars:

Lessons learned from the Complex Care & Hospitalist Division Researcher

Kristina Singh-Verdeflor, MPH





Conflict of Interest

The planner and speaker of this CE activity has no relevant financial relationships with ineligible companies to disclose.

The speaker does not intend to discuss any unlabeled or unapproved use of drugs or devices.




Department of Pediatrics
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

Text: 608-260-7097
Code: YELMUY



**School of Medicine
and Public Health**
UNIVERSITY OF WISCONSIN-MADISON



Please take a moment at the end of the session to complete your evaluation.

Thank you!



Overview



Study Life Cycle

- Identify general areas where outside perspectives or expertise may be advantageous

Examples of studies and challenges

- Provide resources for overcoming these challenges

Group discussion

- To identify your research needs so we may better understand the types of infrastructure and supports to create





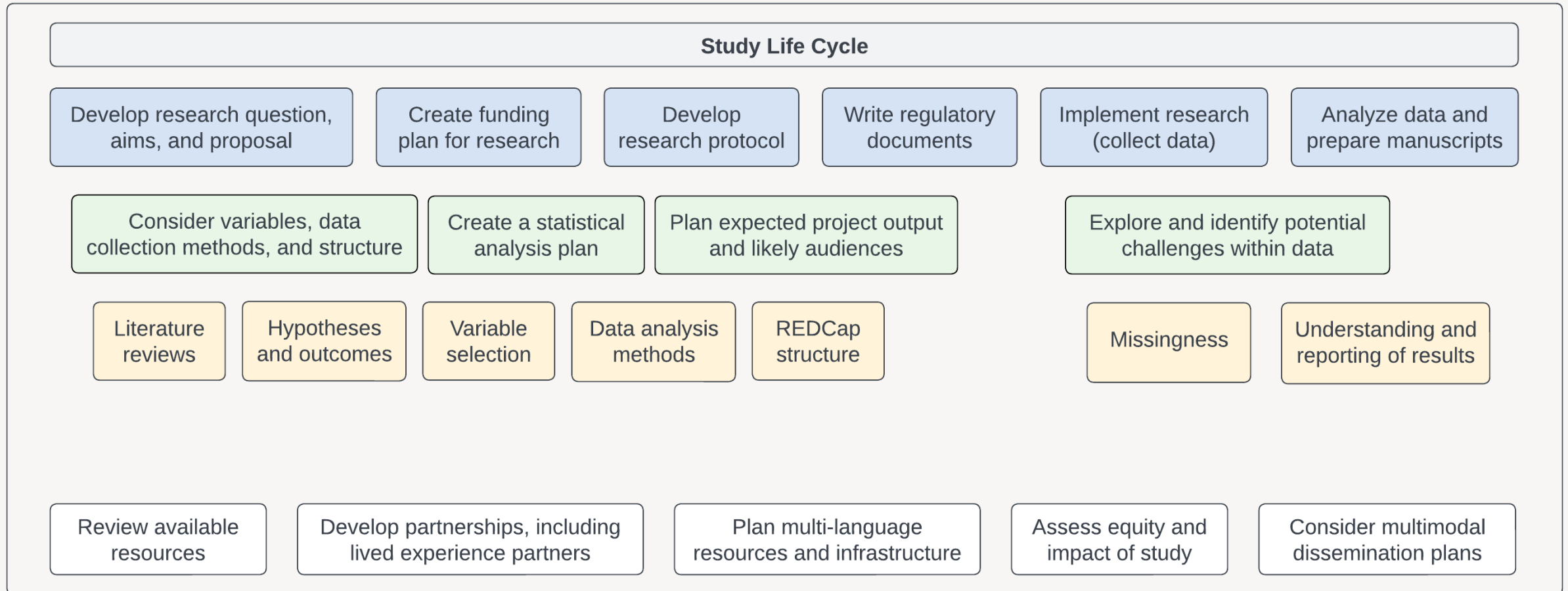
Learning Objectives

Upon completion of this MESP Session, attendees will:

1. Illustrate the study life cycle and identify generalizable areas for outside expertise
2. Examine real-life examples of challenges within study design and data analysis
3. Evaluate aspects of their individual studies and skillset that may benefit from the addition of a researcher or other outside expertise, and
4. Summarize the opportunities for research support within the Department of Pediatrics



Study Life Cycle





At the beginning,

Develop research question,
aims, and proposal

Consider variables, data
collection methods, and structure

Literature
reviews

Challenges

- Less familiar with literature reviews
- Volume of research, or lack thereof
- Formatting of a literature review
- Organization / compilation of manuscripts
- Key takeaways from the literature review

At the beginning, Literature reviews

Resource:

- Pediatric Hospital Medicine and Complex Care Research and Scholarship Guide

Pediatric Hospital Medicine and Complex Care Research and Scholarship Guide

Goal: To provide a limited set of high-yield resources and examples for faculty, fellows, residents and students conducting research or scholarly work

Developing a Project Idea and Designing a Study

[How to develop a problem statement](#)

[How to write and evaluate research questions](#)

[How to write a proposal template with example](#)

[Equator reporting guidelines](#)

Conducting a Literature Review

[How to conduct a systematic literature review](#)

[Types of literature reviews](#)

[PubMed search tip sheet](#)

[Literature review data extraction tool](#)

[How to use Endnote](#)

[How to manage your own pubmed bibliography](#)

[Literature Review Template](#)

Picking a Target Journal

[How to pick a journal](#)

[List of relevant journals](#)

[JANE journal and reviewer selection helper](#)

Writing an Abstract

How to write an abstract: [ppt](#), [tips](#), [article](#)

Examples: [chart review](#), [focus group](#), [D&I](#)

At the beginning, Literature reviews

Conducting a Literature Review

[How to conduct a systematic literature review](#)

[Types of literature reviews](#)

[PubMed search tip sheet](#)

[Literature review data extraction tool](#)

[How to use Endnote](#)

[How to manage your own pubmed bibliography](#)

[Literature Review Template](#)

Review Article

A typology of reviews: an analysis of 14 review types and associated methodologies

Maria J. Grant* & Andrew Booth†, *Salford Centre for Nursing, Midwifery and Collaborative Research (SCNMCR), University of Salford, Salford, UK, †School of Health and Related Research (SchARR),

DOI: 10.1111/j.1471-1842.2009.00848.x

Table 1 Main review types characterized by methods used

Label	Description	Methods used (SALSA)			
		Search	Appraisal	Synthesis	Analysis
Critical review	Aims to demonstrate writer has extensively researched literature and critically evaluated its quality. Goes beyond mere description to include degree of analysis and conceptual innovation. Typically results in hypothesis or model	Seeks to identify most significant items in the field	No formal quality assessment. Attempts to evaluate according to contribution	Typically narrative, perhaps conceptual or chronological	Significant component: seeks to identify conceptual contribution to embody existing or derive new theory
Literature review	Generic term: published materials that provide examination of recent or current literature. Can cover wide range of subjects at various levels of completeness and comprehensiveness. May include research findings	May or may not include comprehensive searching	May or may not include quality assessment	Typically narrative	Analysis may be chronological, conceptual, thematic, etc.
Mapping review/ systematic map	Map out and categorize existing literature from which to commission further reviews and/or primary research by identifying gaps in research literature	Completeness of searching determined by time/scope constraints	No formal quality assessment	May be graphical and tabular	Characterizes quantity and quality of literature, perhaps by study design and other key features. May identify need for primary or secondary research

Literature review

Description. According to the Medical Subject Headings (MeSH) scope note, a literature review describes 'Published materials which provide an examination of recent or current literature. Review articles can cover a wide range of subject matter at various levels of completeness and comprehensiveness based on analyses of literature that may include research findings'.³³ This is necessarily a very broad description making it difficult to generalize. However, common characteristics are that a literature review reviews published literature, implying that included materials possess some degree of permanence and, possibly, have been subject to a peer-review process. Generally, a literature review involves some process for identifying materials for potential inclusion—whether or not requiring a formal literature search—for selecting included materials, for synthesizing them in textual, tabular or graphical form and for making some analysis of their contribution or value.

Perceived strengths. The literature review method seeks to identify what has been accomplished previously, allowing for consolidation, for building on previous work, for summation, for avoiding duplication and for identifying omissions or gaps.

Perceived weaknesses. Literature review has explicit intent to maximize scope or comprehensiveness. Any conclusions they may draw are therefore open to bias from the potential for perhaps inadvertently, significant selection of literature or by not questioning the statements made. Additionally, authors may select literature that supports their conclusions, lending undue credence to a preferred view.

Example. Hall, A. & Walton, G. (2004) Overload within the health care system: a review. *Health Information and Libraries Journal*, 21(2), 102–8.

At the beginning, Literature reviews

Conducting a Literature Review

[How to conduct a systematic literature review](#)

[Types of literature reviews](#)

[PubMed search tip sheet](#)

[Literature review data extraction tool](#)

[How to use Endnote](#)

[How to manage your own pubmed bibliography](#)

[Literature Review Template](#)



EBLING LIBRARY

UNIVERSITY OF WISCONSIN - MADISON
HEALTH SCIENCES

PubMed: Tools for Better Searching

Combining Searches using AND, OR, NOT

*Always capitalize AND, OR,
NOT when searching PubMed.*

Use Boolean operators (AND, OR, NOT) to improve your search:

- Use OR to combine synonyms or like terms, e.g. vitamin c OR ascorbic acid.
- Use AND to combine different concepts that must be in the article, e.g. common cold AND vitamin c.
- NOT removes concepts from your results (use with caution).
- Terms in parenthesis are processed first, e.g. common cold AND (vitamin c OR ascorbic acid).

Phrase Searching

Use quotation marks to search two or more words an exact phrase, e.g. "breast milk".

- Truncation does not work with phrase searching.

Truncation

Use an asterisk (*) at the end of words to account for different endings, e.g. target* will retrieve target, targets, targeting, etc.

- Only the first 600 variants of a term are searched.
- Lengthen your root word or list different if your term has over 600 variants.

Searching Title or Title/Abstract

- Use the field tag [TI] to search words in the title of the record.
- Use the field tag [TIAB] to search words in the title or abstract of the record.

At the beginning, Literature reviews

Conducting a Literature Review

[How to conduct a systematic literature review](#)

[Types of literature reviews](#)

[PubMed search tip sheet](#)

[Literature review data extraction tool](#)

[How to use Endnote](#)

[How to manage your own pubmed bibliography](#)

[Literature Review Template](#)

EndNote

The Dept's Endnote license doesn't allow us to install it on computers we don't own, but it is available via a remote session at <https://remotedesktop.pediatrics.wisc.edu>, similar to Citrix. In order to access it, connect to the UW VPN, and there are setup instructions here: <https://kb.wisc.edu/90370>

Step 1: Import your reference. These steps are similar for most databases.

Google Scholar:

Parent perceptions of real-time access to their hospitalized child's medical records using an inpatient portal: a qualitative study

MM Kelly, AS Thurber, RJ Collier, A Khan... - Hospital ..., 2019 - publications.aap.org

METHODS: Semistructured in-person interviews were conducted with 14 parents who were given a tablet computer with a commercially available inpatient portal application for use ...

☆ Save [Cite](#) Cited by 12 Related articles All 6 versions

× Cite

MLA

Kelly, Michelle M., et al. "Parent perceptions of real-time access to their hospitalized child's medical records using an inpatient portal: a qualitative study." *Hospital Pediatrics* 9.4 (2019): 273-280.

APA

Kelly, M. M., Thurber, A. S., Collier, R. J., Khan, A., Dean, S. M., Smith, W., & Hoonakker, P. L. (2019). Parent perceptions of real-time access to their hospitalized child's medical records using an inpatient portal: a qualitative study. *Hospital Pediatrics*, 9(4), 273-280.

Chicago

Kelly, Michelle M., Anne S. Thurber, Ryan J. Collier, Alisa Khan, Shannon M. Dean, Windy Smith, and Peter LT Hoonakker. "Parent perceptions of real-time access to their hospitalized child's medical records using an inpatient portal: a qualitative study." *Hospital Pediatrics* 9, no. 4 (2019): 273-280.

Harvard

Kelly, M.M., Thurber, A.S., Collier, R.J., Khan, A., Dean, S.M., Smith, W. and Hoonakker, P.L., 2019. Parent perceptions of real-time access to their hospitalized child's medical records using an inpatient portal: a qualitative study. *Hospital Pediatrics*, 9(4), pp.273-280.

Vancouver

Kelly MM, Thurber AS, Collier RJ, Khan A, Dean SM, Smith W, Hoonakker PL. Parent perceptions of real-time access to their hospitalized child's medical records using an inpatient portal: a qualitative study. *Hospital Pediatrics*. 2019 Apr 1;9(4):273-80.

[BibTeX](#) [EndNote](#) [RefMan](#) [RefWorks](#)

At the beginning, Literature reviews

Conducting a Literature Review

[How to conduct a systematic literature review](#)

[Types of literature reviews](#)

[PubMed search tip sheet](#)

[Literature review data extraction tool](#)

[How to use Endnote](#)

[How to manage your own pubmed bibliography](#)

[Literature Review Template](#)

Literature Review Template: Neuromuscular Scoliosis Surgery Outcomes									
Link	Read	Title	Author, Year	RQ	Notes	Sample	Outcomes	Methods	Results
1	Paper	Comorbidities and Complications of Spinal Fusion for Scoliosis	Berry, 2017	Relationship between specific chronic conditions of CMC and hospital resource use	<ul style="list-style-type: none"> - General pediatricians and hospitalists are increasingly summoned to optimize the comorbid conditions of children with medical complexity (CMC) undergoing major surgery. 	<ul style="list-style-type: none"> - n = 7252 - Age ≥ 5 years - Underlying CCC - Undergoing spinal fusion - 2010 through 2014 - 41 Children's Hospitals 	<ul style="list-style-type: none"> - Hospital Length of Stay - Cost - 30 day readmission rate 	<ul style="list-style-type: none"> - Retrospective analysis - Outcomes compared across comorbid conditions - Linear and logistic regression accounting for demographics and clustering 	<ul style="list-style-type: none"> - n = 7252, 59% with GE 4 CCCs - As # of CCCs ↑, median LOS, median hospital cost, and readmission rates ↑

Takeaways		Future Research	
<ul style="list-style-type: none"> - ↑ Hospital LOS, cost, and readmission: <p>Comorbid conditions: chronic respiratory insufficiency, bladder dysfunction, and epilepsy</p> <p>Acute Illnesses: decubitus ulcer, hypertension, and respiratory arrest</p>		<ul style="list-style-type: none"> - Additional investigation is needed to assess how well controlled, ahead of surgery, were the myriad chronic conditions associated with increased hospital resource use in CMC undergoing spinal fusion. A detailed assessment of the preoperative severity as well as intra- and postoperative exacerbations of the conditions may improve understanding of how to best manage them in the perioperative period. - Systematic screening, severity profiling, and care management for these conditions, and others, preoperatively could potentially preclude the likelihood that they adversely affect the health of the child during and after spinal fusion. 	

Key resource

Resource:

- Pediatric Hospital Medicine and Complex Care Research and Scholarship Guide

Pediatric Hospital Medicine and Complex Care Research and Scholarship Guide

Goal: To provide a limited set of high-yield resources and examples for faculty, fellows, residents and students conducting research or scholarly work

Developing a Project Idea and Designing a Study

[How to develop a problem statement](#)

[How to write and evaluate research questions](#)

[How to write a proposal template with example](#)

[Equator reporting guidelines](#)

Conducting a Literature Review

[How to conduct a systematic literature review](#)

[Types of literature reviews](#)

[PubMed search tip sheet](#)

[Literature review data extraction tool](#)

[How to use Endnote](#)

[How to manage your own pubmed bibliography](#)

[Literature Review Template](#)

Picking a Target Journal

[How to pick a journal](#)

[List of relevant journals](#)

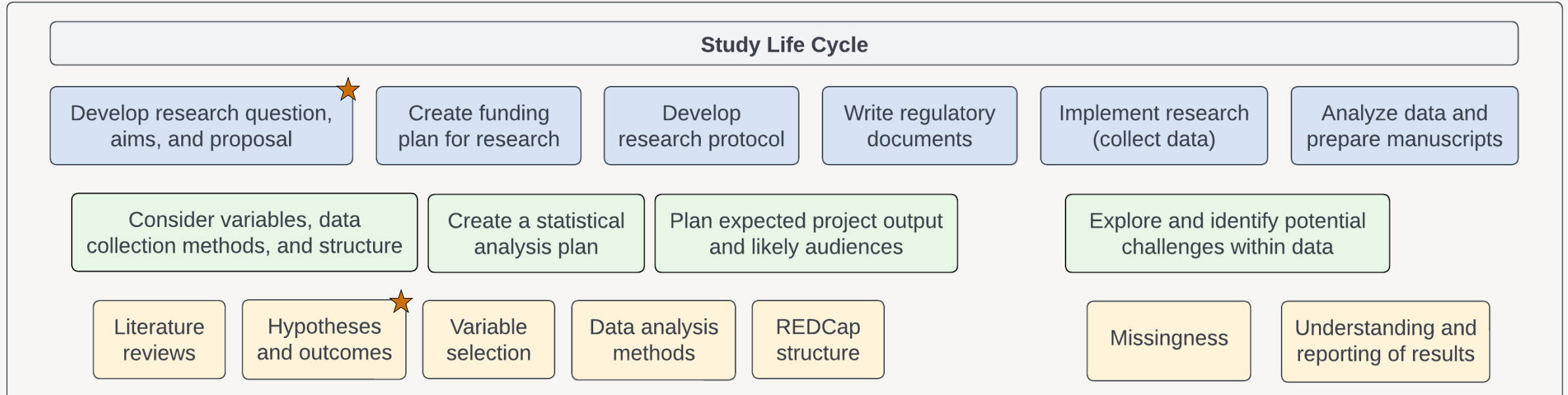
[JANE journal and reviewer selection helper](#)

Writing an Abstract

How to write an abstract: [ppt](#), [tips](#), [article](#)

Examples: [chart review](#), [focus group](#), [D&I](#)

Study Life Cycle



Pediatric Hospital Medicine and Complex Care Research and Scholarship Guide

Goal: To provide a limited set of high-yield resources and examples for faculty, fellows, residents and students conducting research or scholarly work

Developing a Project Idea and Designing a Study

[How to develop a problem statement](#)

[How to write and evaluate research questions](#)

[How to write a proposal template with example](#)

[Equator reporting guidelines](#)

Research Goals

**Quality of
Study Design**

*Capable of
generating valid
results*

**Effectiveness of
Study Execution**

*Fulfills the promise
of the design*

Clarity of Results

*Reveals clear,
internally
consistent results*

**Contribution to
Policy**

*Provides useful
information, even
if inconclusive*



Study Design

Are the methods for constituting the study population and assessing exposure, outcome, and covariates *capable and appropriate to generate valid results?*

a

Screen time → Obesity

b

Screen time → Physical activity → Obesity


c

Parental education → Screen time → Physical activity → Obesity

Parental education → Obesity



Study Design Topics

- 
- Variable Selection
 - Survey Questions & Survey Design
 - Partnerships

Variable Selection

- Exposure & Outcome

a



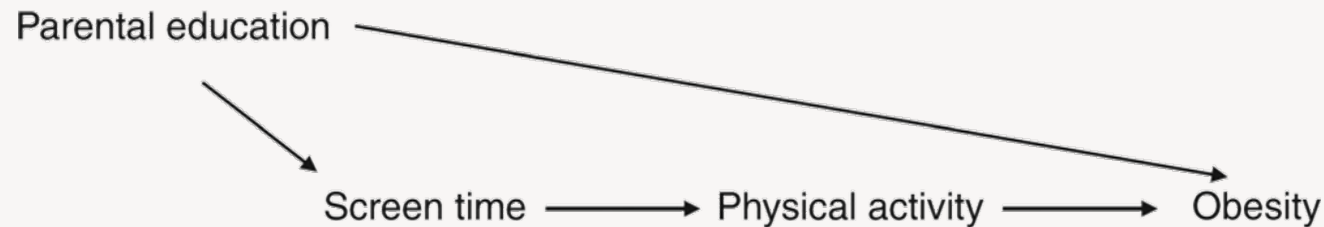
- Mediator

b



- Confounder

c



Directed Acyclic Graphs (DAGs)

A set of graphical tools used to depict our understanding and assumptions about the causal structure of the problem of interest

Advantages:

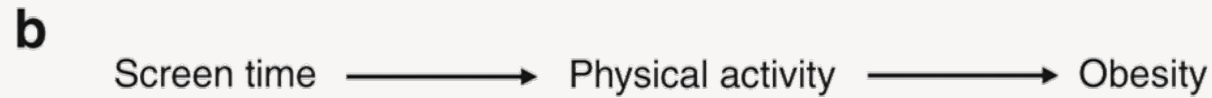
- Identify and communicate our knowledge and knowledge gaps regarding the causal structure
- Force us to be explicit with the assumptions in study design and analysis
- Simplify conceptual questions about confounding, selection bias, and other structural problems

Variable Selection

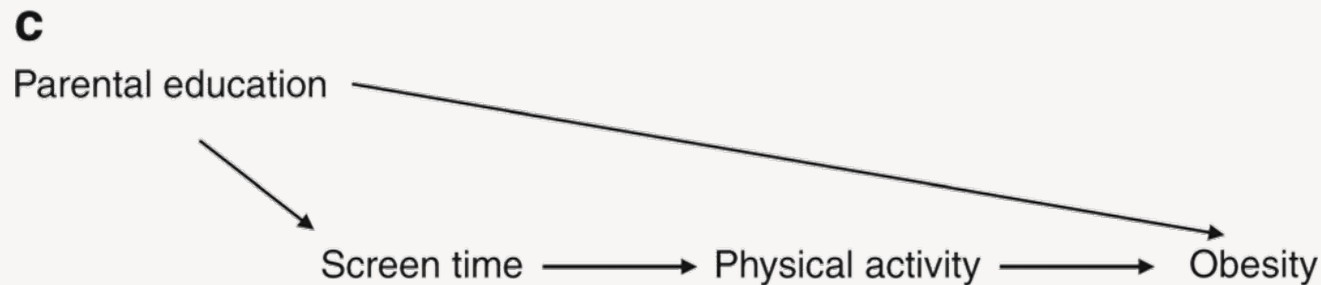
- Exposure & Outcome



- Mediator



- Confounder

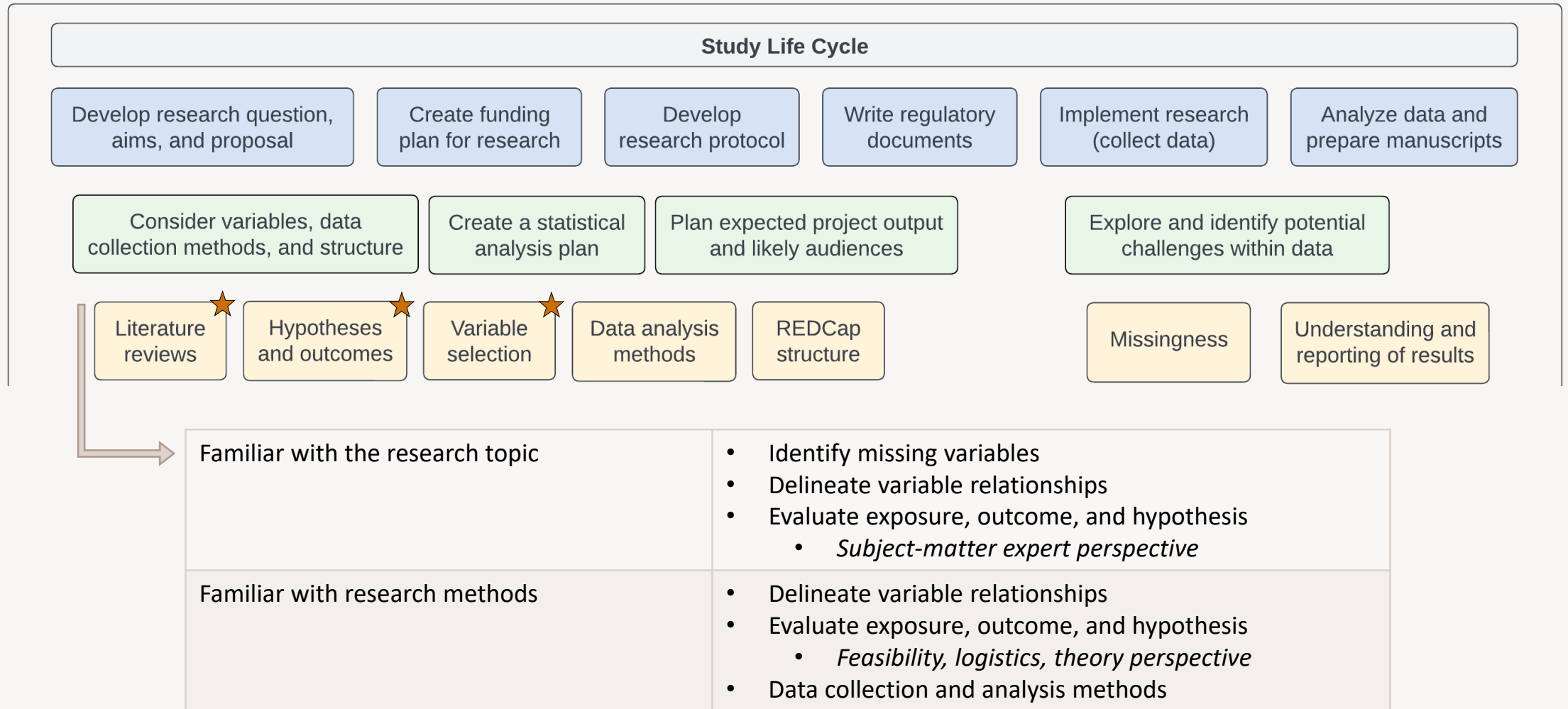


Why do we look at all these other variables?

- Goal **is not** to erase all the differences
- Goal **is** to understand and explore these relationships


Adjustment for Baseline Characteristics in Randomized Clinical Trials, JAMA

Partnerships






PRIME (St. Clair)



**Trainee demographics,
Resilience,
Preparation for the elective, and
Elective site training conditions**



The severity of stress/culture shock
experienced by individual trainees
during short-term global health
training experiences.



PRIME (Literature Review)

Theoretical Approaches to Culture Shock

Culture Learning Perspective	<ul style="list-style-type: none"> - Emphasizes importance of acquiring culturally relevant social knowledge to cope with, and thrive in, any new society - Must become communicatively competent in the new culture, mastering subtleties and nuances of cross-cultural interaction
Stress, Coping, and Adjustment Process	<ul style="list-style-type: none"> - Focuses on the coping styles of individuals - Personality, social support network, knowledge and skills, and personal demography affect how quickly and thoroughly they adapt
Social Identity and Intergroup Relations	<ul style="list-style-type: none"> - How people see themselves and their group affects how they deal with those from a different group, influencing adaptation to the new society

Table 2. Contemporary theories of intercultural contact.

Theory	Conceptual Framework	Theoretical Premise	Factors affecting adjustment	Intervention guidelines
Stress and Coping (Affect)	Cross-cultural travellers need to develop special coping strategies to deal with the stress of migration	All life changes are constant but inherently stressful	Adjustment factors involving personal (demographic, personality, values) and situational (e.g. social support)	Training people to develop robust stress-coping and management skills
Culture Learning (Behaviour)	Cross-cultural travellers need to learn culturally relevant social skills to communicate in their new settings	Social interaction is a skilled performance which has to be learnt and practiced	Culture specific variables. knowledge about a new culture, language/communication competence, social intelligence cultural distance.	Preparation, orientation and culture learning, especially behavioural-based social skill training as well as social and emotional intelligence
Social Identification (Social Cognition)	Cross-cultural transition have to adjust to changes in cultural identity and inter-group relations	Sense of personal and group identity is a fundamental issue for all travellers	Cognitive variables knowledgeable of the host culture (History, Religion, Etiquette) beliefs/attitudes between hosts and sojourners, cultural similarity, cultural identity	Enhancing self-esteem, overcoming barriers to inter-group harmony, emphasising inter-group similarities and identity

Adapted from Zhou et al. (2008).

Culture-Distance Concept: Absolute amount of difference or distance between a individual's own and the host culture is directly proportionally related to the amount of stress or difficulty experienced

Functional Friendship Model: Various friendship networks (host, bicultural, and multicultural) serve important psychological functions, helping overcome difficulties

1

K Kristina Jan 10
Coping Styles?

1

K Kristina Jan 10
Emphasizing cultural knowledge

K Kristina Jan 10
Consider relationships in the host country

PRIME (Variable Selection)

PREDICTOR VARIABLES

Resilience (CD-RISC 10; proxy for immersion "readiness"; 0-10)
Perceived Stress Scale scores (continuous); used as a control for Culture Shock Profile
Age
Gender (M/F)
Ethnicity
Year of training (Med Student vs Resident / Fellow)
Elective site
Elective duration
of travel companions (0 vs any)
Language fluency
Prior travel to elective site country
Prior work at elective site
Any prior international travel
Any prior international medical work (Y/N)
Marital status
Significant other as travel companion (Y/N)
Home communication plans
Pre-departure motivations
Career plans (paired pre/post)
Cost effectiveness in decision making (paired pre/post)
Preparation activities (Simulation vs no simulation)
Self-perceived preparedness (paired pre/post)
Primary worries (narrative)
Helpfulness of on-site clinical supervisor (1-5)
Ease of communication w/ clinical supervisor (1-5 scale)
Helpfulness of non-supervisory personnel (1-5)
Ease of communication w/ patients (1-5 scale)
Sufficient resource to provide good care for patients (1-5)
Support network to deal w/ difficult situations (1-5)
Feel overwhelmed by medical needs in the community (1-5)
Clear sense of personal role (1-5)
Feelings of conflict related to own medical practice and local differences (1-5)
Level of match for trainee skills vs expectations from local providers (1-5)
Clinical role over past 5 days (observer to independent); Observer + educator (1, 2, 6) = 0;
patient deaths in past 5 days (any death = 1; no death = 0)
Average patient acuity in past 5 days (0-3)
% personal responsibility for patient outcomes in past 5 days (0-100)
Current desire to incorporate GH into career

Table: Individual associations between culture shock score and selected predictors using a linear mixed model

Time - Constant Variables		
Description	Rationale - Grouping	Estimate
Resilience Score	Resilience	-0.03
Male Gender (Ref: Female gender)	Demographic - Gender	0.10
Medical Student (Ref: Resident & Fellow)	Years of Training	0.07
Travelled Alone (Ref: Travelled with others)	Solo Travel	0.00
Prior provision of medical care outside USA (Ref: no prior experience)	Prior Work	-0.14
Completion of simulation activity (Ref: No simulation activity)		0.02
Partially, Conversationally, and/or Medically Fluent (Ref: Not fluent)	Ease of Communication	-0.25
Time - Varying Variables		
My clinical supervisor here is helpful	Social Support	-0.11
The non-supervisory providers that I work with here are helpful		-0.12
I think there is a good support network here to help me deal with difficult		-0.1911
I can communicate easily with my clinical supervisor	Ease of Communication	-0.13
I can communicate easily with my patients		-0.13
There are sufficient resources to provide good care for my patients	Professional Strain	-0.08
I feel overwhelmed by the medical needs in this community		0.11
I have a clear sense of my role and how I can be helpful		-0.18
I feel conflicted between my own ideas of medical care and a desire to respect local medical practices that differ		0.09
The expectations of my skills (from staff, providers, and patients) match my level of training	Patient Acuity & Needs	-0.11
Enter the number of patient deaths that have occurred over the past 5 days that you are aware of (0 if none, continuous)		0.03
Average health status of the majority of patients over the past 5 days*		0.07
Role of a clinical provider (Ref: observer and educator)	Level of Personal Responsibility for Clinical Care	-0.07
Please indicate the percent of personal responsibility that you felt for the outcomes of your patients over the past 5 days**		0.00

PRIME (Variable Selection)

Theoretical Approaches to Culture Shock			
Culture Learning Perspective		<ul style="list-style-type: none">- Emphasizes importance of acquiring culturally relevant social knowledge to cope with, and thrive in, any new society- Must become communicatively competent in the new culture, mastering subtleties and nuances of cross-cultural interaction	
Stress, Coping, and Adjustment Process		<ul style="list-style-type: none">- Focuses on the coping styles of individuals- Personality, social support network, knowledge and skills, and personal demography affect how quickly and thoroughly they adapt	
Social Identity and Intergroup Relations		<ul style="list-style-type: none">- How people see themselves and their group affects how they deal with those from a different group, influencing adaptation to the new society	

Table 2. Contemporary theories of intercultural contact.

Theory	Conceptual Framework	Theoretical Premise	Empirical Application
Stress and Coping (Adapt)	Cross-cultural transfer	All life changes are stressful but inherently positive	Adaptation
Culture Learning (Behavior)	Cross-cultural transfer	Social interaction is a skilled performance to learn culturally relevant social skills to communicate in their new settings	Cultural knowledge
Social Identification (Social Cognition)	Cross-cultural transition	Sense of personal and social identity is a fundamental issue for all travelers	Identity

Adapted from Zhou et al. (2008).

Culture-Distance Concept: Absolute amount of difference and the host culture is directly proportionally related to experienced

Functional Friendship Model: Various friendship networks important psychological functions, helping overcome

Table 1: Association between CSP scores and predictors, individual	
Time - Constant Variables	
Variable	Description
resiliencescore	Resilience Score
gender	Gender: Male
simulation	Simulation: Incomplete
trainitype_bin	Medical Student
solotravel	Travelled Alone
medicareoutsideusa	Prior provision of medical care outside
language	Partially, Conversationally, and/or
duration_size_1	Short duration, compared to average
duration_size_3	Long duration, compared to average
Duration	
	Somewhat or Very Prepared
	Race/ Ethnicity: Missing (Ref: White)
	Race/ Ethnicity: Asian, Pacific Islander
	Race/ Ethnicity: Black, African American
	Race/ Ethnicity: Hispanic, Latino
	Race/ Ethnicity: Multiracial
	Race/ Ethnicity: Overall
	Region: Asia (Ref: Africa)
	Region: Caribbean
	Region: Central America
	Region: Europe
	Region: North America
	Region: South America
	Region: Overall
Time - Varying Variables	
supperhelpful	My clinical supervisor here is helpful
nosupperhelpful	The non-supervisory providers that I work with here are helpful
supportnetworksize	I think there is a good support network here to help me deal with difficult situations
communication	I can communicate easily with my clinical supervisor
communicationwithpatients	I can communicate easily with my patients
sufficientresources	There are sufficient resources to provide good care for my patients
overwhelmedbyneeds	I feel overwhelmed by the medical needs in this community
clearsenseofrole	I have a clear sense of my role and how I can be helpful
conflictedpractice	I feel conflicted between my own ideas of medical care and a desire to respect local medical practices that differ
skillsexpectation	The expectations of my skills (from staff, providers, and patients) match my level of training
patientacuity	Enter the number of patient deaths that have occurred over the past 5 days that you are aware of (0 if none, continuous)
patienthealthstatus	Average health status of the majority of patients over the past 5 days*
roleofprovider	Role of a clinical provider (Ref: observer and educator)
patientoutcomes	Please indicate the percent of personal responsibility that you felt for the outcomes of your patients over the past 5 days**

Priorities identified by the group (questions we would like to answer w/ the analysis)

(Megan) Interested in evaluating the support component for GH electives

(Vanessa) How does pre-departure resilience correlate w/ stress/culture shock experienced during GH electives?

(Jim) Demographics of learners & prior experience--is there something about certain learners that preparation doesn't even matter vs those that really need it

(Kristina) Influence of duration of elective & training conditions

(Sami) Intrinsic components of learners; importance of considering cluster analysis

(Steve M) Would like to come away w/ a clear psychologic profile of a person who is at risk of psychological distress

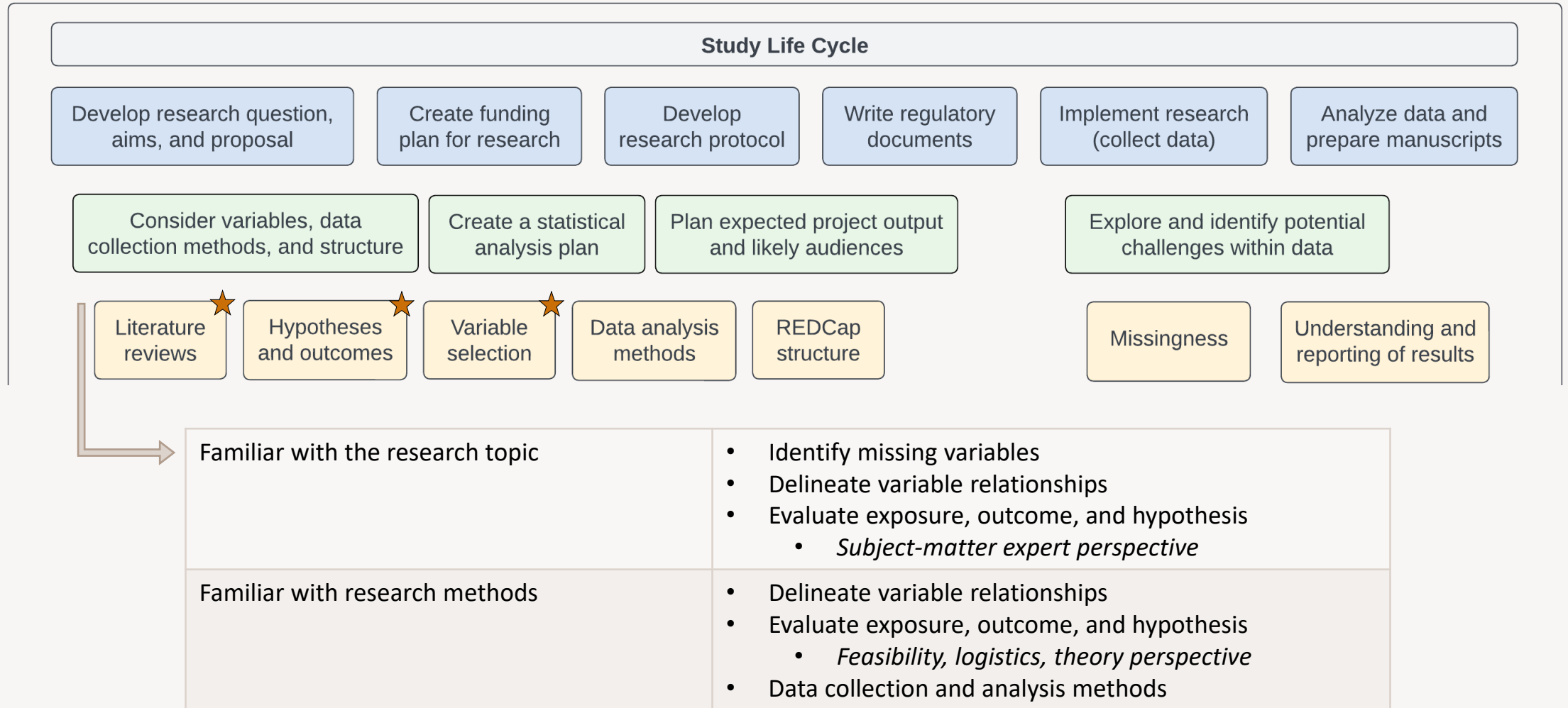
(Steve W) Was there any one preparation variable that made the biggest difference?

(Steve W) Is there a location/region profile we should consider? --e.g. different preparation for electives in Sub-Saharan African vs other regions


(Steph) Which learners are more vulnerable?


Table: Individual associations between culture shock score and selected predictors using a linear mixed model		
Time - Constant Variables		
Description	Rationale - Grouping	Estimate
Resilience Score	Resilience	-0.03
Male Gender (Ref: Female gender)	Demographic - Gender	0.10
Medical Student (Ref: Resident & Fellow)	Years of Training	0.07
Travelled Alone (Ref: Travelled with others)	Solo Travel	0.00
Prior provision of medical care outside USA (Ref: no prior experience)	Prior Work	-0.14
Completion of simulation activity (Ref: No simulation activity)		0.02
Partially, Conversationally, and/or Medically Fluent (Ref: Not fluent)	Ease of Communication	-0.25
Time - Varying Variables		
My clinical supervisor here is helpful	Social Support	-0.11
The non-supervisory providers that I work with here are helpful		-0.12
I think there is a good support network here to help me deal with difficult		-0.1911
I can communicate easily with my clinical supervisor	Ease of Communication	-0.13
I can communicate easily with my patients		-0.13
There are sufficient resources to provide good care for my patients	Professional Strain	-0.08
I feel overwhelmed by the medical needs in this community		0.11
I have a clear sense of my role and how I can be helpful		-0.18
I feel conflicted between my own ideas of medical care and a desire to respect local medical practices that differ		0.09
The expectations of my skills (from staff, providers, and patients) match my level of training		-0.11
Enter the number of patient deaths that have occurred over the past 5 days that you are aware of (0 if none, continuous)	Patient Acuity & Needs	0.03
Average health status of the majority of patients over the past 5 days*		0.07
Role of a clinical provider (Ref: observer and educator)	Level of Personal Responsibility for Clinical Care	-0.07
Please indicate the percent of personal responsibility that you felt for the outcomes of your patients over the past 5 days**		0.00

Partnerships



Survey Questions & Survey Design

 **RESEARCH**



NEWS,
BLOGS &
MEETINGS ▾

RESEARCH
FUNDING ▾

PROFESSORSHIPS
& FACULTY
FELLOWSHIPS ▾

SPONSORED
RESEARCH ▾

COMPLIANCE,
SECURITY,
ETHICS AND
INTELLECTUAL
PROPERTY ▾

CENTERS,
OFFICES
& CORES ▾

RESEARCHER
RESOURCES ▾

HOME / RESEARCH POLICIES / HUMAN RESEARCH PROTECTION PROGRAM / PREP: PROFESSIONAL RESEARCH EDUCATION PROGRAM

PREP: Professional Research Education Program

WHAT IS PREP?

The Professional Research Education Program (PREP) aims to support faculty, staff, and students in conducting safe, compliant, and inclusive human subjects research and connect the research community to campus resources. It consists of ongoing continuing education and professional development opportunities. Sessions are presented by various experts around campus.

If you have questions about PREP or would like to receive email updates about upcoming PREP courses, please email prep@research.wisc.edu.

Professional Research Education Program (PREP) (Brief) Introduction to Survey Best Practices

Jennifer “Jen” Dykema

Faculty Director
University of Wisconsin Survey Center (UWSC)
University of Wisconsin-Madison

19 May 2022



© 2022. Materials may not be reproduced without permission of the author.

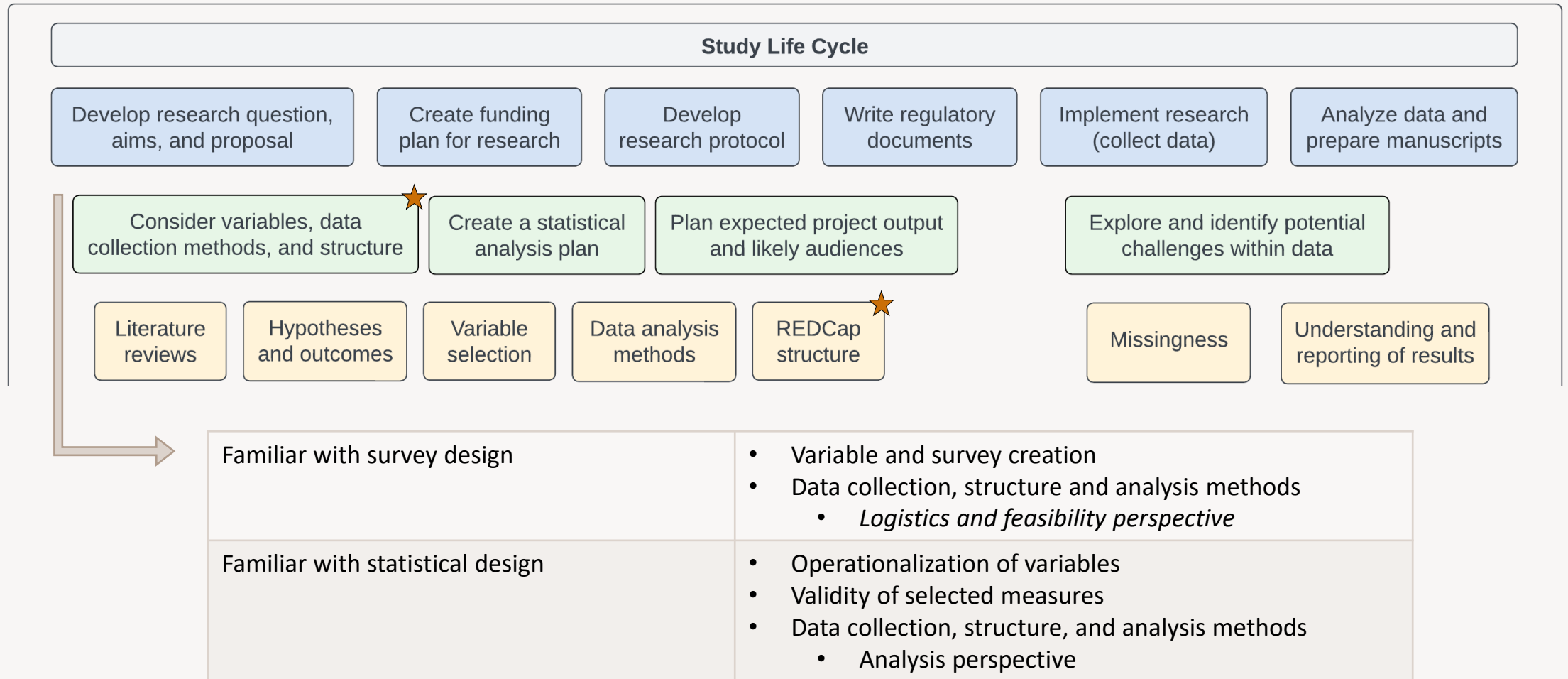


PREP > Study Conduct & Coordination > Introduction to Survey Best Practices (2022)

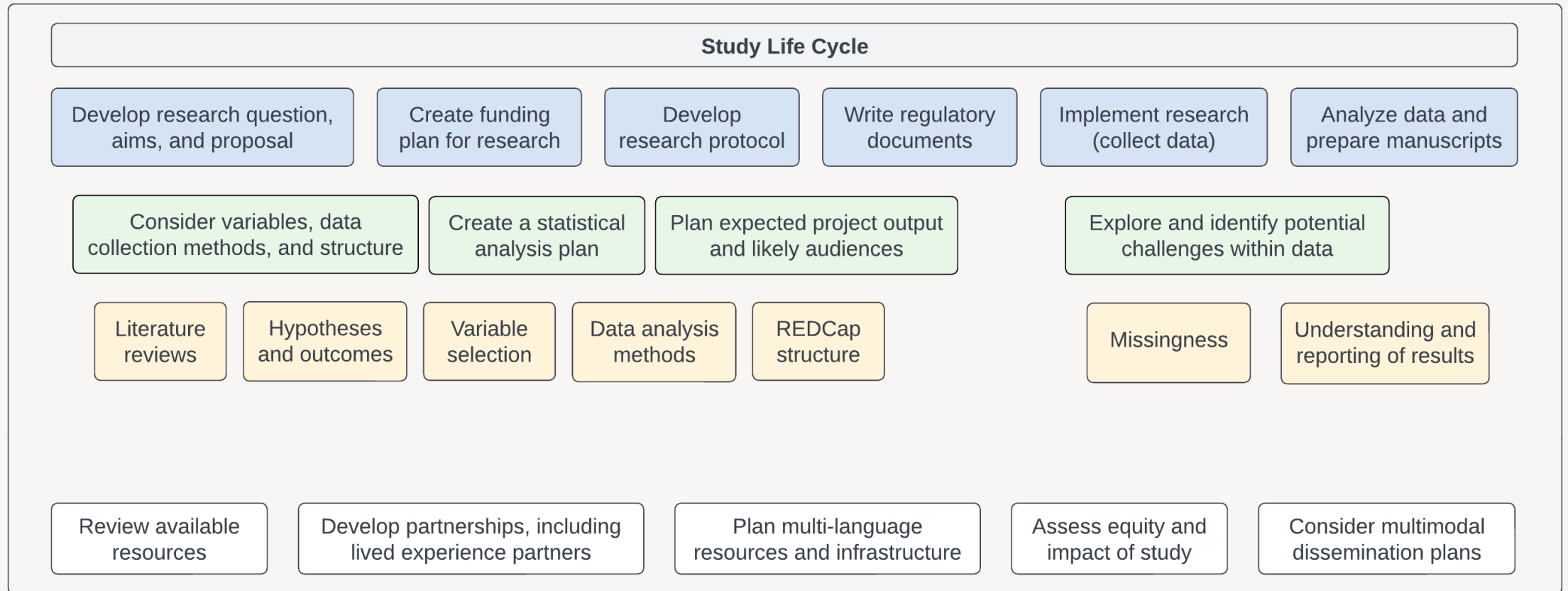
Pediatric Hospital Medicine and Complex Care Research and Scholarship Guide

Goal: To provide a limited set of high-yield resources and examples for faculty, fellows, residents and students conducting research or scholarly work

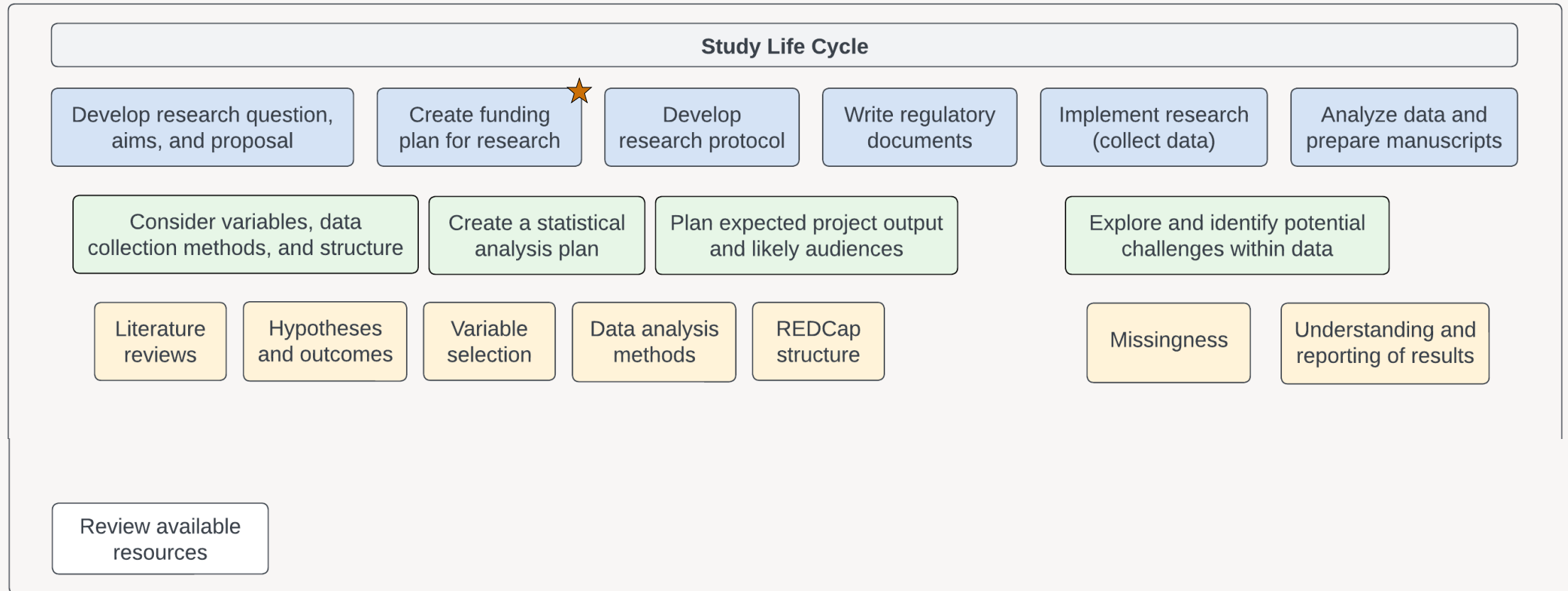
Partnerships



Additional Perspectives



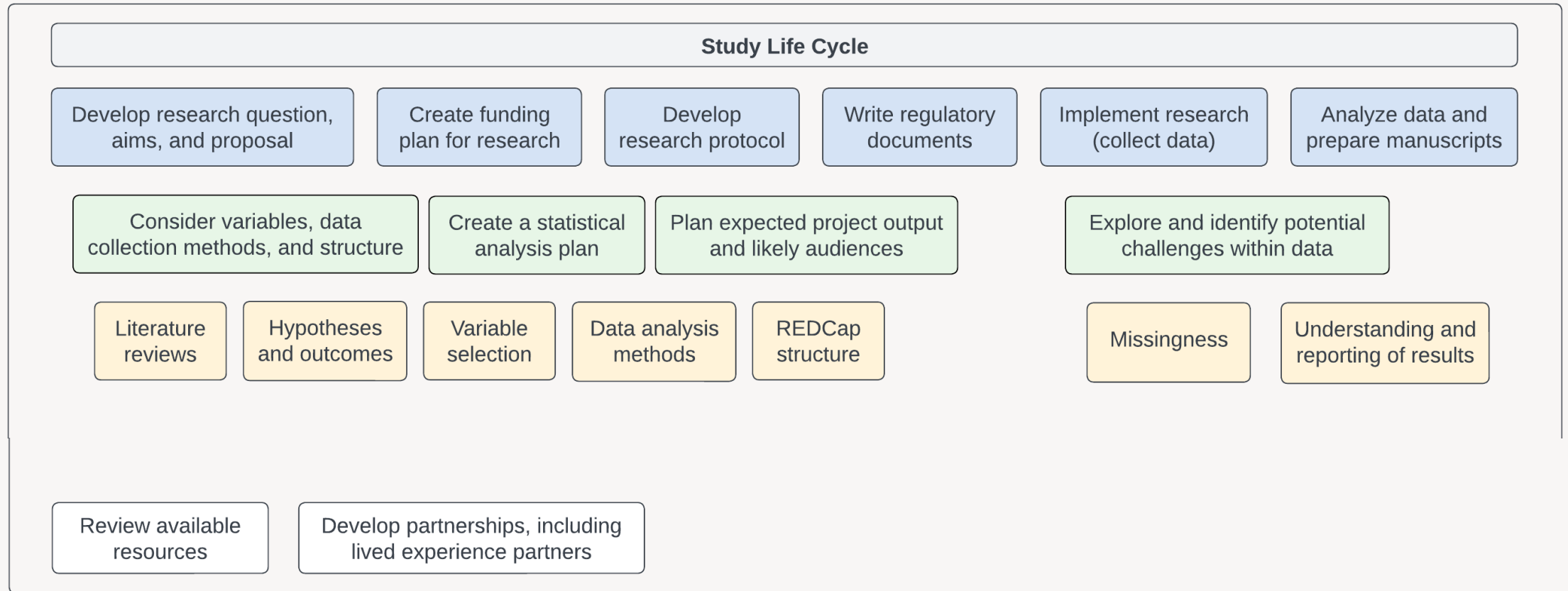
Additional Perspectives



Review available resources

- Anticipate what resources you may need
- Match what resources are needed to what may already be available within UW

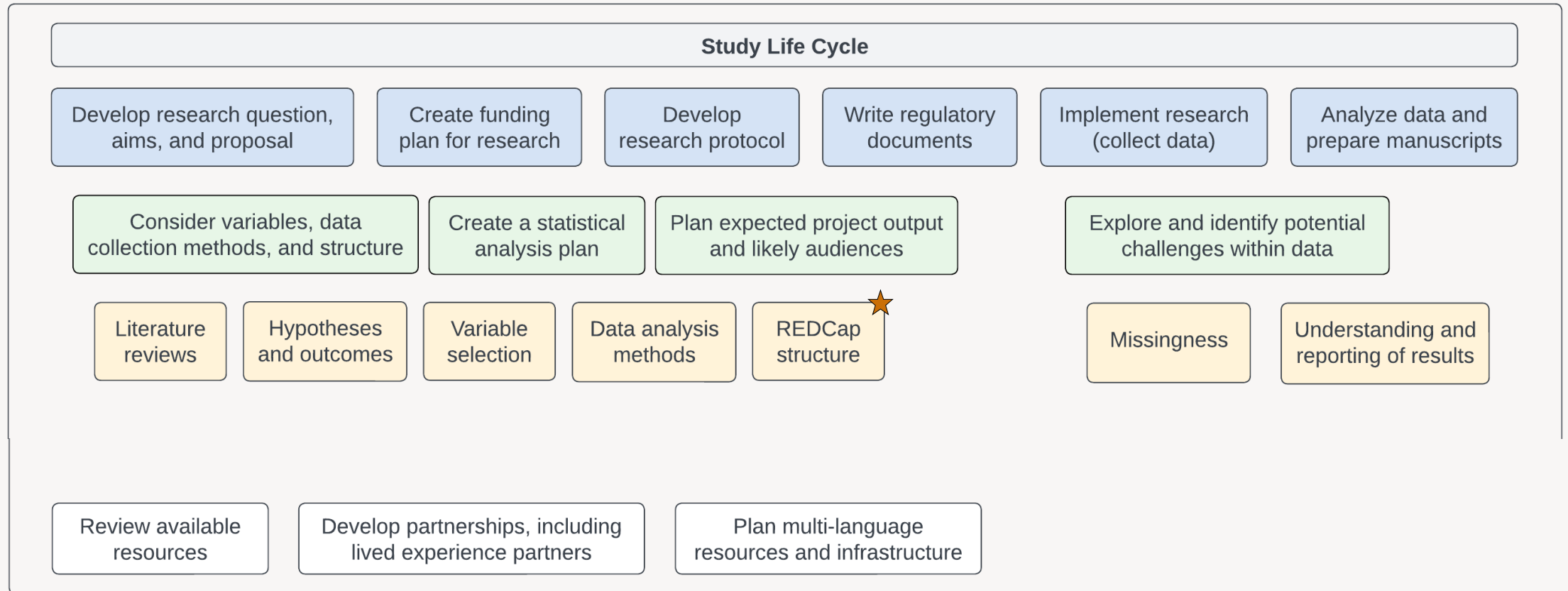
Additional Perspectives



Lived Experience Partnerships

- Individuals who have first-hand experience in the topic or population you're researching
- May provide perspective on your research methods and potential improvements

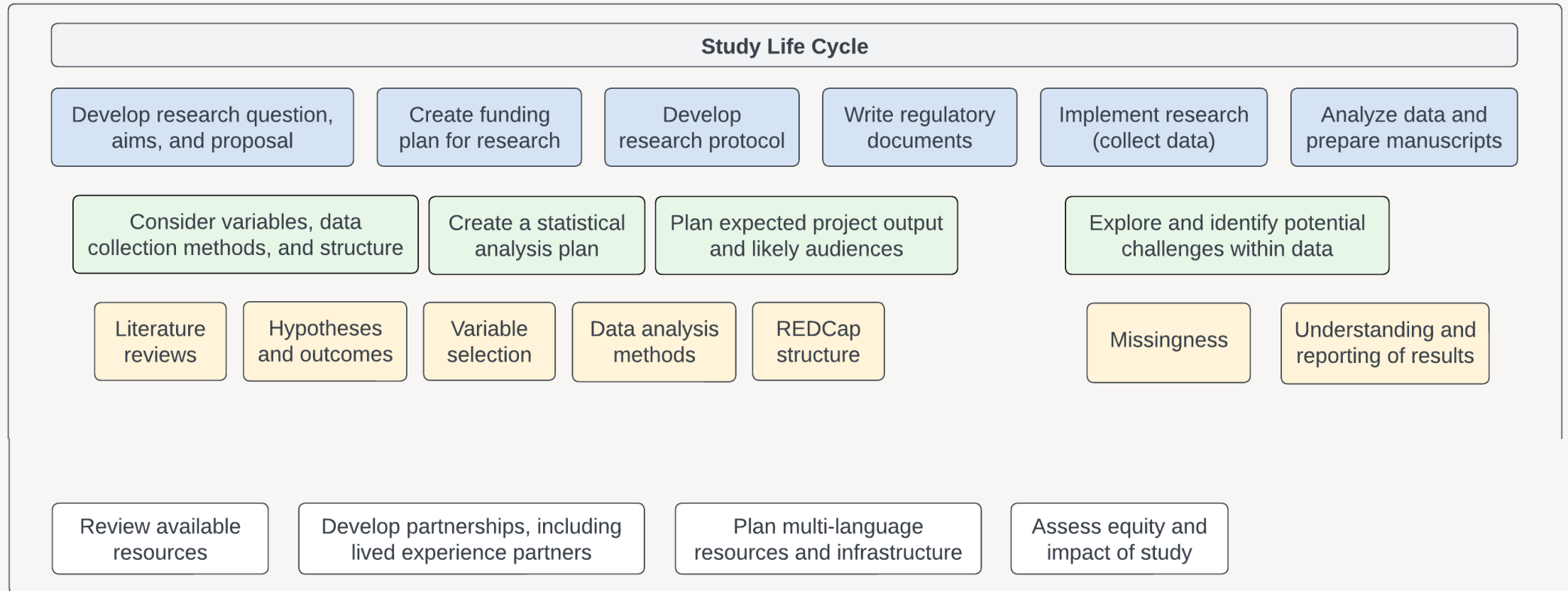
Additional Perspectives



Multi-language infrastructure

- Individuals whose primary language is not English face different challenges
- Translation and implementation in other languages require time, effort, and resources

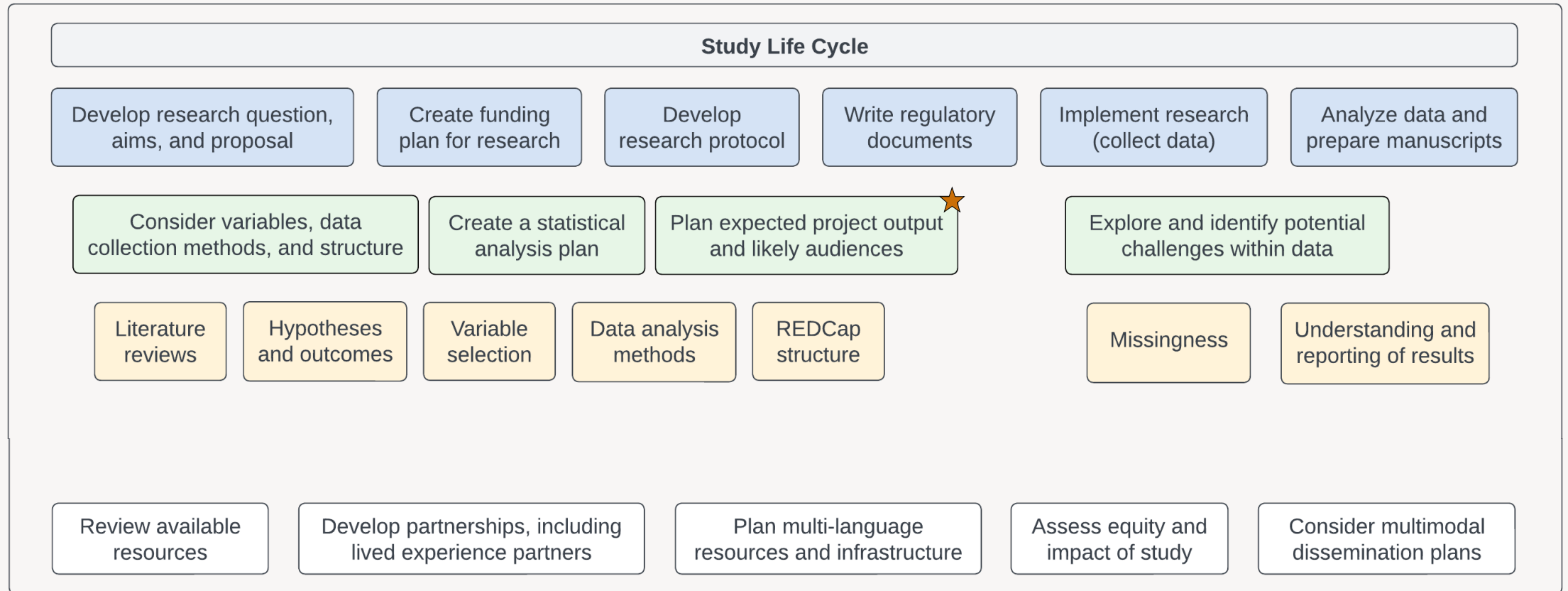
Additional Perspectives



Assess equity and impact

- Consider study language, study inclusion, and the return of research to the population
- Review these topics with experts iteratively throughout your study

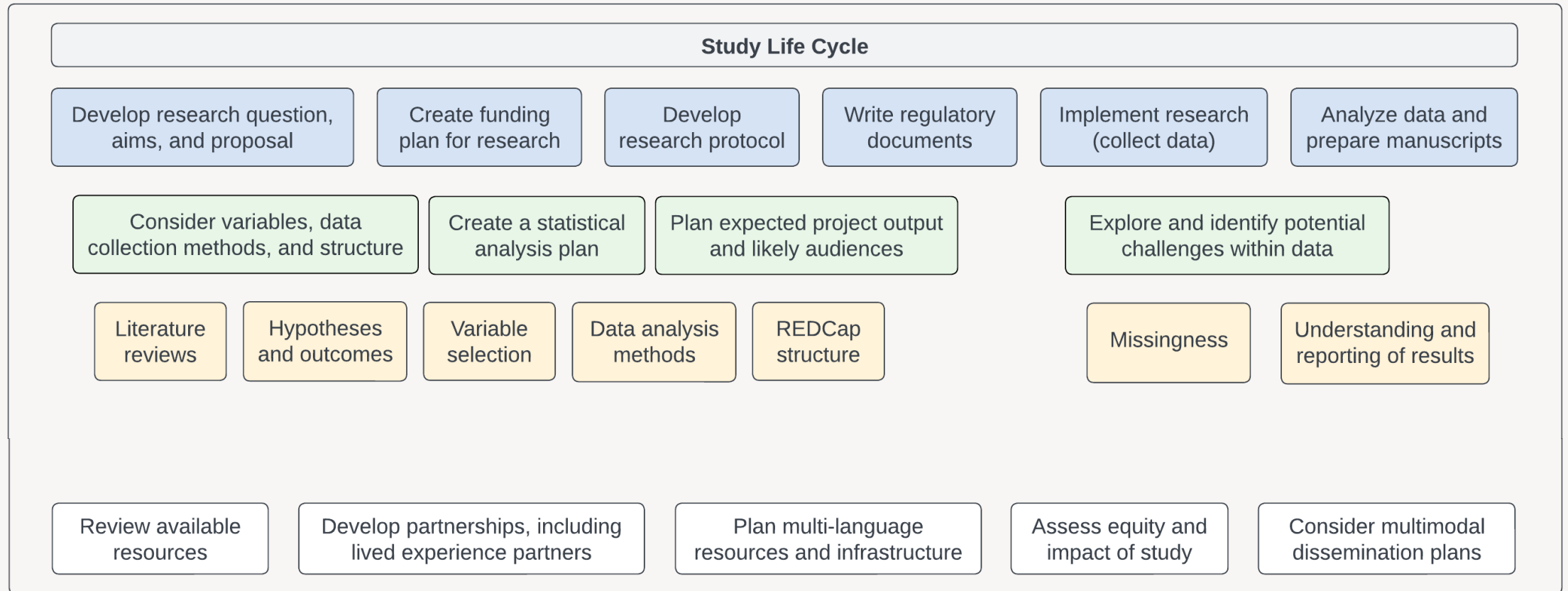
Additional Perspectives



Multimodal dissemination plans

- Identify your audience and the expected takeaways
- Hospital Medicine & Complex Care Research Program: [Research Takeaways for Families](#)

Additional Perspectives



Outreach to experts in these fields will aid in **recognizing** and answering these questions.



Study Design Topics?



We've covered:

- Variable Selection
- Survey Questions & Survey Design
- Partnerships
 - Briefly, additional fields to consider partnerships in (e.g., lived experience partners or dissemination).

What other topics do you have questions on?


Please submit your responses in the chat or feel free to unmute/raise hand.

Data Analysis

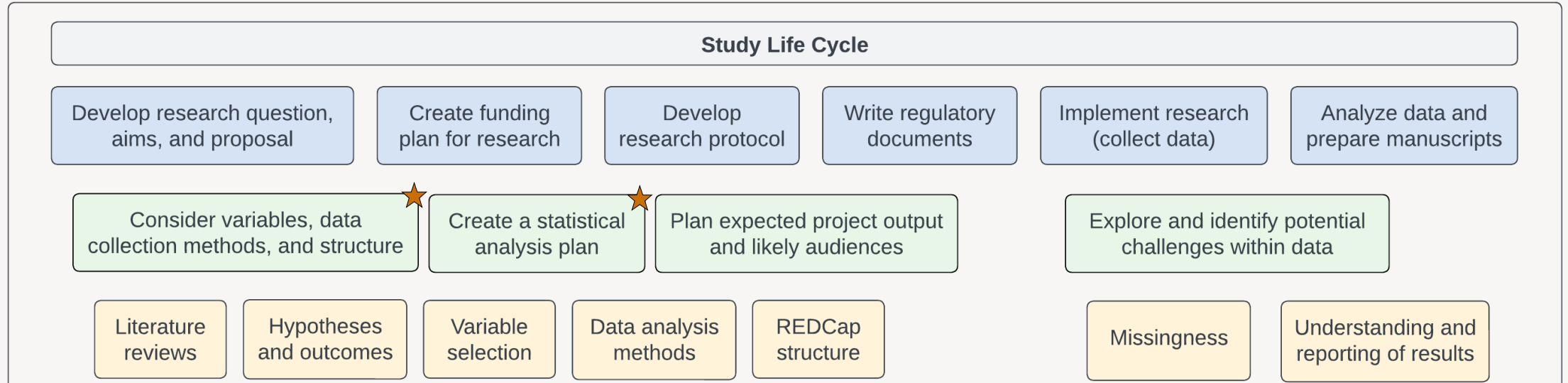
```
        &start..name,  
        i=&start %to &stop;  
        saleswk&i..week&i,  
%end;  
sum(  
%do i=&start %to &stop;  
    saleswk&i..week&i  
    %if &i<&stop %then ,;  
%end;  
    ) as totsales  
from  
    %do i=&start %to &stop;  
        saleswk&i  
        %if &i<&stop %then ,;  
    %end;  
where  
    %do i=&start %to &stop;  
        saleswk&i..name=  
    end;  
    ;
```



Data Analysis Topics

- 
- Create a statistical analysis proposal
 - Challenges to data analysis
 - Missingness
 - Interpretation of results
 - Writing methods
 - Partnership

Partnerships



Pediatric Hospital Medicine and Complex Care Research and Scholarship Guide

Goal: To provide a limited set of high-yield resources and examples for faculty, fellows, residents and students conducting research or scholarly work

Developing a Project Idea and Designing a Study

[How to develop a problem statement](#)

[How to write and evaluate research questions](#)

[How to write a proposal template with example](#)

[Equator reporting guidelines](#)

Data Analysis Proposal

The following template can be used to help you think through an analysis plan. It can be used to frame conversations with collaborators and with analysts or biostatisticians. It will also help you write your paper and anticipate challenges in advance.

An example is included below the template for additional detail.

Project Title

Date

Research Question – *What is the specific aim of the study, or what question are you hoping to answer with this work. Limit to 1-2 sentences*

Data Sources – *Where and when is the data for the study coming from?*

Inclusions – *Describe who /what is included in the study sample?*

Exclusions – *List the criteria used determine if someone / something is excluded from the study?*

Definitions of Key Variables – *List each study variable and define it (this may correspond to your data dictionary). Consider organizing into Outcomes (i.e., dependent variables) and predictors (i.e., independent variables, covariates, confounders). If there is 1 variable that is the key variable of interest to the study, identify it.*

Data Analysis – *what is the general analytical plan? How will missing data be handled? Are there any sensitivity analyses or secondary analyses you anticipate?*

Additional Considerations / Uncertainties – *what else might need to be considered or resolved prior to study completion?*

Data Analysis Proposal

Proposal for HCUP Analysis – Health System Dispersion

Ryan Coller, MD, MPH – October 2014

Research Question

Do children receiving inpatient and emergency care from a more dispersed set of health systems have different health services outcomes than children who receive inpatient and emergency care from a more concentrated set of health systems?

Data Sources

HCUP SID, SEDD from FL, CA, NY 2010-2012

Patients identified via “Visitlink” unique variable

Inclusions

- All patients ≥ 2 years old during 2010 with at least 4 combined inpatient or emergency department encounters during calendar year 2010 (may modify # of encounters for inclusion later). Note – if patient is 2 at ANY point in 2010, all of their 2010 encounters are included (even if they were <2 during some encounters during 2010)

Exclusions

- patients < 2 for all of 2010 or > 22 years old at any point in 2010
- patients with known mortality in 2010 (DISPUNIFORM=20 or DIED=1)
- encounters for pregnancy-related reasons (NEOMAT=1 or 3), encounters with charges = “missing” & LOS=0, encounters with data missing for: VisitLink, Age

Data Analysis Proposal

Definitions of Key Variables

1. Dispersion Index = Modeled after “Continuity of Care index” (Christakis 2002)
In our case, N=total number of hospital and ED encounters. n=total number of visits to a given facility. s=total number of facilities. Dispersion Index for all included patients is calculated for Year 1.
2. Facility = DSHOSPID: “Data source hospital identifier”: the data sources’ own number scheme for identifying hospitals and facilities.

Outcomes = From 2011 and 2012 data

1. Hospitalization (# and presence/absence)
2. Total # Hospital Days
3. ED visit (# and presence/absence)

Predictor of Interest

COC, dispersion index, will create categories (quartile), with highest COC being the ref.

Covariates

Demographics:

age (age): categories = 2-4, 5-9, 10-14, 15-19, 20-22 → needed to change to this set (based on CA’s ranges) because they perturb this variable for patients within these ranges depending on their other demographics. Thus, these categories reflect patients within the actual ranges, but just looking at 7 y/o’s might include kids whose actual age is between 5 and 9 y/o and have been perturbed to 7...age 2-4 is ref.

gender (female), male is ref

race/ethnicity (race), categories are “White (ref)”, “Black”, “Hispanic”, “Asian”, “Other”, combined Native American and Other into 1 category.

payer category (pay1), categories = “Private (ref)”, “Public”, and “Other”, combined Medicare, Medicaid & Other into “Public” (Florida’s “other” category for this variable is a bunch of government programs like Tricare and VA, etc). Combined Self-pay, No Charge, Missing into “Other”

Data Analysis Proposal

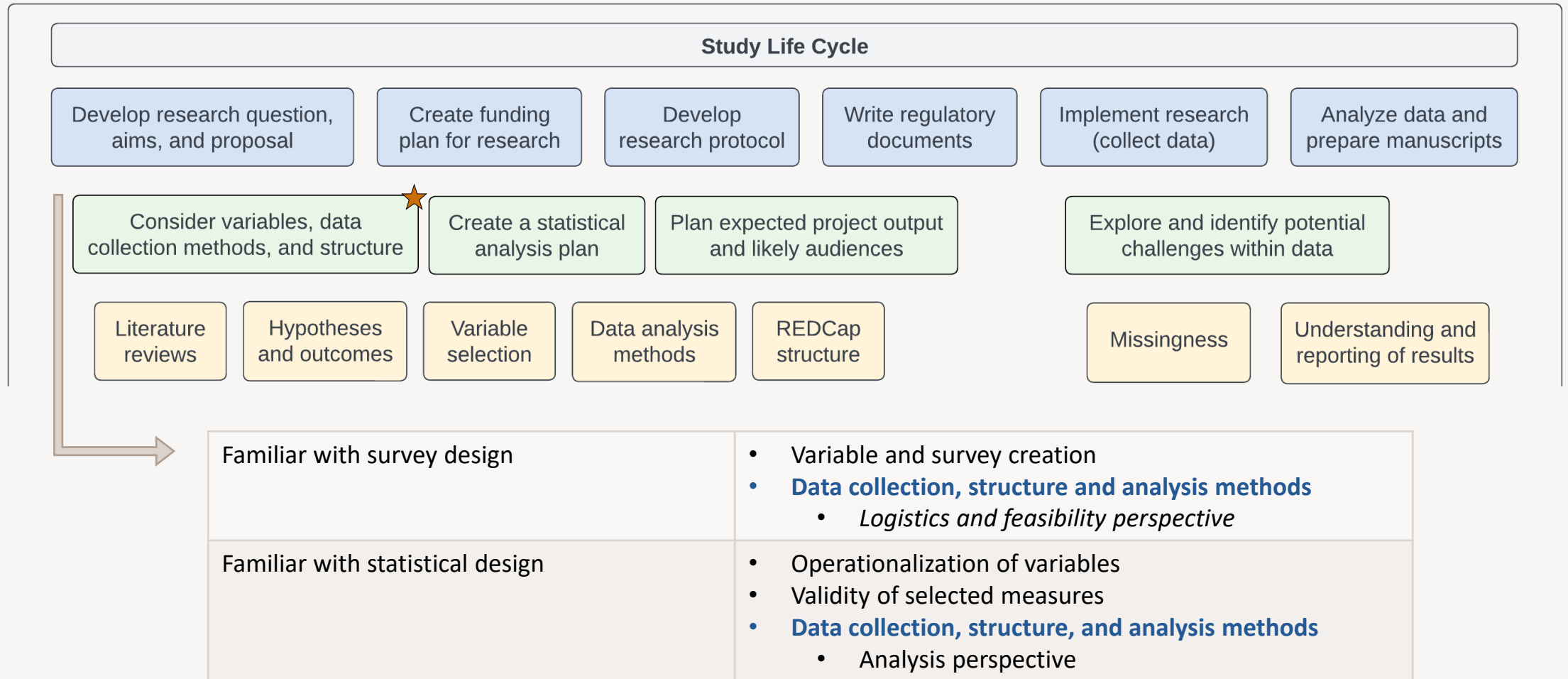
Data Analysis

1. Data organized at person-level (not discharge level), using VisitLink across encounters
2. Weighted logistic and negative binomial regressions for each outcome
 - a. Univariate first
 - b. Multivariate second, adjusting for each of the covariates noted above
 - c. We will look for collinearity between variables before including in one model.
 - d. Multilevel modeling needed? (hospital or state levels).
3. Perform complete analysis with all patients and then repeat sub-analyses for
 - a. 5 most prevalent diagnoses
 - b. Medical Technology Group alone
 - c. Organ systems organized by PMCA
4. Dealing with multiple comparisons....Hochberg, Bonferoni, nothing, other?
5. Does dispersion persist – do those with dispersed care in 2010 also have dispersed care in 2011 and 2012?

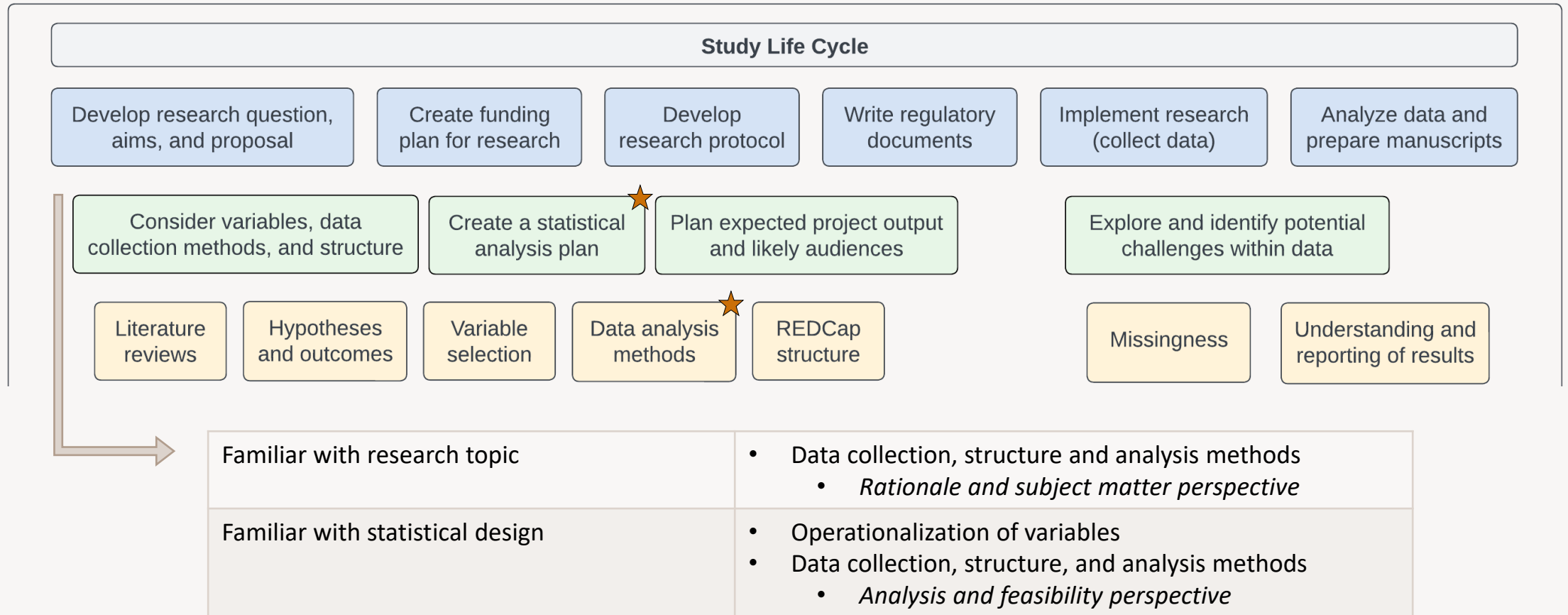
Data Structure

How the collected data is stored and organized, allowing for efficient access and modification

Partnerships



Partnerships



Data Analysis Proposal

Data Analysis

1. Data organized at person-level (not discharge level), using VisitLink across encounters
2. Weighted logistic and negative binomial regressions for each outcome
 - a. Univariate first
 - b. Multivariate second, adjusting for each of the covariates noted above
 - c. We will look for collinearity between variables before including in one model.
 - d. Multilevel modeling needed? (hospital or state levels).
3. Perform complete analysis with all patients and then repeat sub-analyses for
 - a. 5 most prevalent diagnoses
 - b. Medical Technology Group alone
 - c. Organ systems organized by PMCA
4. Dealing with multiple comparisons....Hochberg, Bonferroni, nothing, other?
5. Does dispersion persist – do those with dispersed care in 2010 also have dispersed care in 2011 and 2012?

Primary Analyses

Outcomes = From 2011 and 2012 data

1. Hospitalization (# and presence/absence)
2. Total # Hospital Days
3. ED visit (# and presence/absence)

Covariates

Demographics:

age (age): categories = 2-4, 5-9, 10-14 (CA's ranges) because they perturb their other demographics. Thus, these just looking at 7 y/o's might include k perturbed to 7...age 2-4 is ref.

gender (female), male is ref

race/ethnicity (race), categories are "combined Native American and Other"

payer category (pay1), categories = "Medicaid & Other into "Public" (Florida government programs like Tricare and "Other"

Data Analysis Proposal

Data Analysis

1. Data organized at person-level (not discharge level), using VisitLink across encounters
2. **Weighted logistic and negative binomial regressions for each outcome**
 - a. Univariate first
 - b. Multivariate second, adjusting for each of the covariates noted above
 - c. We will look for collinearity between variables before including in one model.
 - d. Multilevel modeling needed? (hospital or state levels).
3. Perform complete analysis with all patients and **then repeat sub-analyses for**
 - a. **5 most prevalent diagnoses**
 - b. **Medical Technology Group alone**
 - c. **Organ systems organized by PMCA**
4. Dealing with multiple comparisons....Hochberg, Bonferroni, nothing, other?
5. Does dispersion persist – do those with dispersed care in 2010 also have dispersed care in 2011 and 2012?

Sub Analyses

Outcomes = From 2011 and 2012 data

1. Hospitalization (# and presence/absence)
2. Total # Hospital Days
3. ED visit (# and presence/absence)

Covariates

Demographics:

age (age): categories = 2-4, 5-9, 10-14 (CA's ranges) because they perturb their other demographics. Thus, these just looking at 7 y/o's might include k perturbed to 7...age 2-4 is ref.

gender (female), male is ref

race/ethnicity (race), categories are "combined Native American and Other"

payer category (pay1), categories = "Medicaid & Other into "Public" (Florida government programs like Tricare and "Other"

Confounder: Extraneous variable that distorts the association between the exposure and outcome.

Effect measure modification: The association between an exposure and outcome is thought to vary across strata.

Data Analysis Proposal

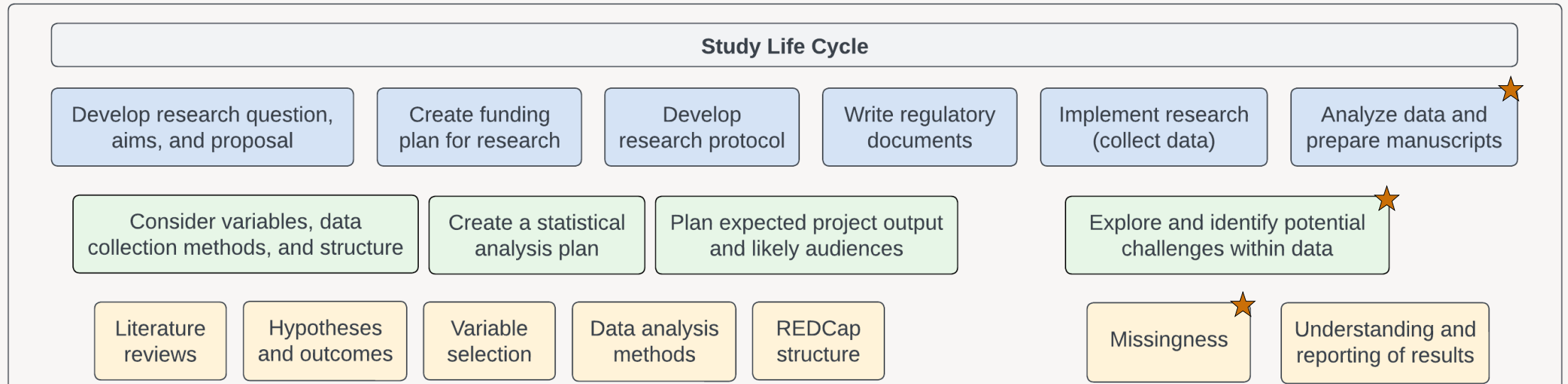
Additional Considerations / Uncertainties

1. Concern: Are ED encounters truly representing an ED visit followed by discharge home. Do we need to worry that ED visits in which you are admitted to another hospital are counted as 2 encounters? This does not appear to be the case. Note the description on the HCUP website: "The SEDD capture emergency visits at hospital-affiliated emergency departments (EDs) that do not result in hospitalization. Information about patients initially seen in the ED and then admitted to the hospital is included in the State Inpatient Databases (SID)."
2. Concern: What to do if someone dies during study period? Should this be an outcome? Turns out this number is tremendously small, we are just excluding them from analysis and also not using it as an outcome
3. Concern: age-weights vs other approach for missing visitlink. Previous work with this data for us has identified that age is the primary variable driving missingness. If editors or reviewers want something more robust, we can do it (but we don't expect it will change much).
4. Additional Long-term Considerations
 - Need to decide what to do with transfer patients (identified by DISPUNIFORM or TRANOUT from transferring out hospital and TRANIN from receiving hospital)
 - At some point, should look at how many people's categorizations for the severity of illness variable change between our approach and if we were to use ONLY 2010 data to categorize them? We don't have to do this right away, but I'm curious → this would be slightly cleaner (or a good sensitivity analysis) since there is some concern to using 3 years of data where we don't know if the complexity was acquired during that time or simply not coded consistently.

Outcomes = From 2011 and 2012 data

1. Hospitalization (# and presence/absence)
2. Total # Hospital Days
3. ED visit (# and presence/absence)

Partnerships



Missingness

Occurs when no data value is stored for the variable in an observation

Missing Completely at Random

Missing data are randomly distributed across the variable and unrelated to other variables

Example

- A few missing values in a dataset on holiday spending amounts,
 - But you still have a wide distribution from low to high values. It is likely that the missing data is truly random.
- Equipment malfunctions or lost samples

Truly random

Missing at Random

Missing data are not randomly distributed but they are accounted for by other observed variables

Example

- There are more missing values for ages 18-25 regarding their holiday spending.
- There is still a wide distribution of values for the holiday spending amount,
 - The reason for missingness is probably not due to the amount, but for other reasons

Missing due to another factor (Age)

Missing Not at Random

Missing data systematically differ from the observed values

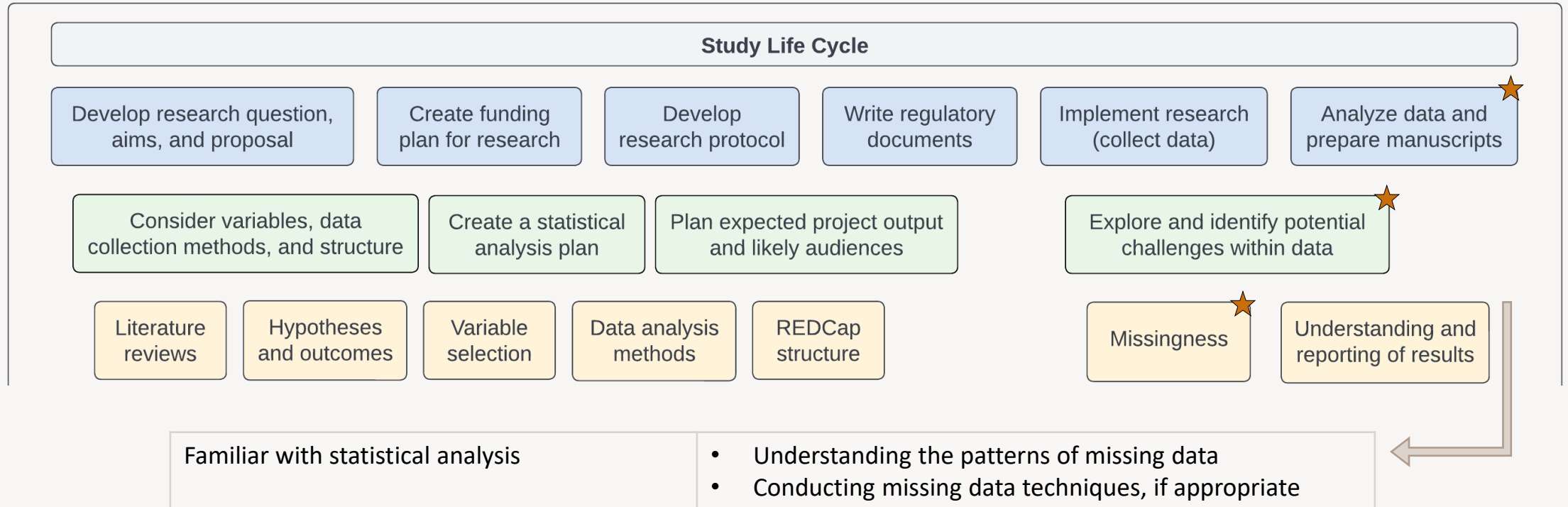
Example

- In holiday spending dataset, there are fewer low values.
- Participants with low incomes avoid reporting their holiday spending amounts because they are low.

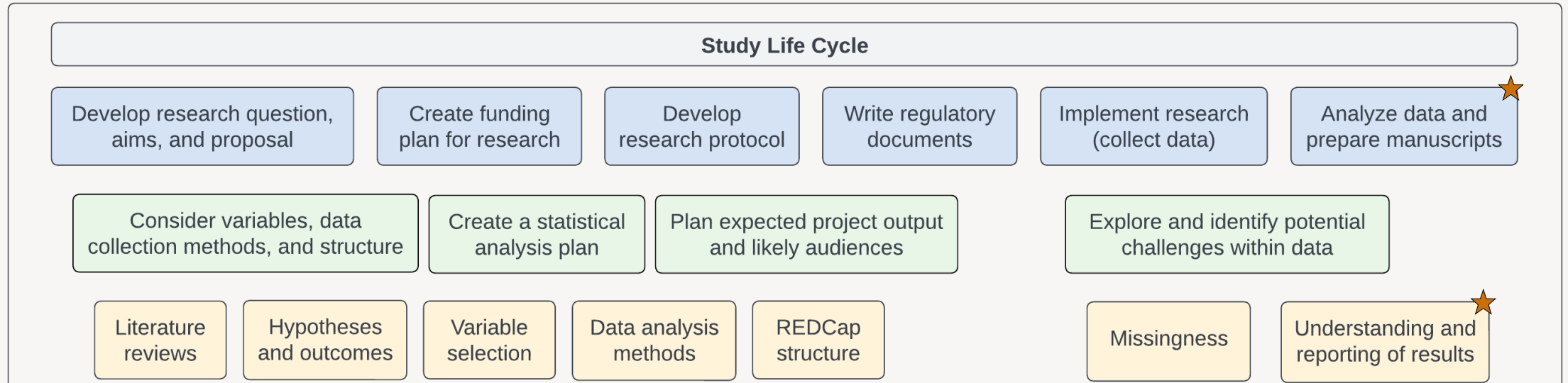
Missing due to the value itself (Low)

Missing data could introduce bias to your results

Partnerships



Partnerships





Interpretation of Results

What is happening with your data and why?

8. Wondering about some of the missing covariate sections (example income \$50-75k)
 - The missing covariate sections are with the variable name in the header of each section (e.g. 50-74k). When we include a variable in a logistic regression model, we have to select one level of the variable to be the referent group.
 - For example, when we look at income, the odds of having positive vaccine intent are lower for those with income less than 35k *compared to* those with income 50-74k.
 - We're looking at this variable's relationship (income) with the outcome (vaccine intent), while attempting to hold all other variables constant (e.g., education, age, CCCs).
 - **Does this make sense?** Keep in mind that we've spent years studying stats and oftentimes it's still not intuitive to explain- so please feel free to ask as many questions as you need. Would you want me to send over some videos or reading on regression?

Statistical vs. Clinical Significance

Statistical Significance:

Indicates the reliability of the study results

Dependent on mathematical factors, such as the study sample size, the effect size, and the spread of the data

Odds Ratio = 1.4

95% Confidence Interval of (1.26 – 1.31)

$P < .001$

Clinical Significance:

Reflects its impact on clinical practice

Dependent on the extent of change, whether the change makes a real difference to subject lives, how long the effects last, consumer acceptability, cost-effectiveness, and ease of implementation

Implementation of provider education on the appropriate prescribing of a certain drug class increased from 78% to 100%.

Writing Methods

What is happening with your data and why?

Tips:

- Draft your methods section before you start your analyses
- Record what's happening and why
- Reference other manuscripts with similar methods

Methods		
Step	Description	Goal
Data organization + introduction	Search for outliers / incorrect data / etc. Data cleaning, restructuring, etc. Summary statistics and visualizations of outcomes	Understand the data and prepare it for analysis
Assess missingness	Identified participants with almost none to no data (e.g., did not fill out any data, did not participate in the medical elective) Identified the amount of missingness in the data	Understand the effect of missingness in the analytical process
Predictor selection	Identified the predictors we would like to examine in relation to culture shock	Determine which predictors we will include in the model and why
Individual predictor analysis	Conducted a linear mixed methods analysis for each individual predictor on culture shock profile score	Determine if there are individual associations between each predictor and culture shock
Met with UW biostatistician	Discussed our analytical plan - methods, missingness, challenges	
Subscale analysis	Assessed internal consistency in the identified subscales. Additional analyses in progress.	Identify subscales that were directed towards a particular theme / emotion
Individual predictor analysis	Conducted a linear mixed methods analysis (with a log transformation) for each individual predictor on culture shock profile score	Determine if there are individual associations between each predictor and culture shock
Full CSP LMM analysis	Conduct a linear mixed methods analysis of all predictors on culture shock score	Determine the associations between each predictor and culture shock, accounting for the other factors in the model
Met with UW biostatistician	Discussed our results, model diagnostics process, next steps for sensitivity analyses	
Model diagnostics	Automated variable selection, Collinearity Analysis	Assess potential changes to the model / Improve model fit and stability
Multiple imputation process	In progress	Conduct imputation to address missing data



Group Discussion

What areas would you like more support in?

What would you like this support to look like?





Poll

Which areas would you like to receive more support in?

Consider variables, data collection methods, and structure

Create a statistical analysis plan

Plan expected project output and likely audiences

Explore and identify potential challenges within data

Literature reviews

Hypotheses and outcomes

Variable selection

Data analysis methods

REDCap structure

Missingness

Understanding and reporting of results



Research Support Topics?

We've covered:

Study Design

- Variable Selection
- Survey Questions & Survey Design
- Partnerships
 - Briefly, additional fields to consider partnerships in (e.g., lived experience partners or dissemination).

Data Analysis

- Understanding tests
- Challenges with conducting data analysis
 - Missing Data
- Interpretation of results
- Writing a methods section
- Partnerships



Group Discussion

Which areas would you like to receive more support in?

How would you like to receive this support?

Please feel free to be more specific and add suggestions or questions to chat!

Please feel free to unmute and ask your questions!

Consider variables, data
collection methods, and structure

Create a statistical
analysis plan

Plan expected project output
and likely audiences

Explore and identify potential
challenges within data

Literature
reviews

Hypotheses
and outcomes

Variable
selection

Data analysis
methods

REDCap
structure

Missingness

Understanding and
reporting of results

Research Support

- Topics? Questions?

Resources





Departmental Resources



Slide Deck

- Resources are linked in each section of this slide
- These slides will be available after the presentation



Pediatric Hospital Medicine and Complex Care Research and Scholarship Guide

- Array of resources for all aspects of research in a single location



Curriculum & Resource Facilitation

- [UW Department of Pediatrics Research Resources & Tools](#)
- [Professional Research Education Program](#)
- [Institute for Clinical & Translational Research](#)
- [INSPIRE – Quality Improvement](#)



Resources



Statistics

- [StatsTest.com](#)
 - Choose your own adventure but for statistical tests
 - Includes descriptions, assumptions, appropriate usage scenarios, examples, and FAQs
 - E.g., [Chi-Square Test](#)
- [UCLA Statistical Methods and Data Analytics](#)
 - Resources for a variety of topics
 - [How do I interpret odds ratios in logistic regression?](#)
 - [Choosing the correct statistical test](#)
- [Columbia Population Health Methods](#)
 - Description, strengths, challenges, and further resources for statistical tests
 - [Generalized estimating equations \(GEE\) for repeated measures](#)
 - [Causal mediation](#)
- [YouTube Resources](#)
 - [StatQuest](#): Fun introductory explanation for simple to complex stats
 - [Linear Regression](#)
 - [P-values](#)
 - [Matthew E. Clapham](#): Beautiful visualizations and explanations
 - [Testing for Normality](#)
 - [Linear Mixed Effects Models](#)
 - [Mikko Ronkko](#): In-depth explanations for simple to complex stats
 - [Missing Data Lecture Series](#)



Resources



Statistics

- Statistical Horizons
 - Courses on statistical analysis and coding
 - E.g., Sample Size Justification
- Perspectives in Clinical Research
 - Common pitfalls in statistical analysis series
 - Understanding the properties of diagnostic tests – Part 1
 - Understanding the properties of diagnostic tests – Part 2: Likelihood Ratios
 - Odds versus Risk
 - The use of correlation techniques
 - Measures of agreement
 - Absolute risk reduction, relative risk reduction, and number needed to treat
 - Linear regression analysis
 - Logistic regression
 - Intention-to-treat versus per-protocol analysis
- Edinburgh Medical School: Experimental Design & Data Analysis
 - Chapter 16. Understanding covariates: simple regression and analyses that combine covariates and factors
- JAMA Guide to Statistics & Methods



Resources



Study Design

- The Lancet

- [An overview of clinical research: the lay of the land](#)
- [Descriptive studies: what they can and cannot do](#)
- [Bias and causal associations in observational research](#)
- [Cohort studies: marching towards outcomes](#)
- [Case-control studies: research in reverse](#)
- [Increasing value and reducing waste in research design, conduct, and analysis](#)
- [Compared to what? Finding controls for case-control studies](#)
- [Sample size calculations in randomised trials: mandatory and mystical](#)
- [Blinding in randomised trials: hiding who got what](#)
- [Sample size slippages in randomised trials: exclusions and the lost and wayward](#)

- Perspectives in Clinical Research

- Study Design Series

- [Study Designs: Part 1 – An overview and classification](#)
 - [Study Designs: Part 2 – Descriptive studies](#)
 - [Study Designs: Part 3 – Analytical observational studies](#)
 - [Study Designs: Part 4 – Interventional studies \(I\)](#)
 - [Study Designs: Part 5 – Interventional studies \(II\)](#)
 - [Study Designs: Part 6 – Interventional studies \(III\)](#)
 - [Study Designs: Part 7 – Systematic reviews](#)
 - [Study Designs: Part 8 – Meta-Analysis \(I\)](#)
 - [Study Designs: Part 9 – Meta-Analysis \(II\)](#)

- [Interpreting Epidemiologic Evidence: Connecting Research to Applications](#)

- [CU Dissemination Resources, Readings, & Presentations](#)

- [Designing for Dissemination & Sustainability to Promote Equitable Impacts on Health](#)



Departmental Resources

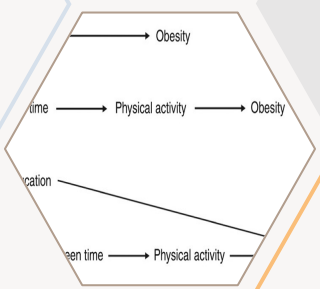


DATA Group

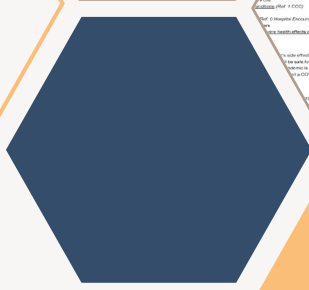
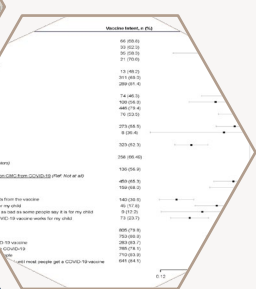
- Division scholarship data analysis-oriented group
- Consultation regarding study and analytical design

Contact me:

Ksinghverdef@wisc.edu



```
select .name,
       i=estart %to %stop;
       salesuk%i.week%i,
end;
sum(
  %do i=estart %to %stop;
  salesuk%i.week%i
  %if %i<%stop %then ,;
  %end;
) as totalsales
from
  %do i=estart %to %stop;
  salesuk%i
  %if %i<%stop %then ,;
  %end;
where
  %do i=estart %to %stop;
  salesuk%i.name=
  %i;
  %end;
```



Thank you!

Kristina Singh-Verdeflor
Ksinghverdef@wisc.edu