Temple University
Beasley School of Law

Center for
Public Health
Law Research

Quality Control

Coding

LEARNING LIBRARY

FEBRUARY 2022

Learning objectives

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- Learn how to perform quality control on original coding
- Define “redundant coding”
    - Learn the steps used in redundant coding
- Define ”naïve coding”
    - Learn the steps used in naïve coding
- Learn how to do a final quality control check

How to perform quality control on original coding

- As records are coded, the supervisor will check the following:
  - Unanswered questions
  - Caution notes
  - Citations
  - Formatting issues with the legal text
- Original coding checks occur daily, as researchers are coding records

Define “redundant coding”

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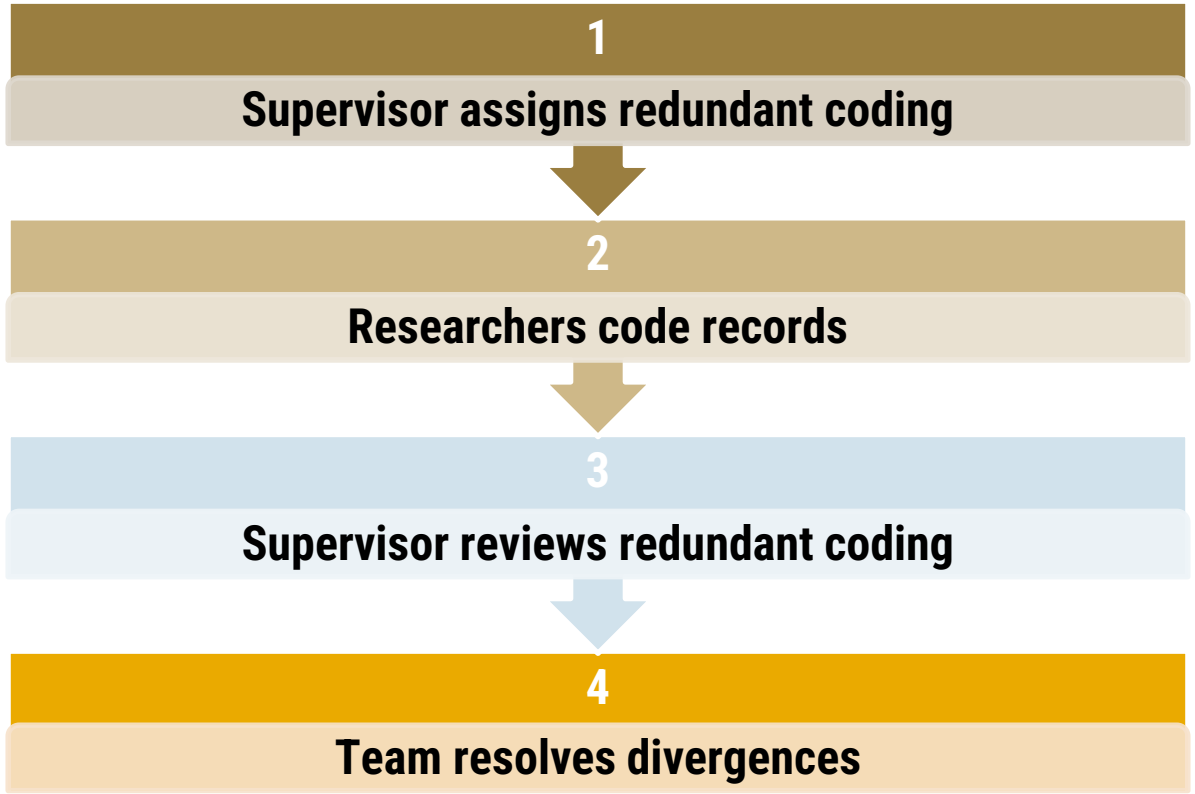
- “Redundant coding” consists of two researchers independently coding identical coding records
  - The supervisor compares and reviews these records to determine where the researchers diverge
- Redundant coding identifies:
  - Problems with the questions
  - Problems with the response set
  - Coding errors

Steps in redundant coding



1. Assigning redundant coding

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- The supervisor assigns 100% redundant coding until the rate of divergence is below 5%
    - When the rate of divergence goes below 5%, the supervisor assigns 20% redundant coding
        - The supervisor may assign additional redundant coding as needed
- Divergences are recorded on a Coding Review Sheet, a document allowing researchers to explain their coding decisions in the case of a divergence

2. Researcher code records

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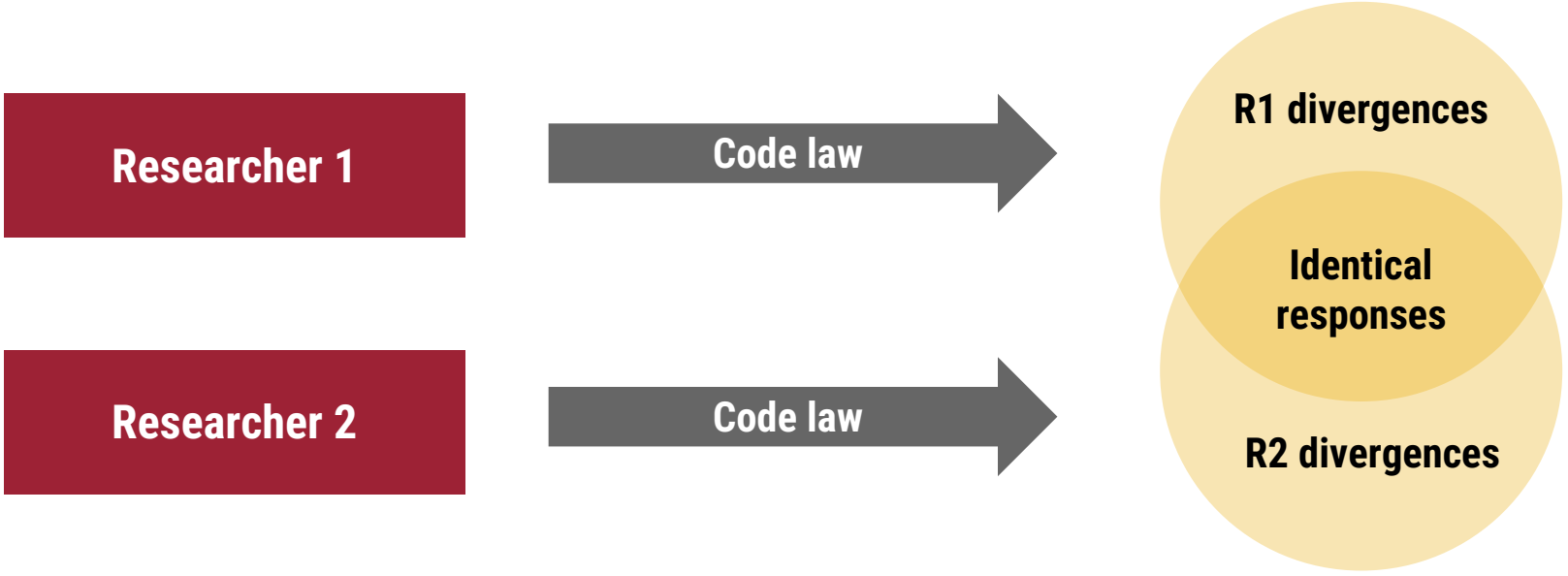

3. Supervisor reviews redundant coding

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- Calculate the rate of divergence
- Record divergences and errors in a Coding Review Sheet and send notes to researchers

Calculate rate of divergence

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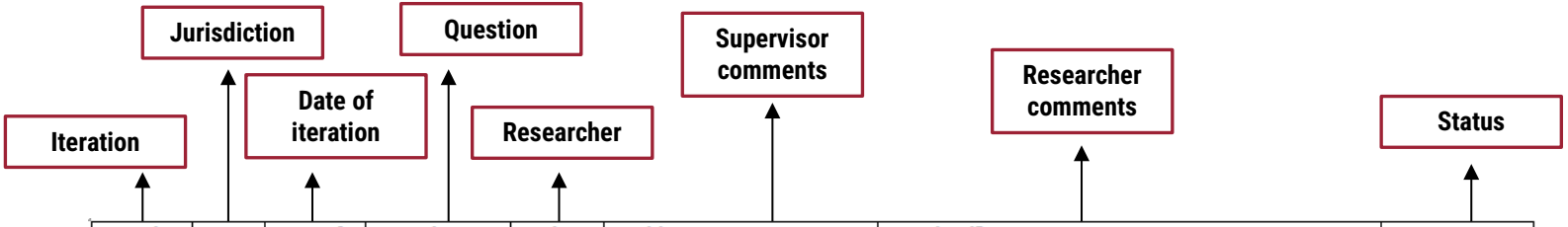
The rate of divergence is calculated by dividing **the total number of divergences in a batch** of jurisdictions (numerator) by the **total number of coded variables** (denominator).

				DD_CoderName	DD_Iteration	DD_Law	
State	FIPS Code	Begin Date	End Date	TBD	TBD	Cellphone Law	Citation
CT	9	1/1/2015	1/31/2015	Reno Jackson	23	Yes	Conn. Gen. Stat. Â§ 14-296aa
CT	9	1/1/2015	1/31/2015	Amy West	0	Yes	Conn. Gen. Stat. Â§ 14-296aa
						=IF(G3=G4,0,1)	0
CT	9	10/1/2014	12/1/2014	Reno Jackson	23	Yes	Conn. Gen. Stat. Â§ 14-296aa
CT	9	10/1/2014	12/31/2014	Amy West	0	Yes	Conn. Gen. Stat. Â§ 14-296aa
						0	0
DE	10	7/29/2014	1/1/2015	Reno Jackson	11	Yes	Del. Code tit. 21, Â§ 2710, Del. Code tit. 2
DE	10	7/29/2014	12/31/2014	Amy West	0	Yes	Del. Code tit. 21, Â§ 4176C
						0	0
NY	36	11/1/2014	1/1/2015	Reno Jackson	12	Yes	NY Veh & Traf Â§ 1225-c NY VEH & TRAF Â
NY	36	11/1/2014	12/31/2014	Amy West	0	Yes	NY VEH & TRAF Â§ 1225-d
						0	0

Record divergences and errors in a coding review sheet



Iteration	State	Date of Iteration	Question	Coder	Problem	Resolved?	Status
1	FL	10-1-2013	Is there a state law on cellphone-use while driving?	EP	Caution Note/Flag – not sure that we need this, unless you think it is important to publish remove flag and note (not only for this entry but for all entries)	EP: Agree, Caution Note & Flag removed from all iterations.	Resolved.
1	FL	10-1-2013	What are the explicit exceptions to the law?	EP + SJ	EP answered: When the vehicle is stopped, Other SJ did not	SJ: I agree with Elizabeth. Operating an autonomous vehicle is probably the "other" category that she picked. I added her answers to my list of exceptions. EP: I marked other because there is an exception for receiving messages related to navigation, safety alerts, data used by the motor vehicle, and radio broadcasts. There is also an exception for autonomous vehicles. EP: I marked "When the Vehicle is Stopped" because of the sentence below; I think it it is probably enough to be coded: "For the purposes of this paragraph, a motor vehicle that is stationary is not being operated and is not subject to the prohibition in this paragraph."	Resolved.

4. Determine reason for divergence

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- Two types of divergences can occur:

1. **Objective:** instances where one coder answered the question incorrectly

2. **Interpretive:** instances where the coders disagreed on a response based on a different interpretation of the law or of the question

Resolve divergences

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When there is an **objective error**, the response should be recoded

- If a researcher is frequently making objective errors, additional training may be necessary

When there is an **interpretive error**, the are several potential resolutions:

- Modify question
- Collect additional law
- Edit response set

- Researchers work on the Coding Review Sheet independently and may agree or disagree on a response after revisiting the question
- The team meets to discuss and resolve any outstanding divergences
- Researchers recode all of their original jurisdictions, as needed

Define “naïve coding”

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- A researcher who is naïve to the project codes 20% of the total number of records
    - The supervisor compares and reviews these records to determine where the researchers diverge
- Naïve coding:
    - Ensures that the project is replicable
    - Increases the accuracy of the project with additional quality control

Steps in naïve coding

1. Assigning naïve coding

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- As coding nears completion, the supervisor assigns a naïve coder to code 20% of the total number of records
    - These records are assigned at random
- The naïve coder reviews the research protocol and background research prior to coding

2. Supervisor reviews naïve coding

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- Calculate the rate of divergence
- Record divergences and errors in a Coding Review Sheet and send notes to researchers

3. Resolve divergences

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- **Objective errors** are to be expected at a higher rate for naïve coding than for redundant coding, because the naïve researcher is unfamiliar with the topic
- **Interpretive errors** should occur at a reduced rate. An excess of interpretive errors might indicate that questions and responses are unclear, that laws are missing, or that the research protocol needs to be clarified

- The original and naïve coder must go through the Coding Review Sheet independently and may agree or disagree on a response after revisiting the question
- The team meets to discuss and resolve any outstanding divergences
- The original coder recodes jurisdictions, as needed
- When naïve coding results in a particularly high rate of divergence, or reveals a systemic problem with a project, the entire project may have to be recorded, or questions and responses may have to be adjusted

Final quality control checks

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- Supervisor will review all of the questions, responses, and citations prior to publishing the project to identify any outstanding issues, including:
  - Any questions that were not answered
  - Outlier responses
  - Missing citations
  - Inconsistent caution notes

Summary

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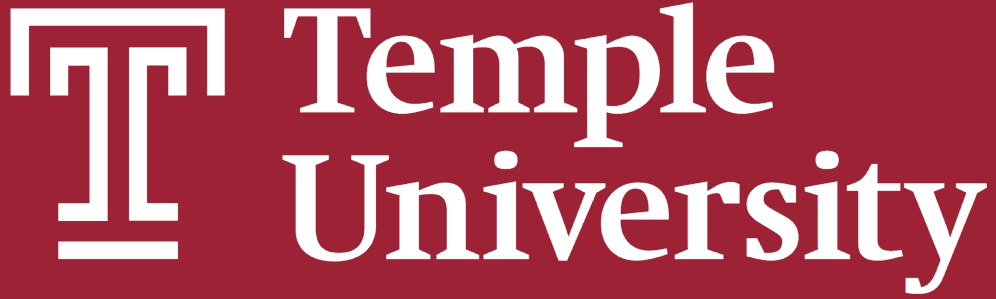
- The supervisor should check **original coding** as it is being done
- **Redundant coding** – two researchers code identical records of the same jurisdiction. Supervisor compares records to determine which coding answers should be selected
- The steps involved in redundant coding are:
  1. Researchers code identical records
  2. Supervisor reviews coding
  3. Team resolves divergences
- **Naïve coding** – a researcher unfamiliar with the project codes 20% of the total number of records for that project
- The steps involved in naïve coding are:
  1. Supervisor assigns naïve coding
     - Naïve researcher codes 20% of the total number of records
  2. Supervisor reviews naïve coding
  3. Team resolves divergences
- The supervisor will do a **final check of all data** before publishing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