

Evaluation in the 21 Century: Synthesis using text data

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October 25th
NEC Conference

Introductions

Pickup your Bingo Cards

- The idea is to complete an X or a + on your bingo card
- Go round the room introduce yourself and ask people if a specific item on the bingo card refers to them

The rules:

- Players have to get others to sign their Bingo card. Do not write another person's name for them.
- A person can only sign one box on a Bingo card
- Prizes will be awarded to the first two people to complete the pattern

Objectives

This workshop aims to provides participants with an understanding of:

1. Defining insight and synthesis
2. Identification of knowledge for review
3. Analysis of knowledge using synthesis techniques
4. The process of relating and combining knowledge from a set of parts into a whole that forms new insights.

Where does this course come from ?

Contents

Session	
09:00 – 09:30	Introductions
09:30 – 10:30	Definitions
10:30-11:00	Break
11:00 – 12:30	Identification of text data
12:30-14:00	Lunch
14:00 – 15:30	Analysis
15:15-15:45	Break
15:45 – 16:45	Synthesis
16:45-17:00.	Close

Definitions

Define Evaluation and a Successful Evaluation System

In the handout write your definition of:

- evaluation
- synthesis
- Insight

Share with the room

Definitions

Evaluation is:

“The **systematic** and **objective** assessment of an on-going or completed project, programme or policy, its **design, implementation and results**. The aim is to determine the relevance and fulfilment of objectives, development efficiency, effectiveness, impact and sustainability.” (OECD DAC, 2002)

Definitions



A synthesis relates knowledge, combining a set of parts into a whole to form new insights relevant to a particular topic.

What is an insight?

- A break with unwarranted assumptions
- An aha moment
- A fresh move
- In IEG the insight is actionable

Kounios & Beeman 2014; Bowden et al 2005; Laukkonen et al 2021

Three steps in text synthesis



- Identification
 - Define the area of interest
 - Develop a list of studies to be included
 - Extract/sort text
- Analysis
 - Repeated reading
- Synthesis
 - Identify relationships
 - Compare relationships
 - Define patterns and storyline

Identification

Step 1.1. Defining the area of interest that text data might inform

- What is the objective/question of the EIN: what type of ‘insight’ does the EIN aim to create? For whom?

Example questions

- What is being done?
- Where is it being done?
- How well is it being done?
- How well is it aligned to literature?
- How are results measured?
- What are the lessons?

Example Questions

- What are the lessons for addressing institutional capacity constraints in WB projects since 2009 in sub-Saharan Africa (SSA) based upon IEG evaluations?
- How has the World Bank been approaching transport decarbonization?

Tip!

In notes

What question are you interested in related to your COVID-19 response?

- What is being done?
- Where is it being done?
- How well is it being done?
- How well is it aligned to literature?
- How are results measured?
- What are the lessons?

Step 1.2 - Developing and justifying an exhaustive list of studies to be included and extracting text

- Define date range, sectors, geography
- Type of study
- Location in document (e.g. only title, only objective, or abstract)
- Define criteria to include text

Define the type of synthesis

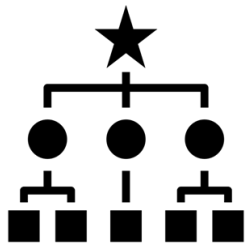
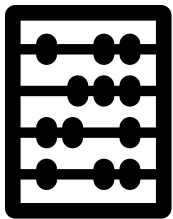
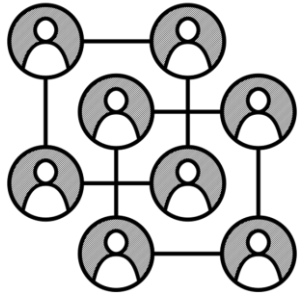
- Description: (e.g., pattern description, aggregation, summarization, cataloguing lessons);
- Association: identifying patterns of regularity (e.g., association between particular intervention characteristics and certain outcomes, correlation, systematic or structured reviews of quantitative studies; new lessons),
- Explanation: (e.g., finding configuration of contextual factor, mechanisms and outcomes; systematic or structured review of qualitative or mixed-methods studies)
- Regularities: Identifying how a change can be replicated across contexts (e.g. middle range theory, comprehensive theory of action and change)

Two examples of approaches to help include text

Example 1 - Issue drive:

Using the keywords “epidemic,” “outbreak,” or “pandemic.” The second phase was a targeted search using the keywords “crisis” or “emergenc*” and keywords related to the outputs and outcomes of the COVID-19 response

Example 2 - Two examples of approaches to help include text



Dimension	Characteristics
Engagement of Interest Groups - the priority that different interest groups (e.g. government, civil society, and the private sector) give to a development goal.	Commitment of leaders
	Participation in decisions
	Demand for accountability
	Transparency support of oversight of actions
Reform of Policy Instruments - Administrative rules, laws, regulations, standards, and other formal incentives that a society uses to guide stakeholder actions beyond any one organization to achieve development goals.	Clarity of the policy instrument in defining related rights and responsibilities
	Consistency of policy instrument with other policy instruments
	Resistance of policy instrument to corruption, rent seeking, and regulatory capture
Enhancing the capacity of organizations - Carry out needed processes through the systems, rules of action, processes, personnel, and other resources stakeholders bring together	Clarity of Mission
	Operational efficiency
	Financial viability and probity
	Communications and relations with interest groups
	Achievement of outputs contribute to intended reform

In your handout

Based on the question you wrote in your handout what keywords might you add to the below list to search for text?

“epidemic,” “outbreak,” or “pandemic.”...

Tip: Use an existing framework or think of the main terms that you would search on the internet related to your question

In your handout

Terms used in COVID-19 response:

- assure health services (“health servic*” “health system” “essential servic*” “human resourc*” “case management” “laborator*”);
- assure child welfare and social services (“child welfare” “social welfare” “educat*” “school*” “learn*” “mental health” “psychosocial*” “gender-based violence” “women empowerment” “girl*” “parent*” “caregiver*” “youth” “adolescent”)

Step 1.3 - Three approaches to identifying text

- 1) Read the full text
- 2) Guided review against framework
- 3) Automatic extraction against taxonomy

Analysis

Analysis of Text

- Analysis of text deals with words, meaning, and interpretation.
- A process of systematically categorizing excerpts in your qualitative data in order to find patterns.
- Text can be analyzed aggregated in numbers - # of instance in a code
- Text can be interpreted – similar themes in the text
- You to take unstructured or semi-structured text data and identify patterns

How do you read when you analyze text?

In your handout list the different ways you have read text when conducting an analysis

Share your list with the person next to you and discuss

Provide examples to the room

How do you read when you analyze text?

1. Read to deductively code
2. Read for patterns within the text– e.g. how the context conditions
3. Read to inductively code – read, name and rename
4. Read for argument – e.g. first sentences
5. Read to translate into your own social understanding
6. Read for discourse and argumentation

Example read for code – Where does the text fit?

Dimension

Engagement of Interest Groups - the priority through accountability mechanisms, that different interest groups (e.g. government, civil society, and the private sector) give to a development goal.

Reform of Policy Instruments - Administrative rules, laws, regulations, standards, and other formal incentives that a society uses to guide stakeholder actions beyond any one organization to achieve development goals.

Enhancing the capacity of organizations – Carry out needed processes through the systems, rules of action, processes, personnel, and other resources stakeholders bring together

1. the preparation of a private sector development strategy was never completed , and the second phase of labor legislation that was also expected to be part of the policy dialogue was delayed. ...The government could not reach political consensus regarding the direction of reforms in business regulation , perhaps due to the lack of a reform champion, and thereafter commitment to the program waned .
2. fiduciary systems were established in Finance Departments of targeted provinces . Good progress was made in increasing the share of national revenue transferred to the provinces

Synthesis

Definition of Synthesis

A synthesis relates knowledge, combining a set of parts into a whole to form new insights relevant to a particular topic.

A text synthesis process:

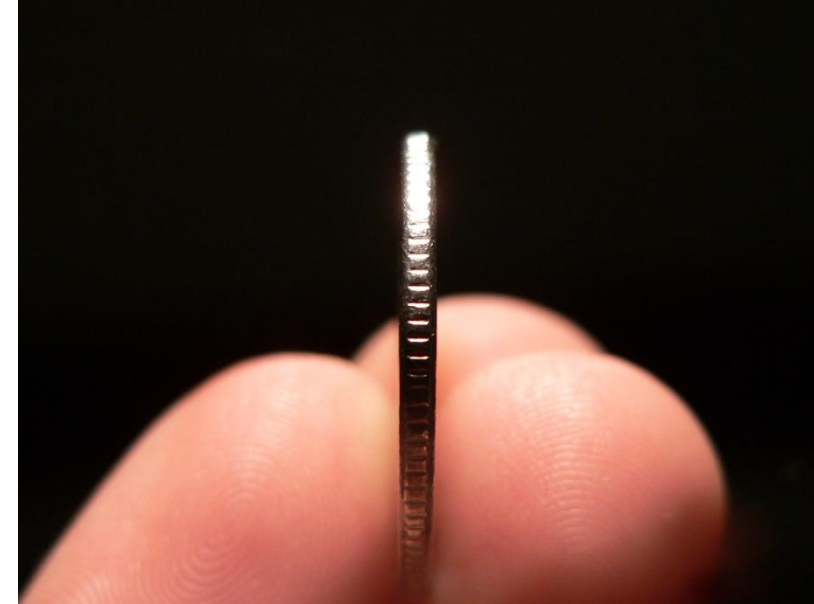
1. Brings together concepts, themes, metaphors, findings and how they relate to each other within each study
2. Compares the concepts, themes or metaphors across studies,
3. Using the concepts, themes or metaphors to determine the relationship between studies and developing the storyline and express it.

An Example of Synthesis on Lesson's for Crisis Response

Look at your handout and the three examples

What issues emerges about dialogue in these examples?

Tip - Decide what type of reading will you use?



An Example of Synthesis on Lesson's for Crisis Response

Comparing these and other examples in the data the following theme was identified:

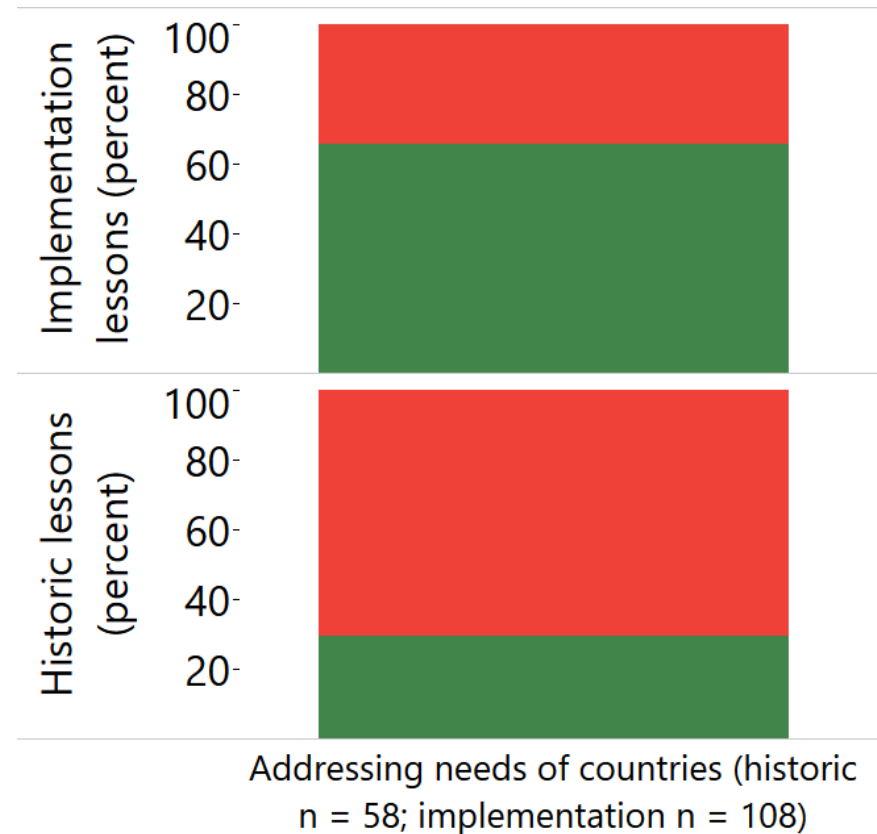
To **address the needs of countries during a crisis** ongoing responsiveness was supported by frequent **dialogue** to help navigate immediate realities on-the-ground, while maintaining a longer-term focus on development priorities and objectives.

Lessons:

- Engage in continuous dialogue with the government sectors during planning and throughout implementation to address evolving needs for immediate support and longer-term reforms

An Example of Synthesis – Aggregating the relationships between studies

Aggregating the analysis between past lessons and current practice helped to spot trends



Example of synthesis - interpretative

Synthesis Note



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In Brief:

Lessons from IEG's Evaluations

Improving Project Performance in Contexts of Migration

Independent Evaluation Group | *October 27, 2020*

Highlights

A review of Independent Evaluation Group (IEG) evaluations identifies that the performance of World Bank interventions operating in contexts of migration can be enhanced by paying attention to four interconnected themes that arise consistently: (i) targeting of appropriate groups, locations, and time periods; (ii) the ongoing development of client, World Bank, and private sector capacity; (iii) the availability of granular analysis; and (iv) coordination based on comparative advantage.

Summary

Machine learning and meta-ethnography: Seven steps to synthesizing 578 evaluations into four themes

DEV Research Seminar

TODAY'S PRESENTATION

1

Seven Steps
Approach

2

Questions

3

Data Science Led -
Steps 2-4

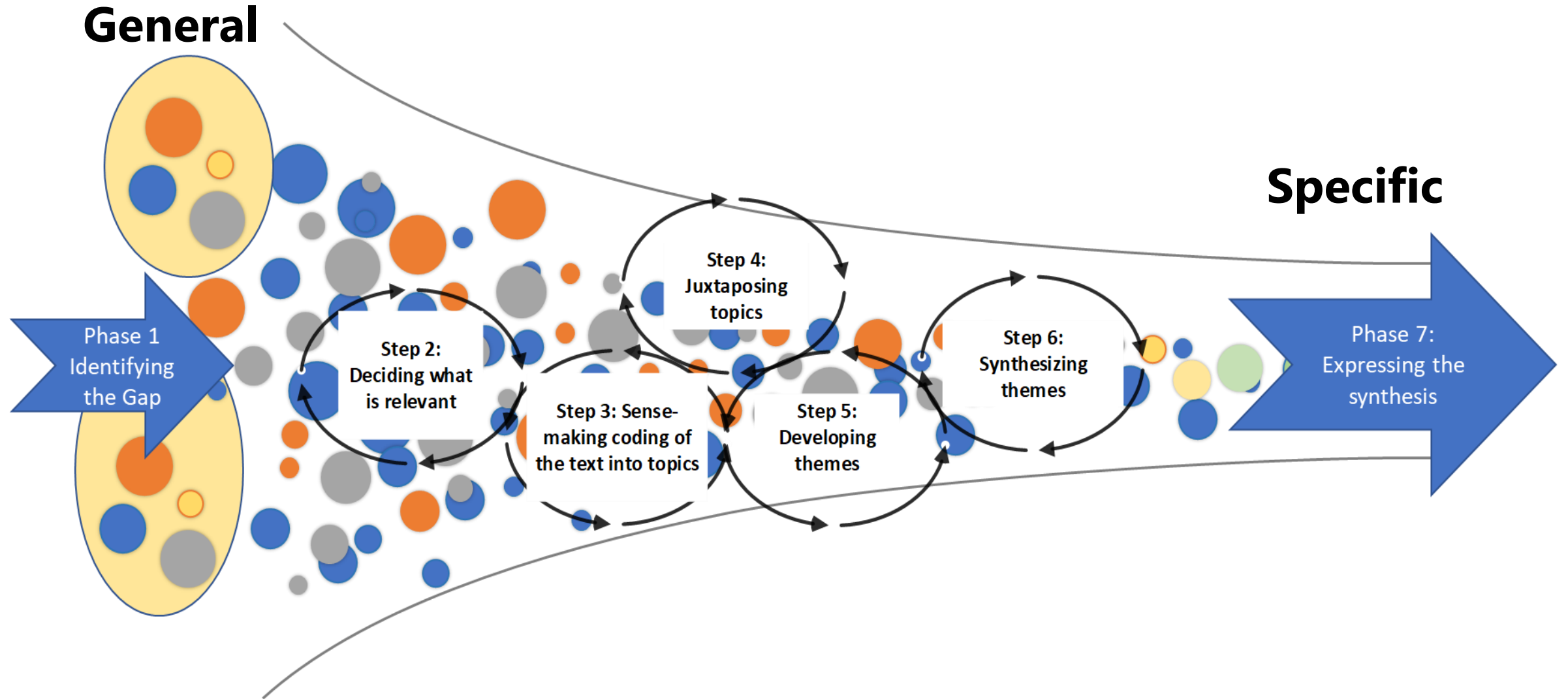
4

Qualitative Led –
Steps 5-7

5


Lessons

Overview of Seven Steps adapted from meta-ethnography process



Supervised vs Unsupervised Machine Learning

	Supervised	Unsupervised
Objectives	Predictions	Pattern/structure recognition
Approach	Defined framework Deductive	Exploratory Inductive
Data	Pre categorized data	Unlabeled data
Analysis Types	Classification Regression	Clustering
Use Examples	Predictive modeling	Topic modeling



LDA Model

Step 1: Identifying the Gap

Executive Directors question to IEG:

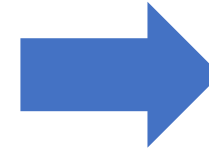
Are there specific evaluations by IEG on projects related to migration?

+

The Executive Directors also **asked:**

How the Bank can help

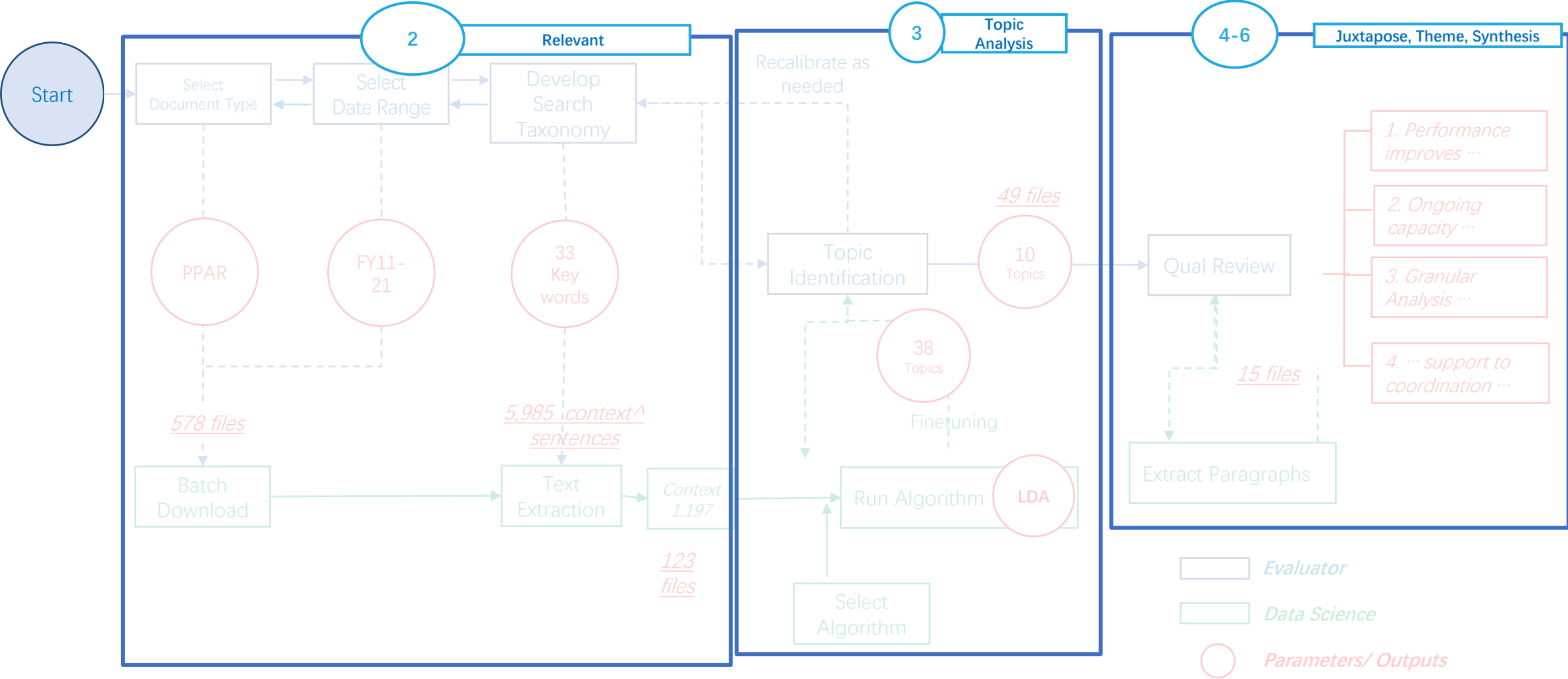
- address main economic and social challenges of managing migration
- while leveraging its benefits in sending, receiving and transit countries



IEG sought to answer:

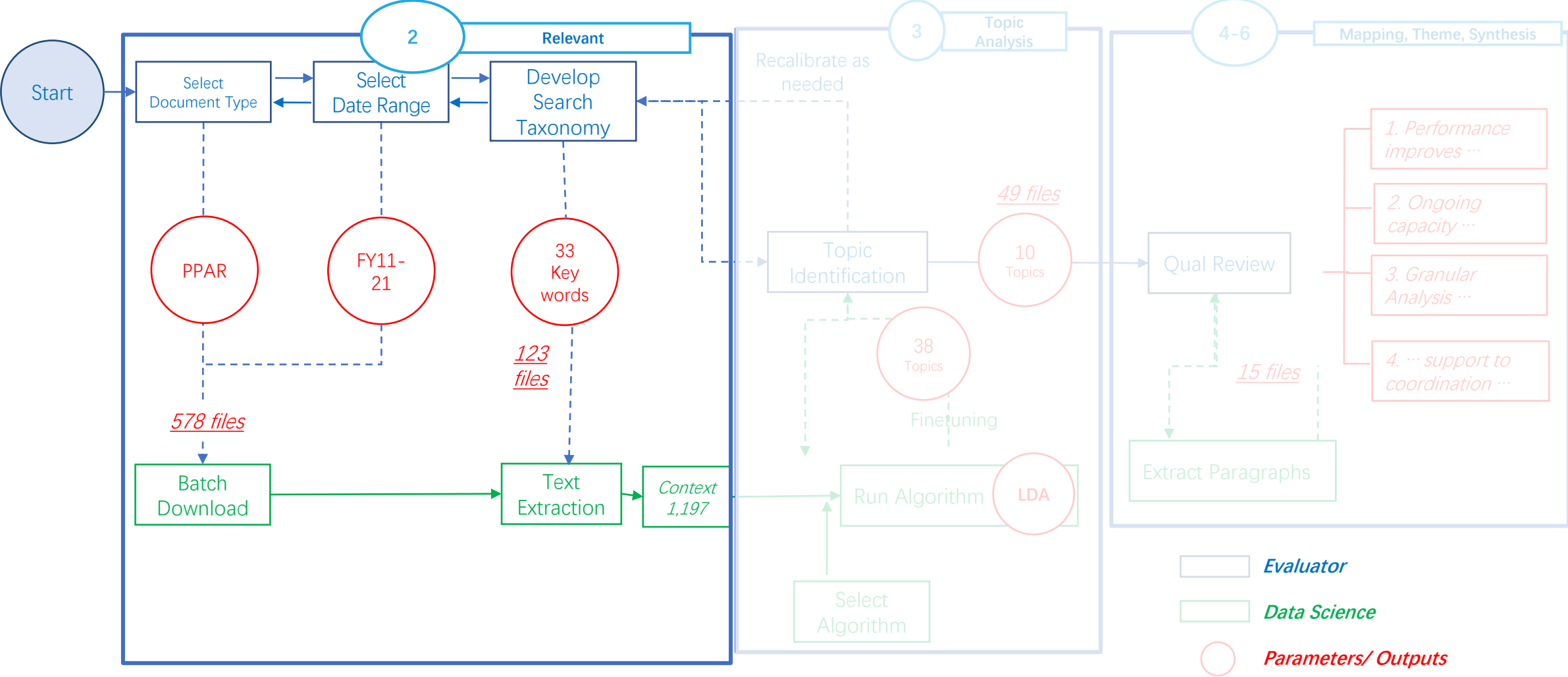
How can the World Bank improve the performance of interventions operating in contexts of migration?

Detailed Process



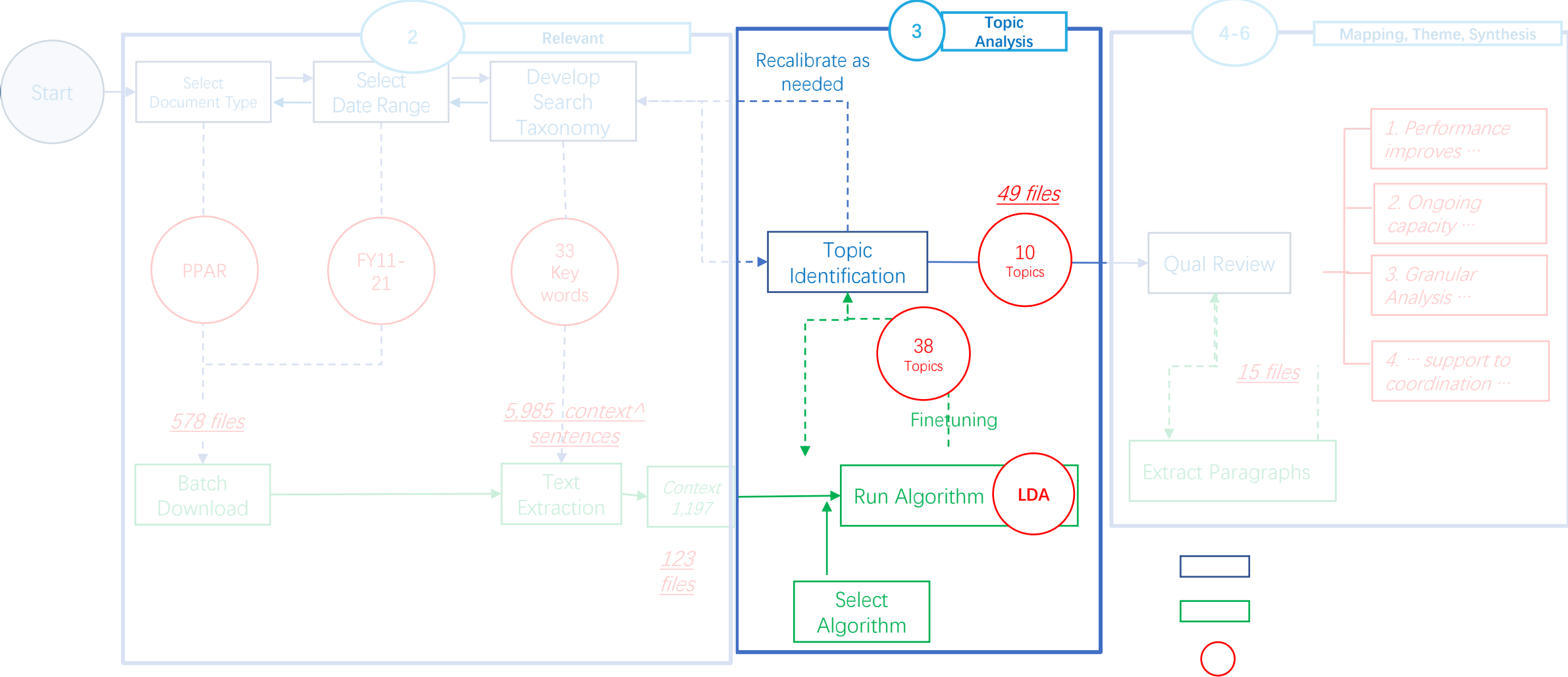
[^] Context is defined here as two sentences before and after the sentence in which a keyword was found, along with the main sentence.

Detailed Process



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Detailed Process



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LDA Topic Output

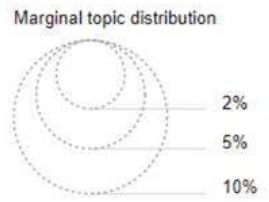
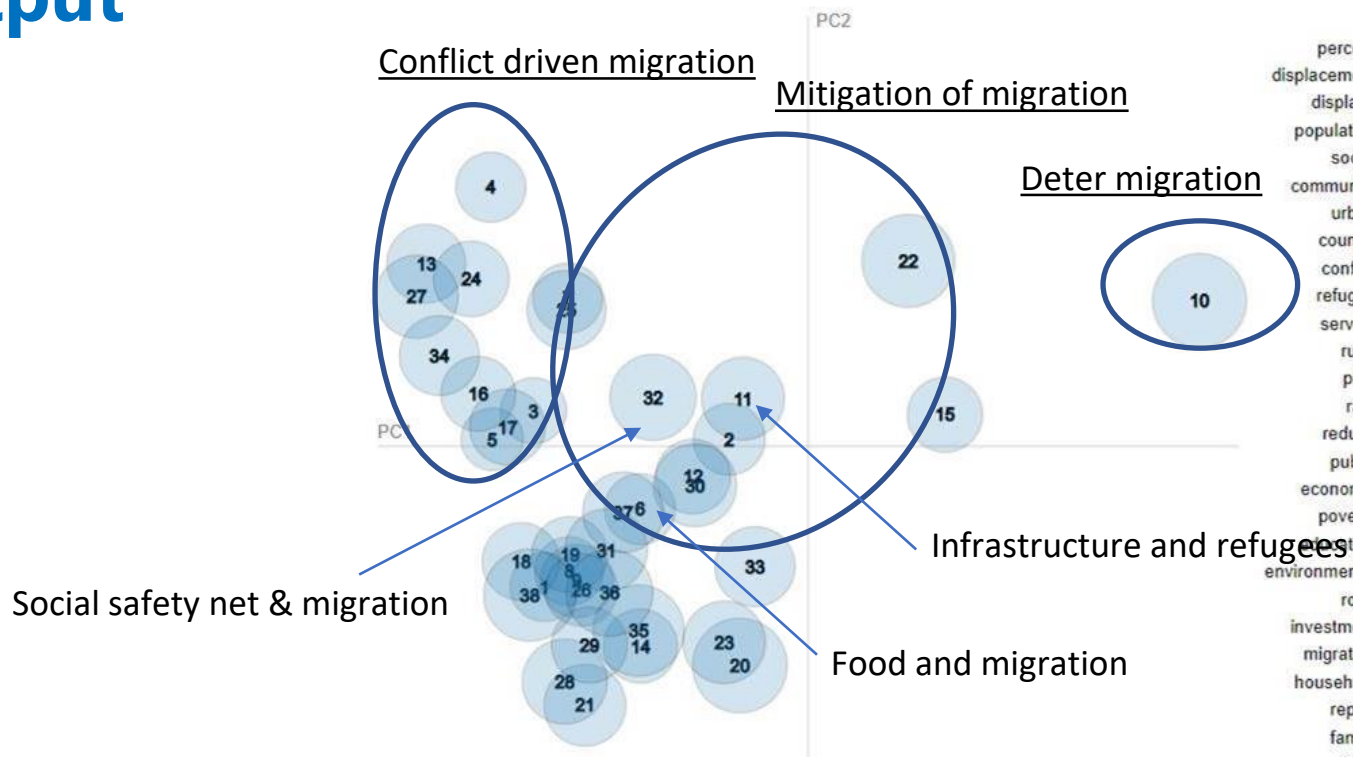
	A	B	C	D	E	F	G	H	I	J	K
1	Top Level Category	No clear topic	Mitigation of migration	Results of migration	Results of migration	Results of migration	Results of migration	Mitigation of migration	No clear topic	No clear topic	Deter L
2	Sub Level Category	No clear topic	Mitigation for displacement planning	Conflict drive migration	Conflict drive migration	Conflict drive migration	Food and migration	Selection of migrants into the project	No clear topic	No clear topic	Deter L
3	Topic Id	1	2	3	4	5	6	7	8	9	10
4	Keyword 1	water	organization	city	woman	war	food	household	health	training	displac
5	Keyword 2	network	subprojects	lebanon	percent	refugee	school	population	acci	assistance	conflic
6	Keyword 3	influenza	fund	displace	idps	event	reduce	urban	director	planning	reduce
7	Keyword 4	human	population	cultural	displace	establish	impact	increase	familias	identify	deter
8	Keyword 5	border	provide	people	country	society	price	vulnerable	social	service	risk
9	Keyword 6	author	capacity	syrian	azerbaijan	national	support	income	ministry	people	exposu
10	Keyword 7	lima	community	heritage	conflict	crisis	rate	rural	department	person	social
11	Keyword 8	poultry	result	refugee	national	form	djibouti	housing	planning	review	threat
12	Keyword 9	study	support	main	population	education	province	outcome	consultant	study	drive
13	Keyword 10	service	appendix	informal	child	arab	primary	poor	sisben	implement	socioe
14	Keyword 11	nepal	partner	syria	colombian	israeli	tax	migrant	national	market	increas
15	Keyword 12	avian	basic	urban	internally	annex	mozambique	target	coordinator	land	role
16	Keyword 13	disease	municipality	economic	armenia	operation	source	average	office	technical	preven
17	Keyword 14	bird	base	historic	household	wave	study	stand	economics	agricultural	cohesi
18	Keyword 15	outbreak	financing	implement	estimate	private	burundi	connect	family	access	stabiliz
19	Keyword 16	laboratory	service	population	people	canal	people	migration	associate	agriculture	fieldw
20	Keyword 17	surveillance	figure	follow	compare	challenge	import	condition	local	staff	pdp
21	Keyword 18	lack	finance	tripoli	comprehensive	suez	refugee	age	secondary	institution	direct
22	Keyword 19	migration	health	service	apply	subsistence	feed	strong	additional	annual	play
23	Keyword 20	quarantine	individual	crisis	colombia	university	increase	slow	senior	guideline	reactiv
24	Keyword 21	private	beneficiary	khan	legal	tier	efficiency	absorb	universidad	follow	approa
25	Keyword 22	respect	generation	form	assistance	jordanian	vehicle	compare	secretary	local	organiz
26	Keyword 23	pandemic	promote	formal	head	africa	product	subsidy	nacional	welfare	livelih
27	Keyword 24	sanitation	participation	reconstruction	affect	collapse	inflation	weather	economist	table	intervie
28	Keyword 25	ministry	actual	secondary	approach	enormous	economic	passenger	policy	delivery	pair
29	Keyword 26	oie	eligible	war	privatization	exhaust	measure	growth	district	repair	asset
30	Keyword 27	health	care	addition	armed	push	reconstruction	classify	red	timely	ieg
31	Keyword 28	emergency	united	concentrate	indigenous	fourth	child	electricity	bogota	threat	strengt
32	Keyword 29	function	requirement	chud	employment	flood	output	mobility	andes	agro	staff
33	Keyword 30	facility	operation	earthquake	standard	capital	drought	developed	cartagena	independence	chang
34	Count of Paragraphs	0	15	13	26	7	22	9	0	0	0

LDA Topic Output

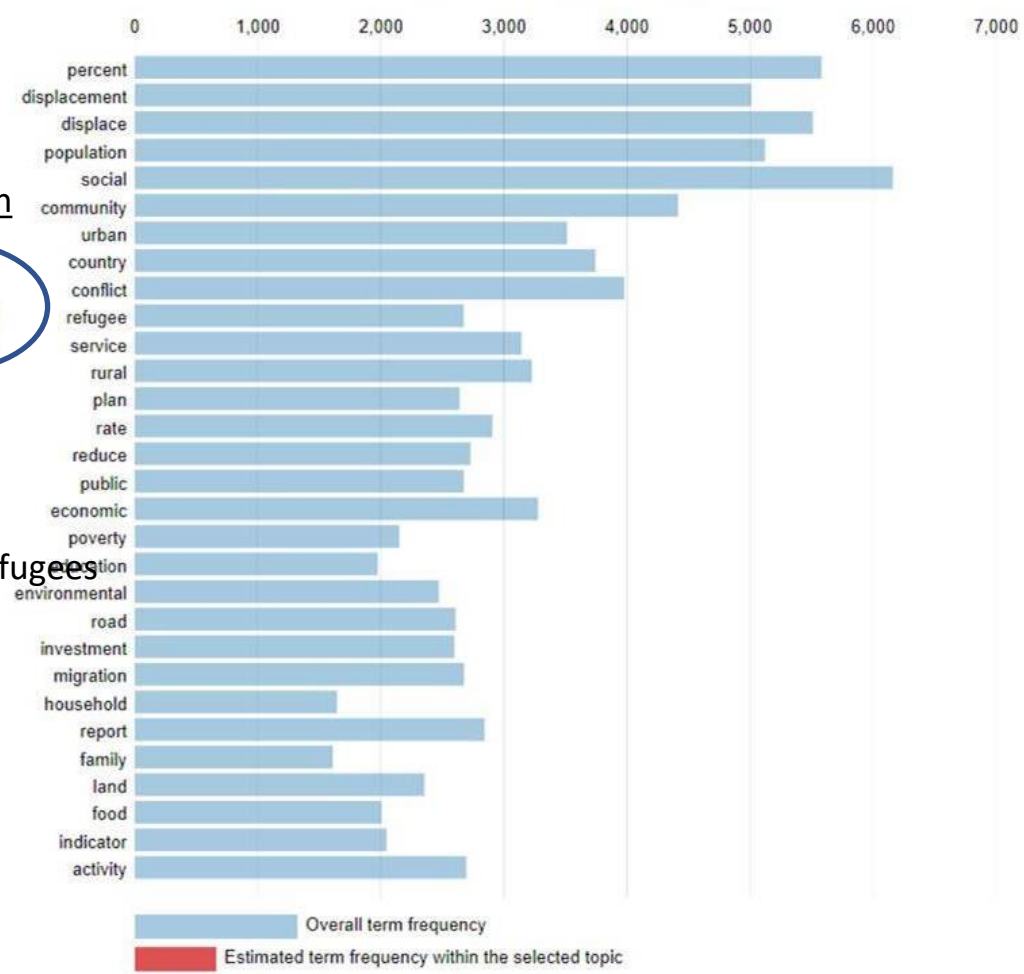
Selected Topic:

Slide to adjust relevance metric:⁽²⁾ $\lambda = 1$

Intertopic Distance Map (via multidimensional scaling)

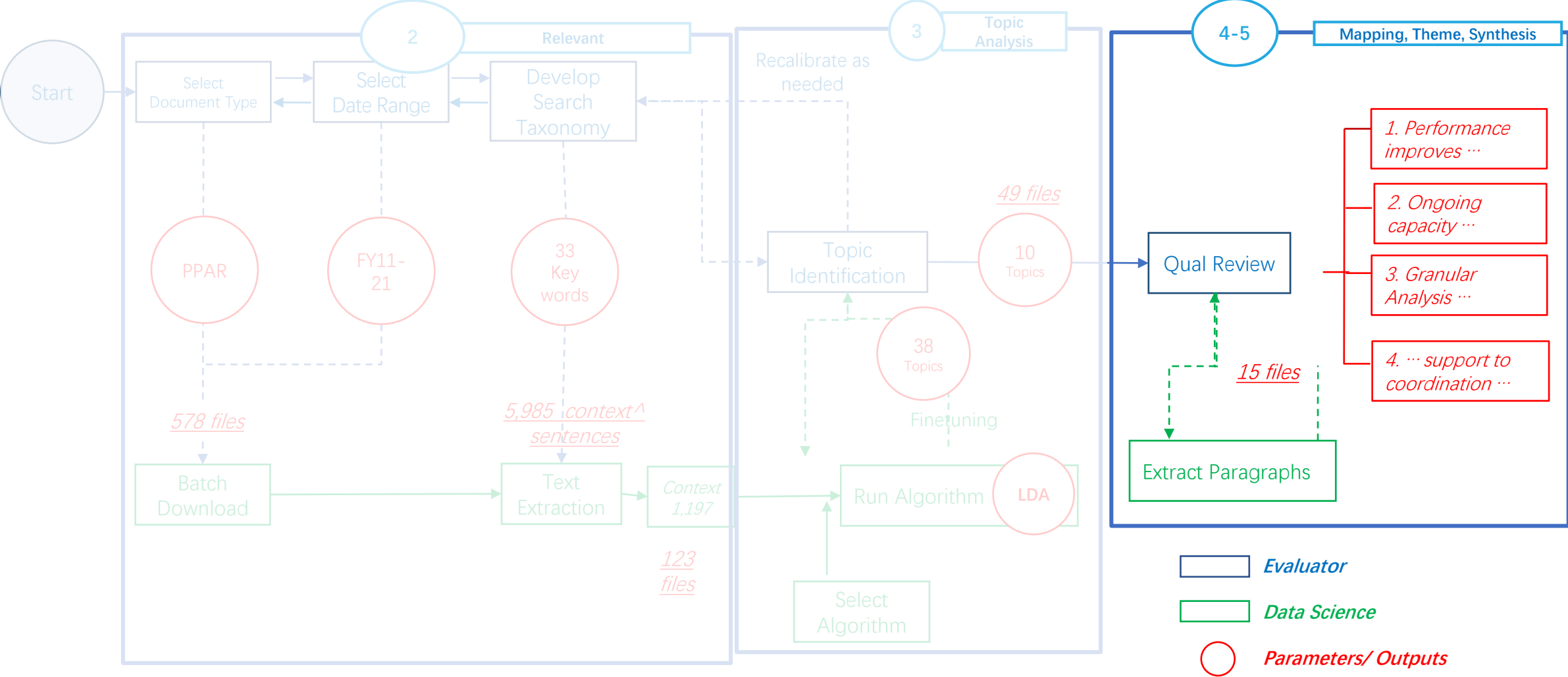


Top-30 Most Salient Terms¹



1. saliency(term w) = frequency(w) * [sum_t p(t | w) * log(p(t | w)/p(t))] for topics t; see Chuang et. al (2012)
 2. relevance(term w | topic t) = $\lambda * p(w | t) + (1 - \lambda) * p(w | t)/p(w)$; see Sievert & Shirley (2014)

Detailed Process



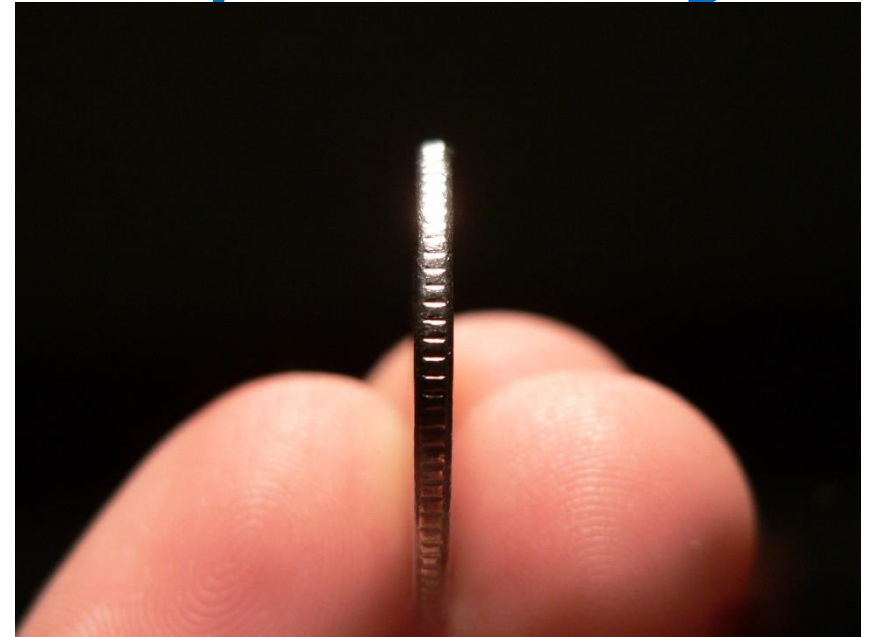
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Qualitative Process

- Deep reading – Holistic reading & dynamic reading making ongoing reference to context
- Translation – Deepening the clustering of issues that fit together
- Context – Understand issues based in their context

Juxtaposing Topics and Developing Themes (steps 4-5): Seeing both sides of themes

- Identify the most relevant documents
- Match and interpret mutually supportive evidence
- Identify connections between topics to develop themes
- Identify and express shared qualities of themes in writing



Step 6 - Synthesis

Performance improves by targeting specific subgroups, locations and time horizons.

Ongoing Capacity Development is Needed to Address Migration

Granular Analysis Serves as a Basis for a Coherent Response

The World Bank's Support to Coordination Works Well When Based on Comparative Advantage

- Develop an overarching hypothesis?
- Situate themes in context
- Provide details...

Performance improves by targeting

- Sub-groups – migrants, nonmigrants, gender, ethnicity,
- Location – Economic geographies matter
- Time – Disaster and Development

Step 7: Expressing the Synthesis

Synthesis Note



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Lessons from the Process

Value Added

- Too many documents to search and review without ML
- Some Evaluations would not have otherwise surfaced

ML Not Required

- Small amount of content to review

Content

- It helps to be grounded in the text to identify a greater variety of topics.
- The development and assessment of the taxonomy is key

Thank you

<http://ieg.worldbankgroup.com>

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IEG
INDEPENDENT
EVALUATION GROUP

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Summary of Course

- Defining insight and synthesis
- Identification of knowledge for review
- Analysis of knowledge using synthesis techniques
- The process of relating and combining knowledge from a set of parts into a whole that forms new insights.

Summary of Course

- What are your main take-aways?

What's the next move?

Synthesis

- Increase the number of syntheses in the IEG product
- Generate insights that are operationally accessible and usable
- Improve data science capability

