



Qualitative research or Quantitative research: A case study in integration

Ron S. Kenett , Reuven Gal, Eitan Adres, Nohad Ali
and Hagit Glickman

Samuel Neaman Institute for National Policy
Research, Technion, Haifa, Israel

The qualitative path



- Conceptual development
- Study design: Who to interview
- Study design: How to interview (semi structured)
- Data capture: Minutes by interviewers or recording
- Data analysis: Qualitative review of records
- Communication of findings: Report preparation

The quantitative path



- Conceptual development
- Study design: Population frame
- Study design: Design of questionnaire
- Data capture: Running of survey
- Data analysis: Statistical analysis of responses
- Communication of findings: Report preparation

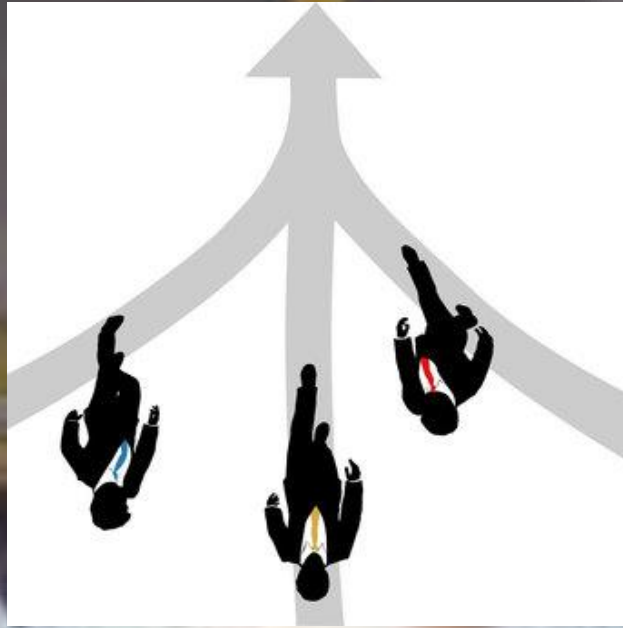


The qualitative path



The quantitative path





The qualitative path

The quantitative path

The combined path



- Conceptual development
- Study design: Who to interview
- Study design: How to interview (semi structured)
- Data capture: Minutes of interviews
- Data analysis: **Text analytics**
- Communication of findings: Report preparation

5/2022

 Check for updates



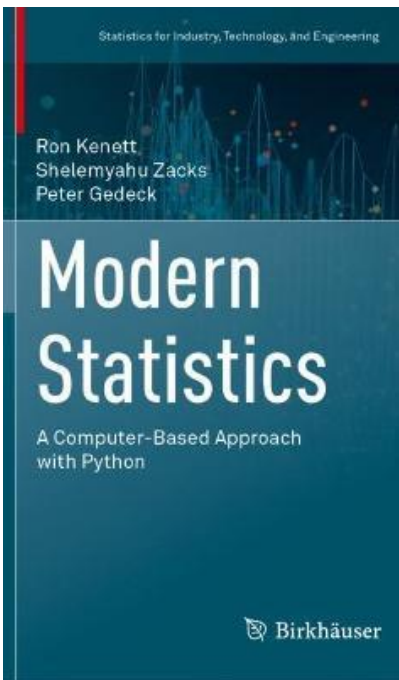
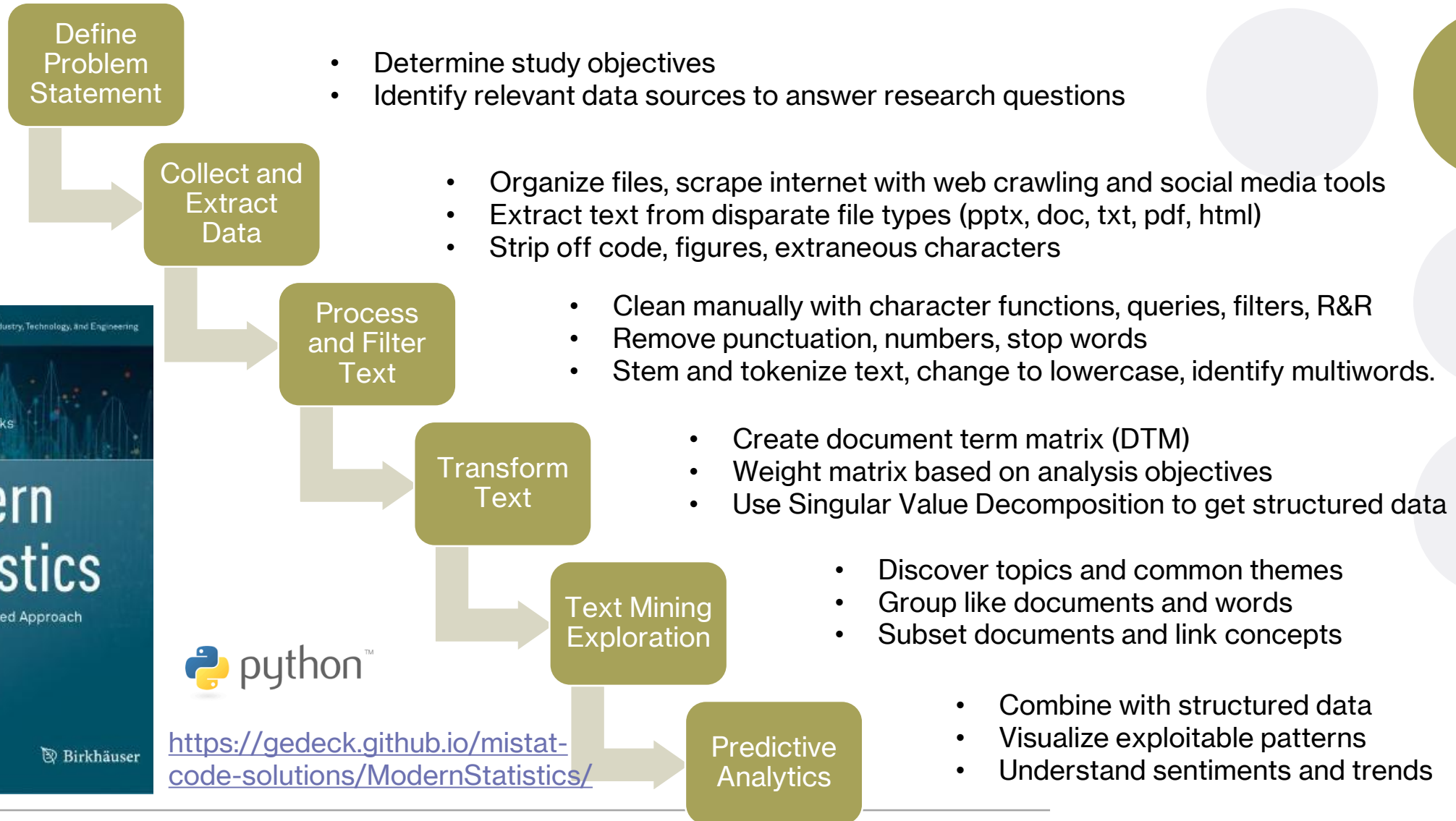
The Israeli society common denominator: a text analytic study

Ron S. Kenett , Reuven Gal, Eitan Adres, Nohad Ali and Hagit Glickman
Samuel Neaman Institute for National Policy Research, Technion, Haifa, Israel

ABSTRACT
The core of this article is the search for an 'organizing principle' for the State of Israel in the present era. To approach this core goal, it conducted 40 interviews with well-known and influential Israeli individuals and attempted to identify common grounds of Israeli society. Analysis of the interviews finds a broad common denominator among those with a wide variety of opinions, which is closely linked with the major principles of the Declaration of Independence of the State of Israel.

KEYWORDS Israel; society; semi-structured interviews; text analytics; latent semantic analysis (LSA); qualitative analysis; quantitative analysis

Text analytics workflow

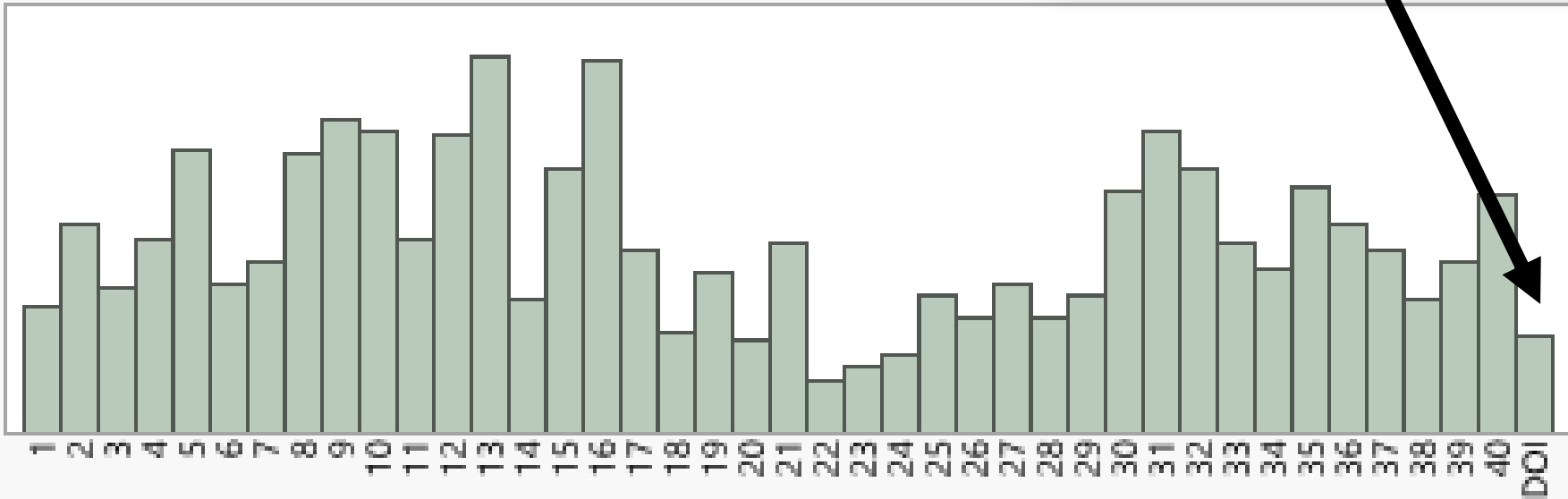


<https://gedeck.github.io/mistat-code-solutions/ModernStatistics/>

Documents (sentences)



Interviewee



Number of sentences per interviewees and in Declaration of Independence (DOI)

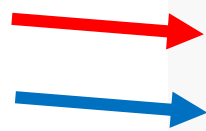
Text Explorer for Text

| Number of Terms | Number of Cases | Total Tokens | Tokens per Case | Number of Non-Empty Cases | Portion of Non-Empty Cases |
|-----------------|-----------------|--------------|-----------------|---------------------------|----------------------------|
| 4064 | 1730 | 36316 | 20.9919 | 1728 | 0.9988 |

Term and Phrase Lists

| Term | Count |
|-----------------|-------|
| state | 166 |
| israel | 148 |
| ultra orthodox | 117 |
| also | 103 |
| jewish | 103 |
| one | 81 |
| israeli | 80 |
| palestinians | 75 |
| must | 72 |
| democracy | 69 |
| zionism | 67 |
| education | 64 |
| economic | 60 |
| arabs | 59 |
| jews | 59 |
| need | 59 |
| change | 57 |
| world | 56 |
| people | 55 |
| society | 55 |
| today | 53 |
| state of israel | 52 |
| arab | 51 |
| important | 51 |

| Phrase | Count | N |
|-----------------------------|-------|---|
| ultra orthodox | 129 | 2 |
| state of israel | 52 | 3 |
| organizing principle | 43 | 2 |
| declaration of independence | 32 | 3 |
| jewish people | 29 | 2 |
| middle east | 29 | 2 |
| israeli society | 26 | 2 |
| long term | 20 | 2 |
| arab society | 19 | 2 |
| jewish state | 19 | 2 |
| diaspora jewry | 18 | 2 |
| nation state | 15 | 2 |
| jewish and democracy | 14 | 3 |
| united states | 14 | 2 |
| ben gurion | 13 | 2 |
| law of return | 12 | 3 |
| ultra orthodox society | 12 | 3 |
| israeli arabs | 12 | 2 |
| orthodox society | 12 | 2 |
| covenant of destiny | 11 | 3 |
| long term planning | 10 | 3 |
| education system | 10 | 2 |
| term planning | 10 | 2 |
| ultra orthodox public | 9 | 3 |



Document Term Matrix

DOI and interviews v2 - JMP Pro

File Edit Tables Rows Cols DOE Analyze Graph Tools Add-Ins View Window Help

DOI and interviews...

- Source
- Text Explorer of Text
- Iterative Clustering
- Distributions

Columns (349/1)

Text

- Docume...ry (343/0)
 - state Binary
 - israel Binary
 - ultra or...x Binary
 - also Binary
 - jewish Binary
 - one Binary
 - israeli Binary
 - palesti...s Binary
 - must Binary
 - democr...y Binary

Rows

- All rows 1,730
- Selected 0
- Excluded 0
- Hidden 0
- Labeled 0

| Text | state Binary | israel Binary | ultra orthodox ... | also Binary | jewish Binary | one Binary | israeli Binary | palestinians Binary | must Binary | democracy Binary | zic |
|--------------------------------|--------------|---------------|--------------------|-------------|---------------|------------|----------------|---------------------|-------------|------------------|-----|
| 21 ary as the infrastruct... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 itary should be made... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 ed from the army/mi... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 pen to the periphery... | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 ophe" that will excite ... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 our military strength ... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 he separation of relig... | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 a - not according to t... | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 eclaration of Indepen... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 elf has no validity of t... | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 ed to stand on solid f... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 32 y to make a changes ... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 33 of Zionism - that of c... | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 34 how we can withstan... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35 Independence - brin... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 36 e with this or that stat... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 37 he biggest failure of t... | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 38 im is the rabbi (when... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 39 y carrying Haredim on... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40 ork and enlist in the a... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 41 om the political need... | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 42 nness of the leadershi... | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 43 mselves to the requir... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 44 thodox generation w... | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 45 ay these things out lo... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 46 rd house because th... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 47 vere one-time. The 's... | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 48 nderstand that the es... | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

DTM



Singular Value Decomposition

For a DTM, X , the SVD factorization is

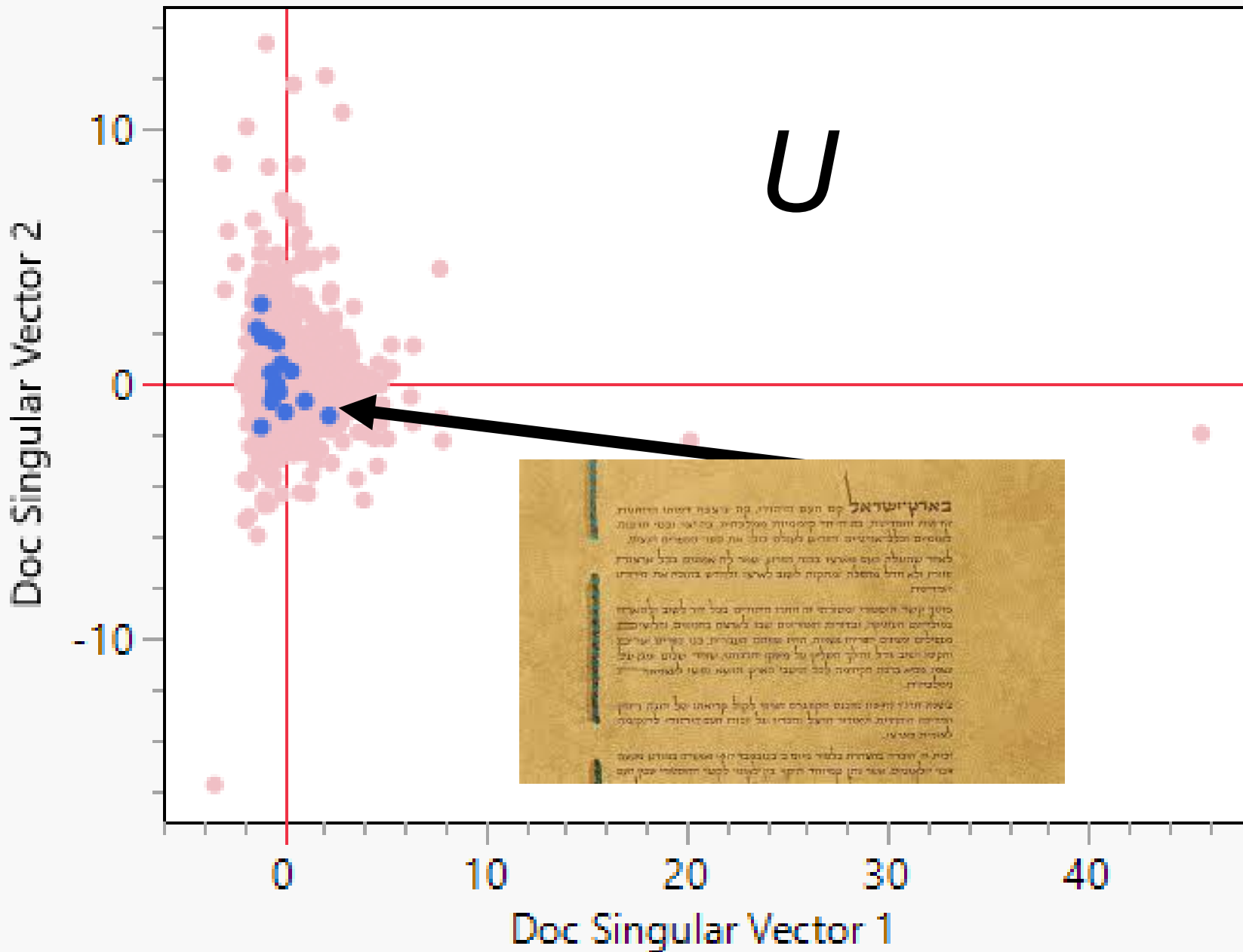
$$X \approx UDV^t,$$

Where:

- U is a d by s orthogonal matrix **U is a rank-reduced description of documents**
- D is a diagonal matrix with nonnegative entries (the singular values).
- V^t is an s by w orthogonal matrix, where s is the rank of the SVD factorization ($s=1,\dots,\min(d,w)$), and the superscript t indicates “transpose.” **V is a rank-reduced description of terms.**
- d is the number of documents
- w is the number of words
- s is the rank of the SVD factorization ($s=1,\dots,\min(d,w)$)

Latent Semantic Analysis

- In natural language processing, the use of a rank-reduced SVD is referred to as *latent semantic analysis* (LSA).
- The LSA technique plots the corpus dictionary using **the first two vectors** resulting from the SVD.
- Similar words (words that either appear frequently in the same documents, or appear frequently with common sets of words throughout the corpus) are plotted together, and an interpretation can often be assigned to dimensions appearing in the plot.



Topic Analysis

In Topic Analysis, a rotated SVD performs a varimax rotation on the partial singular value decomposition (SVD) of the document term matrix

One specifies the number of topics,

Topic analysis is equivalent to a rotated principal component analysis (PCA). The varimax rotation takes a set of singular vectors and rotates them to make them point more directly in the coordinate directions (toward the terms). This rotation makes the vectors help explain the text as each rotated vector orients toward a set of terms. Negative values indicate a repulsion force. The terms with negative values occur in a topic less frequently compared to the terms with positive values.

1

פתרון מדיני-אזורי

2

זכויות אדם אזרחיות
ממלכתיות/שוויוניות

3

היבטים כלכליים-
משבריים

4

כללי משחק (משילות)

5

רב תרבותיות
והתייחסות למיעוטים

Top Loadings by Topic

| Topic 1 | | Topic 2 | | Topic 3 | | Topic 4 | | Topic 5 | |
|--------------|---------|---------------|---------|-----------|---------|------------|---------|-----------|---------|
| Term | Loading | Term | Loading | Term | Loading | Term | Loading | Term | Loading |
| jordan | 0.75435 | right | 0.34965 | economic | 0.48590 | minister | 0.5202 | minority | 0.39191 |
| arrangements | 0.71818 | secular | 0.33740 | crisis | 0.40150 | prime | 0.5202 | rights | 0.38549 |
| palestinians | 0.59252 | full | 0.32553 | market | 0.38410 | long term | 0.5011 | within | 0.36781 |
| states | 0.36506 | religious | 0.30606 | war | 0.37529 | planning | 0.4421 | group | 0.30959 |
| three | 0.32910 | freedom | 0.27445 | liberal | 0.35120 | government | 0.3074 | self | 0.30892 |
| solution | 0.30170 | state | 0.26835 | social | 0.33723 | term | 0.2734 | identity | 0.29133 |
| now | 0.28284 | nationalism | 0.26107 | open | 0.30129 | elected | 0.2328 | creates | 0.28001 |
| stage | 0.26848 | liberal | 0.23720 | paradigm | 0.28364 | level | 0.2207 | including | 0.23773 |
| two | 0.26682 | jewish state | 0.23620 | period | 0.26075 | system | 0.1799 | groups | 0.23428 |
| long term | 0.25938 | accept | 0.22978 | model | 0.25865 | world | -0.1792 | possible | 0.22825 |
| give | 0.25148 | law of return | 0.22309 | process | 0.24536 | means | 0.1783 | various | 0.21500 |
| connection | 0.24015 | equality | 0.22185 | political | 0.24400 | | | basic | 0.19968 |
| | | meaning | 0.21371 | changed | 0.21368 | | | last | 0.19515 |
| | | democracy | 0.20626 | | | | | human | 0.19379 |
| | | individual | 0.20286 | | | | | | |

Two sample gaps

secular
Palestinians
economic

democracy

education

The term “**democracy**” appeared in 69 sentences out of 1730 and has low loading. It was listed by the qualitative research as a leading paradigm, a gap between the qualitative vs. quantitative approaches.

The term “**education**” did not appear in the quantitative analysis but was highlighted in the qualitative analysis. It appeared in 64 of the sentences.

The qualitative path

The quantitative path

<https://www.neaman.org.il/EN/Past-initiatives-to-strengthen-the-Israeli-society>

**יוזמות לצמצום הקיטוב
בחברה הישראלית: לקחים
מהעבר**

פרופ' רון קנת
ד"ר ראובן גל
ד"ר איתן אדרס
ד"ר חגית גליקמן
ד"ר נוהאד עלי
חזקי פרקש

מוסד שמואל נאמן
למחקר מדיניות לאומית



<https://neaman.org.il/Common-Ground>



תכנון ארוך טווח

**"המחנה המשותף":
מתווה מוסכם לפרדיגמות
לאומיות ארוכות-טווח**

ד"ר איתן אדרס
ד"ר ראובן גל
פרופ' (אמריטוס) זאב תדמור
פרופ' עירד יבנה

Combine qualitative
and quantitative
analysis with text
analytics



Thank you for
your attention