50 YEARS OF OCCUPATION

A SENTIMENT AND N-GRAM ANALYSIS OF

U.S. MAINSTREAM MEDIA COVERAGE OF

THE ISRAELI OCCUPATION OF PALESTINE

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EXECUTIVE SUMMARY

The Israel-Palestine issue is often described as one of the most intractable conflicts in the world. With the occupation now in its 52nd year, a solution remains elusive. A key factor in prolonging the conflict has been the United States' unconditional support for successive Israeli governments; which has helped entrench Israel's illegal presence in the Palestinian territories. Augmenting this has been the U.S. mainstream media, which critics argue has maintained a slanted view of the occupation, one that favors the Israeli narrative over those of Palestinians. According to Palestinian-American political analyst Yousef Munayyer:

> *"...the media coverage of this [Palestinian-Israeli] issue – when it is in fact covered – is covered in a fairly unfair and biased way. It has created this perception that the Israelis are somehow the underdogs and the Palestinians are somehow the aggressors, when really the entire world recognises that Israel, in fact, occupy Palestine – not the other way around" (Grothaus, 2013).*

OBJECTIVE

While the existing academic literature on the American media coverage of Israel-Palestine has identified a persistent pro-Israel bias, this appears to be based on a relatively limited corpus. Few, according to our knowledge, have investigated an extended time frame. In this study, we investigate the U.S. media coverage of the Israel-Palestine issue over the 50-year period of Israel's occupation from June 1967 to June 2017 across five major American newspapers.

METHODOLOGY

Our approach involved the use of Natural Language Processing (NLP) techniques such as Sentiment analysis and n-grams (uni/bigrams) to investigate the vocabulary used in the chosen newspaper headlines, in terms of both general sentiment and the terms/topics most closely associated with both groups. N-grams were used in three different contexts – overall aggregate basis across the papers, by publication, and by decade.

RESULTS AND DISCUSSION

OVERALL CORPUS

- Over four times more Israeli centric headlines than Palestinian ones.
- The New York Times had the **largest** number of headlines for both Israel and Palestine, while the Wall Street Journal the **smallest**.
- Coverage around the issue spikes during periods of escalated violence/wars.
- Coverage of Israel and Palestine have declined since the Oslo peace accords in 1993.

SENTIMENT ANALYSIS

- While overall headlines in both corpuses were largely negative, Israeli centric headlines were more positive than Palestinian centric ones.
- Israeli headlines were **statistically more significantly positive** than Palestinian ones by for all publications, except for the Washington Post.
- 44% of Israeli headlines were negative compared to 48% of Palestinian headlines.
- In each of the selected five newspapers (regardless of political orientation), proportionally, more Palestinian centric

headlines were negative than Israeli ones – and less positive except for the Washington Post.

N-GRAM ANALYSIS

- On an aggregate basis, unigrams and bigrams can be classified as related to violence (e.g. War, Troops, Palestinians killed), state/security institutions (e.g. Leader, Hamas, Israeli Cabinet), government officials (Prime Minister, Palestinian leaders)/sources (e.g. Israel says, Palestinians say) or diplomatic approaches (e.g. talks, Peace talks, Peace Plan).
- Across each of the five publications, similar trends were observed with n-grams like: war, Palestinians killed, Hamas, and Peace talks being the most prominent unigrams and bigrams.
- By decade, themes vary as the occupation evolves during the 50-year time period. Nevertheless, major themes of violence, diplomacy and state institutions and national groups and leaders remain consistently prominent.
- Israeli sources are near **two and half times** (250%) more likely to be quoted as Palestinian ones.
- Key n-grams indicative of the conflict such as East Jerusalem, economy, occupation and blockade have a low presence in either corpus, while terms like terror and affiliated words appear at a much higher frequency.

- Over the 50-year time period, there has been a near **85% decline** in the instances of the word occupation and its affiliated unigrams in Israel centric headlines. In the Palestine corpus, there has been **65% decline** in the word occupation and its affiliated unigrams.
- N-grams germane to Palestinian aspirations, such as bigrams mentioning the word "Palestine refugee(s)" have become increasingly rarer, reflecting a relegation of such concerns from media coverage. For instance, bigrams mentioning "Palestine Refugee(s)" **have declined by 93%** over the 50-year period.

CONCLUSION

The results of the study strongly support previous academic literature that assesses that the U.S. mainstream media's coverage of the conflict favours Israel in terms of both the sheer quantity of stories covered, and by providing more opportunities to the Israelis to amplify their point of view. The overall sentiment of those stories calculated from the headlines of the five major U.S. newspapers was consistently more negative for Palestinian stories. On the other hand, the Palestinian narrative is highly underrepresented, and several key topics that help to identify the conflict in all its significance, remain understated.

INTRODUCTION

June 2017 marked the 50th year of Israel's occupation of Palestine. The occupation, now the longest running in modern history, has been identified as the crux of the Middle East's woes throughout much of the second half of the 20th century. Multiple attempts to end Israel's military presence in the occupied territories, from the Oslo Accords in 1993 to the Arab Peace Initiative, have failed and the prospects of a viable Palestinian state remain dim.

Consequently, the conflict continues to command headlines in major newspapers across the world achieving constant global attention.

A peculiar feature of the Israeli occupation of Palestine, is the overt political support the United States provides its ally Israel, the occupying power. This manifests in several ways such as the unwavering diplomatic cover the United States provides Israel in international fora; in particular the shield provided by the United Nations Security Council veto, the substantial military aid that is funnelled to the Jewish state, and the convergence of other security and commercial interests.

Another aspect of the conflict is the U.S. role as the chief arbiter between the Israelis and the Palestinians. Originally, this was accepted by both sides as a compromise to facilitate peace discussions under the Oslo framework. However, international observers have noted that the United States has all but abdicated any pretence of neutrality and adopted uncritical support for Israel's occupation (Hatuqa, 2017). It has even gone as far as to repudiate the international community's consensus on the status of Jerusalem, by recognizing it as Israel's capital (Smith 2018).

America's mainstream media has been a critical vector for supporting this and the conduct of U.S. media coverage of Israel has been widely evaluated in modern scholarship. Mohamad Elmasry, Assistant professor at the University of North Alabama writes that, "Israel is assumed to be good, peaceful, and like 'us'. The Palestinians, meanwhile, are backwards, violent, and foreign" (ElMasry, 2014).

"The dehumanization of Palestinians is a recurring theme in U.S. media reporting", writes Tamara Kharroub, Assistant Executive Director at the Arab Centre in Washington D.C (Kharroub, 2018). Citing the Great Return March in Gaza, Kharroub assails the media for failing to report on the names of civilians killed in the non-violent protests which she says are in "in stark contrast to the usual reporting on Israeli victims, in which their pictures, lives, and grieving families are repeatedly shown and discussed".

During the most recent Gaza war in 2014, Operation Protective Edge, much criticism of the U.S. press was made in relation to the extensive platform access provided to Israeli sources. According to Pundit Fact, the number of Israeli officials brought to speak on CNN during a sliver of the 51-day war were 20 compared to only four Palestinian ones (Qiu & Sanders, 2014). Former Israeli Ambassador to the U.S., Michael Oren, appeared six times, more than all Palestinians officials combined. This imbalance matters, as official Israeli government policy is effectively made an intrinsic part of the discussion of the conflict, while the views of Palestinians living under occupation are subordinated to the margins.

For Israel's critics, the pro-Israel coverage seen in the U.S. is particularly problematic as it presents the conflict in a manner that completely occludes the power imbalance between the Israelis, who field one of the most advanced armies in the world, and Palestinians, who are often armed with nothing more than rocks and rockets, which have been more accurately described as "enhanced fireworks" (Democracy Now, 2018). In other words, no distinction is made between Israel, an occupier and the Palestinians, a victim of military occupation.

"Western mainstream media has portrayed the Israel-Palestine conflict as a conflict revolving around security and terrorism, with Israel being the victim" said Siham Rashid, former Director of the Public Relations Department, Palestinian Counseling Center (Rashid, 2003). "So, for many people, the conflict is understood as a conflict of land and borders between two peoples who have equal claims, not as a conflict between an oppressed and oppressor and colonized and colonizer".

This study contributes to the literature around the occupation by analyzing its coverage in five influential U.S. newspapers during the past 50 years between June 1967 and June 2017. We utilize Natural Language Processing (NLP) techniques, specifically sentiment analysis and n-grams to quantify and examine the nature of the coverage. We begin with an outline of the theoretical media frameworks that underpin our research and provide context on why the language used to describe the news matters. Second, previous work undertaken to study news coverage of the conflict will be reviewed to demonstrate how the findings support an emerging literature that documents consistent bias in media coverage of the Israeli-Palestinian issue. Next, the findings of our study will be presented outlining the trends our review of media data has uncovered. The study concludes by identifying potential steps for further research and how to derive even more robust results in future analytical work.

NEWS AS AN INFLUENCER

Whether online, television or print, the mainstream media serves to provide most Americans with their daily news. How the media frames the news and presents it to viewers can profoundly shape their perception of current events.

Several theories have delved into how public texts, political speeches and news stories, are formulated to promote narratives and guide understanding of current events.

One such theory is framing, first popularized during the second half of the 20th century by Erving Goffman. Goffman argued that frames assist in defining a situation by helping to organize and structure messages. This enables individuals to perceive and make sense of society at large (Gofmann, 1974).

According to Dennis Chong and James N. Druckman, "The major premise of framing theory is that an issue can be viewed from a variety of perspectives and be construed as having implications for multiple values or considerations" (Chong and Druckman, 2007, p. 104). Communications studies and political science professor Robert Entman, a widely cited authority on framing theories, asserts that:

"To frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recondition for the item described" (Entman, 1993, p.52).

Entman writes that frames help to highlight certain messages in a text that elevate their salience - a term he defines as "making a piece of information more noticeable, meaningful, or memorable to audiences", which can be accomplished using repetition or making them more culturally familiar (Entman, 1993, p.53). More noteworthy, Entman writes, is how exclusion can also define a frame. Citing a landmark study on the power of framing by Kahneman and Tversky (1984):
"...frames select and call attention to particular aspects of the reality described, which logically means that frames simultaneously direct attention away from other aspects. Most frames are defined by what they omit as well as include, and the omissions of potential problem definitions, explanations, evaluations, and recommendations may be as critical as the

inclusions in guiding the audience" (Entman, 1993, p.54)

Entman's study on the comparative coverage of the bombing of Iran Air by a U.S. naval ship in 1988, versus the Soviet downing of a Korean Airliner in 1983, is highly instructive in showcasing how two similar incidents can be easily framed to promote two very different perceptions (Entman, 1991).

Entman demonstrates the Iran Air shooting was characterized by U.S. media outlets, as one of technical failure, while the Korean jet incident was a "moral outrage" - despite a similar number of casualties resulting from both tragedies, with the latter given significantly more coverage. Soviet justifications for technical failure were largely omitted in the reports, while in the Iran Air case, American negligence was far less salient as compared to points promoting the technical failure aspect. Entman notes that while "stray contrary opinions that expert readers might pick up from careful analyses are likely to possess such low salience as to be of little practical use to most audience members" (Entman, 1991, p.22).

Agenda Setting is another prominent model for understanding media coverage. It, "refers to the idea that there is a correlation between the emphases that mass media place on certain issues" and their public perception (Scheufele & Tewksbury, 2007, p.11). In other words, the stories that become the focus of the media as measured by, for example, the quantity will correlate with public opinion and what the audience will view as important news stories.

According to Maxwell McCombs:

"The agenda-setting influence of the news media is not limited to this initial step of focusing public attention on a topic. The media also influence the next step in the communication process, our understanding and perspective on the topics in the news" (McComb, 2002, p.5).

The term became popular with McCombs and Shaw's research on the 1968 presidential election in which the authors showed a strong link between what stories news networks chose to focus on, and the issues the audience sought to assign more importance to. (McComb & Shaw, 1972).

Supporting Literature

In a study by Janice Terry and George Mendenhall (1974), the authors examined three major newspapers to investigate the coverage of the U.S. press on the Israeli-Palestinian issue in 1973, the year during which the Yom Kippur war took place. The authors looked at the New York Times, The Washington Post and the Detroit Free Press. Their results showed that articles in all three newspapers, that included features and editorials, were consistently pro-Israel.

The authors write that while all three papers bemoaned terrorist activities committed by Palestinians, similar Israeli actions were presented as justified "responses" to "intolerable" situations". Terry and Mendenhall conclude that: "The results of the study again reveal a rather consistent pro-Israeli and anti-Arab bias in the three US newspapers studied".

Another study conducted comparing the Israel-Palestine coverage between the New York

Times and Israeli newspaper Haaretz between 1987-1988, 2000-2001 and post 9/11 (Viser, 2003) found that the New York Times had consistently covered Israel more favourably over these periods, most notably in the post 9/11 era. The author found that the Times more frequently relied on Israeli sources. For example, Israelis were given twice as many end quotes in the 2000-2001 period and two and half times more in the post 9/11 period than Palestinians.

In her book *Pens and Swords – How the American Mainstream Media Report the Israeli-Palestinian Conflict* (2008), Marda Dunsky asserts that the Israeli-Palestinian issue is not a "sole affair of its physical combatants" (Dunsky, 2008, p.36) but also involves the U.S. government lending Israel support at the international level. Dunsky writes:

"Although the United States gives Israel diplomatic cover in the United Nations and

supplies it with a unique degree of aid and weaponry, American mainstream media rarely acknowledge or analyze this American bias. As a result, the U.S. foreign policy tilt is implicitly absorbed into much U.S. media reporting of the conflict" (Dunsky, 2008, p.36). Dunsky believes that the U.S. mainstream media is often devoid of providing any context surround keys issues of the conflict, fixated on details or peace initiatives and violence that leave "the American public without important contextual information about why the conflict remains so intractable".

Pens and Swords, a quantitative/qualitative analysis of major U.S. media organizations from the summer of 2000 to spring 2004, provides pointed insights on the framing of the Israel-Palestine conflict in the U.S. press. One of Dunsky's main finding points to the lack of coverage in the U.S. media about the international consensus and process around the conflict, especially regarding key issues such as Israeli settlements and the Palestinian refugee question.

Dunsky provides a stark example citing a New York Times article focusing on settlements in the West Bank. The report discussed the rapid growth of buyers in east of the Green Line[1], with interviews from prospective buyers at a housing fair in Jerusalem hotels. Dunsky notes the report did not mention in the 625-word piece that settlements in the West Bank are illegal under international law or had been the central issue of contention for the Palestinians who have repeatedly demanded halting settlement activity (Dunsky, 2008, p.199).

While Dunsky does not consider this to be part of a conspiracy, she laments the fact that failure to record America's role as it relates to the conflict, on how it shapes vis-à-vis "International law and consensus- is the single most significant flaw, across time and media, in shaping and defining coverage" (Dunsky, 2008, p.367).

Greg Shupak of the University of Guelph in Canada writes in his book "*The Wrong Story*" , concludes that "The stories told about Palestine-Israel are as notable for what they exclude as they are for what they include" (Shupak, 2018, p.4). In the book, an empirical study of U.S. media

coverage, much of it focusing on editorials written on Operation Protective Edge in Gaza in 2014, he criticizes the New York Times coverage of the war. His work shows how the paper frequently omits important details that would better contextualize the conflict and render moot the "both sides frame" the Times often employs in its reporting on the issue.

For example, Shupak shows that in five editorials immediately before and those during the 51-day war, the New York Times only once mentions the blockade of Gaza by Israel which he writes had been a key factor in the lead up to the conflict (Shupak, 2018, p.15). Shupak notes that:

"This lack of attention is necessary for the "both sides" narrative to hold: since only "one side" was besieging the other, the mere existence of a siege is itself enough to puncture the "both sides" narrative" (Shupak, 2018, p.15). He adds that, "Keeping to the "both sides" framework deprives readers of a context that is central to understanding Protective Edge. Obscuring the importance of the siege to Palestinians distorts the narrative of Protective Edge in Israel's favor" (Shupak, 2018, p.15).

In another instance, Shupak cites a Times editorial published on July 25th during Protective Edge - in which the editors write that "the war is terrorizing innocent people on both sides of the [Israel-Gaza] border" (Shupak, 2018, p.17). Shupak notes that a day prior to the editorial being published, a UN report claimed two Israeli civilians had been killed, while a staggering 538 Palestinian civilians (including 186 children) had died.

The late Edward Said, arguably the single most influential intellectual on the conflict, assailed the U.S. media for what he saw as an exclusion of Palestinian voices on important aspects of Israel's entrenched occupation, largely portraying them as this unwavering, irrational entity and what he called "frenzied collectives hell bent on killing innocent Jews" (Said, 2012, p.xxvii).

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[1] An armistice line or boundary between Israel and the West Bank established since 1949.

WHAT WE PLAN TO DO

Previous research on the U.S. media's coverage of the Israeli occupation of Palestinians has identified two broad themes: 1) Israel is more positively portrayed than the Palestinians, 2) The coverage of the occupation often omits key details and context that would help audiences better understand the nature of the occupation. However, much of the work is based on reviews of relatively limited time scales. Often, such research has been restricted to a narrow stretch of coverage or focused around spans immediately preceding or after a major war or escalation in the conflict such as the First Intifada, or the 2014 Gaza War.

While valuable, this research has shortcomings, such as the inability to offer insights into how U.S. reporting on the issue has changed overtime from the beginning of the occupation. Our approach addresses this gap by investigating a dataset that extends across 50 years worth of newspaper headlines from 1967 to 2017 for five major U.S. newspapers, published in cities across the country.

The five newspapers within our corpus included the Chicago Tribune, Los Angeles Times, The New York Times, The Washington Post and The Wall Street Journal; these publications were selected due to their high circulation numbers and varying ideological political orientations. In particular, the New York Times is often viewed as being the most liberal whereas the Wall Street Journal is seen as more conservative. Using the ProQuest database, we searched for headlines that included only mentions of the words Israel or Israeli to create an Israeli centric corpus. A separate headline search was conducted using the words "Palestine", "Palestinian", "Gaza Strip" and "West Bank" to derive a Palestinian centric dataset. The words were mutually exclusive, so that the word Israel, for example, did not appear in the Palestinian headline dataset. We captured headlines for a variety of news documents including those categorized as "Article", "Commentary", "Editorial", "Feature", "Front Page/Cover Story", "News", "Military News" and "Report".

NATURAL LANGUAGE PROCESSING (NLP)

Using the Python computer language, NLP techniques were used to assess the coverage of the Israeli-Palestinian conflict. With the growth of computing power, it has become increasingly viable to analyze large data sets of unstructured textual data and apply algorithms to reveal underlying patterns in the language used and glean insight (Mills, 2018). Newspaper headlines readily lend themselves to analysis by such methods. For the purposes of this study, the following analytical techniques were leveraged:

SENTIMENT ANALYSIS

Sentiment is a measure of the degree to which individual words or sentences can be classified as "positive", "negative" or "neutral". NLP techniques attempt to categorize a text's overall sentiment polarity by summing the number of positive, neutral and negative words to derive an aggregate score.

Conceptually, media coverage of the conflict should strive to be neutral, objective, and derived from facts. Practically, however, all media entities will exhibit some form of institutionalized ideological posturing and reflect a slant on any given issue. Sentiment analysis provides a powerful metric to assess the degree to which ideological loyalty colours analysis.

In our case, scores were calculated with reference to a standard list of words that have been classified as being either positive or negative. Words external to the list were assumed to be neutral. For every headline, each word was scored using this list in order to determine the aggregate score.

Negative sentiment was assigned to any headline with a score less than 0, and text with an aggregate of greater than 0 was deemed to be positive. A score of 0, meanwhile, was classified as neutral. All headlines were filtered to remove stop words such as 'a', 'as', 'the', 'and' which provide little in terms of explanatory power.

The dictionary used to score headlines contains 7,259 words and was curated by Professors Minqing Hu and Bing Liu at the University of Illinois (Liu, B., Hu, M., & Cheng, J., 2005). Given the nature of the conflict, this list of words was augmented with a "Violence Vocabulary" (Violence Vocabulary, 2015) that provided enhanced coverage of adjectives describing violence not found in the original list.

UNIGRAM AND BIGRAM FREQUENCIES

One approach to analyzing the corpus is to employ unigram analysis. In this method, headlines are filtered to remove stop words (such as 'a' or 'the') and count the remaining words left over in the "bag of words". Words with higher frequency provide insights into the themes and content of the corpus. The higher the unigram frequency of any given word, the greater the tendency for it to represent a key aspect of the dataset.

However, unigrams provide no context with regards to where the word appears in the headlines. As such a unigram-based analysis must be supplemented with an assessment of bigram frequencies.

Bigrams provide a method of identifying words that tend to appear together in a corpus of data. For example, the sentence, "The man jumps over the fence" would yield the following five bigrams: ('the', 'man'), ('man', 'jumps'), ('jumps', 'over'), ('over', 'the'), ('the', 'fence').

Measuring bigrams over large bodies of text provide insight on how certain terms tend to cluster together or collocate. While some of these are intuitively logical, such as the words West and Bank ('west', 'bank'), it also helps measure how frequently other concepts or topics tend to appear in proximity and may help uncover structural bias in terms of the language used (Jurafsky and Martin, 2017). For the purposes of this study, a raw count of the number of times a given bigram co-allocation occurred was utilized.

INTERPRETING N-GRAM DATA

How do we test that a theme identified in the corpus in terms of unigrams/bigrams is significant and not the product of random chance? How do we know, for instance, that the frequencies of the most common bigrams are not random, but reflect a material aspect of the conflict?

One method is to determine if the same types of themes reappear in different contexts. For our purposes, a context is simply a way of grouping bigrams extracted from the data in different ways. This study utilizes four distinct contexts:

- Unigrams and bigrams on an aggregate basis
- Unigrams and bigrams by publication
- Unigrams and bigrams by decade

The significance of an n-grams can be explored by focusing on those which emerge in common across these four contexts. Conceptually, therefore, the data can be pictured as exhibiting one of the following characteristics:
- A **consistency** in coverage, similar n-grams across the four different contexts.
- A **divergence** in coverage, with little or no overlap in terms of bigrams / unigrams and no apparent linkages evident between the different bigrams / unigrams in the four contexts.

RESULTS

SENTIMENT SCORES

The number of headlines citing Israel over the 50-year period is more than four times than that of headlines citing Palestine (Table 1, Fig. 1). As Table 1 illustrates, the New York Times had the highest number of headlines regarding both Israel and Palestine while the Wall Street Journal had the lowest.

The sentiment analysis reveals that the average sentiment score for both Israeli and Palestinian headlines is negative (Table 1). However, Israeli headlines were more positive than Palestine ones. Over 95% of scores for both Israeli and Palestine centric headlines fell in the range between 1 and -3.

Concurrently, headlines focused on Israel were on average more positive than that for Palestinian related headlines across all five newspapers that were selected for analysis in this study (Table 1). In terms of Israel coverage, the Los Angeles Times had, overall, the most negative sentiment, with the New York Times being the least negative. For Palestine unique titles, the Los Angeles Times once again exhibited the most negative sentiment, while the New York Times was the least negative. Furthermore, our statistical test results in Table 1 show that Israeli headlines were statistically more significantly positive than Palestinian ones overall and by publication, except for the Washington Post. The statistical tests, in effect, confirm the positive bias in favour of Israel.

Proportionally, more Palestine headlines scored negative than Israeli ones. A total of 44% of all Israel headlines were negative, compared to 48% of Palestine unique headlines. Only 11.1 % of all Israeli headlines were positive, while 10.7% of all Palestine related headlines scored positively. Neutral headlines for Israel and Palestine unique headlines were 44% and 41% respectively. All five publications had more negative headlines proportionally for Palestine than for Israel. All except the Washington Post had more positive headlines for Israel than Palestine. Figures in Appendix 1 chart out the

how sentiment by proportion of positive, negative and neutral headlines have trended in the 50-year period from 1967-2017.

N-GRAMS

Overall, for Israeli headlines there were a total of 29,323 unique unigrams, more than twice as many times as those for Palestinian headlines (12,397), while there were 309,583 unique bigrams, nearly four times as many Palestinian bigrams which were a total of 79,958. The major themes captured by unigrams and bigrams extracted from both Israel and Palestine related news headlines include terms related to violence (e.g. War, Troops, Palestinians killed), state/security institutions (e.g. Leader, Hamas, Israeli Cabinet), government officials (e.g. Abbas, Prime Minister, Palestinian leaders) or sources (e.g. Israel says, Palestinians say) or diplomatic overtures (e.g. Talks, Peace talks, Peace Plan) as shown in Table 2.

A look at the n-grams by publication reveals similar trends (Appendix 2). The unigrams and bigrams for both sets of headlines again showed that the themes in discussing the two states appear to be heavily focused on violence, state institutions and peace negotiations. A large overlap was evident between the five papers in terms of the top 30 unigrams and bigrams for each publication. Specifically, 84% of Israeli unigrams were repeated among more than one publication, and for Palestinian unigrams, 86%, were shared. For Israeli bigrams, 77%, were repeated. As for Palestinian bigrams 71%, were repeated.

Though largely consistent over the decades, some themes did vary, reflecting the changing dynamics of the occupation, and the region more generally (Appendix 3). For example, the mentions of the group Hamas became more pronounced from 2010 onwards as evidenced by the 'Hamas' unigram / 'Israel Hamas' bigram, while terms such as the "Suez Canal" were prominently featured in the 60s and 70s era (for

Israeli linked bigrams) but not in subsequent decades, reflecting the normalization of relations between Egypt and Israel.

For each set of results, the top 30 n-grams were chosen, excluding underlying search terms (e.g. the words "Israel", or "Gaza") that would naturally appear with a high frequency. Single letters and numbers in unigrams were also discarded. In addition, categorical terms like "World News", "Letters to Editor" or "Photo Caption" were also removed to provide more clarity.

TABLE 1 – NUMBER OF HEADLINES, MEAN SENTIMENT SCORE, Z SCORE BY PUBLICATION

	Headlines		Sentiment		Z- score*
Publication	**Israel**	**Palestine**	**Israel**	**Palestine**	
Chicago Tribune	13548	2724	-0.54	-0.63	-3.34†
Los Angeles Times	22639	4308	-0.58	-0.73	-7.56†
New York Times	23184	5249	-0.46	-0.54	-5.87†
Washington Post	16190	3837	-0.54	-0.58	-1.70
Wall Street Journal	6541	1374	-0.54	-0.65	-3.44†
Overall	82102	17492	-0.53	-0.62	-9.89†

* Calculated to perform the Mann Whitney U Test [2]
† p <0.05; (2-tailed)

TABLE 2 – TOP 30 UNIGRAM/BIGRAMS FOR ISRAEL AND PALESTINE CENTRIC HEADLINES

Israel Unigram	Israel Bigram	Palestine Unigram	Palestine Bigram
US	Middle East	World	Middle East
Peace	Peace Talks	US	Palestinian State
Lebanon	Israel Says	Peace	Palestinian Leader
Talks	US Israel	Talks	Peace Talks
Says	Israel US	Arafat	Palestinian Authority
World	Israeli Jets	Mideast	Mideast Peace
Arab	Says Israel	Hamas	Palestinian Police
New	Israeli Troops	New	Palestinians Killed
Arabs	Talks Israel	Says	Talks Palestinians
Mideast	Israel Egypt	Arab	Palestinian Leaders
UN	Israeli Soldiers	Killed	Jewish Settlers
Egypt	Israeli Cabinet	UN	Mideast Talks
PLO	Prime Minister	State	Aid Palestinians
Syria	Israeli Army	Plan	Peace Plan
War	Egypt Israel	PLO	Killed Gaza
Plan	Mideast Peace	Arabs	Palestinian Refugees
Attack	Lebanon Israel	Leader	Palestinian Issue
Jews	Israeli Leader	Aid	Talks Palestinian
Aid	Aid Israel	Violence	Palestinians Say
Raid	Lebanon Israeli	East	Palestinian Statehood
May	Israel Syria	Middle	Killed West
Iran	Israeli Planes	Jewish	Palestinian Group
Jewish	Peace Plan	Lebanon	Palestinian Guerrillas
News	Israel PLO	War	Prime Minister
Jordan	South Lebanon	Leaders	Gaza Hamas
Jerusalem	Soviet Jews	Abbas	Palestinian Camp
Killed	Israelis Say	Jerusalem	Palestinians US
Leader	Golan Heights	Settlers	Bank Settlers
Arms	Visit Israel	News	Aid Palestinian
Say	Tel Aviv	Egypt	Shot Dead

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[2] An alternative (non-parametric) statistical test to the student-test (Laerd, 2018).
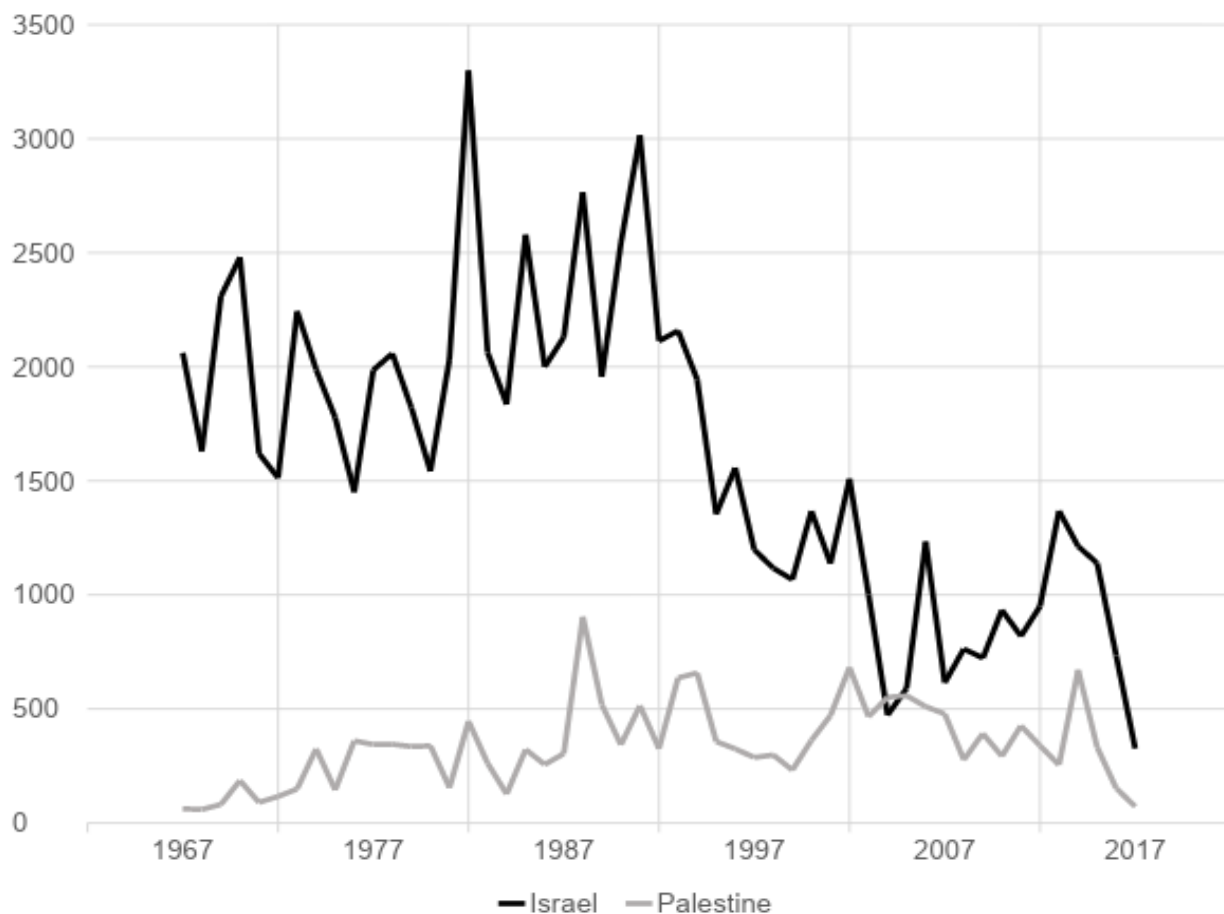
FIGURE 1 – HEADLINES PER YEAR

DISCUSSION

The large gap in Israel centric headlines over Palestinian ones was 4:1 in favour of Israeli stories broadly supports what previous studies and researchers have noted – that Israeli perspectives and narratives find greater space in the American media compared to those of Palestinians.

Overall, it is evident that coverage in the second half of the 50-year period has reduced dramatically, specifically after the signing of the Oslo peace accords in 1993. Between 1967 and 1992, there were on average 1200 headlines for both Israel and Palestinian centric corpuses, while only 700 on average in the period since.

One is tempted to describe this phenomenon as the 'Oslo Effect', where the much-celebrated deal, mainly in U.S. and other western circles, was seen to have charted a path to the two-state solution, which in fact remains more elusive than ever before.

It is also evident that coverage of the conflict varies in direct proportion to the escalation of violence. For example, during the first full year of the first intifada in 1988, the total number of Palestine centric headlines is 904, while in the previous year, one without a major war or escalation it was only 304. Similarly, in the year 2014 during Operation Protective Edge, there

were 672 Palestine centric headlines, while in 2013 there were 254.

While the violence and devastation of war generates more headlines, no similar spikes are seen in the coverage of the long-term siege of Gaza, or the harsh reality of Israel's military control of the West Bank. This contributes to the normalization of the Israeli occupation.

SENTIMENT ANALYSIS

The sentiment scores demonstrate that Israeli headlines across all selected papers, (except for the Washington Post), regardless of ideological orientation, are consistently more positive, and less negative as compared to Palestinian ones. The case of the statistically insignificant difference between the Washington Post datasets does warrant further investigation to determine if any specific period may be tipping the scores towards neutrality.

Nonetheless, the results provide a quantitative indicator that appears to confirm the existence of a deep, systemic pro-Israel bias, which has often been alluded to in media analysis scholarship. This is a unique aspect of relations between the Israeli state and the United States. The deep ties that undergird the relations between two governments also finds resonance in other aspects of America's political environment - be it security cooperation between state institutions, to the way the media covers Israeli interests.

N-GRAM ANALYSIS

A hallmark of the conflict has been the perception that there is an ongoing peace process which, from time to time, breaks down, thereby delaying resolution of the conflict. As a result, bigrams associated with words such as "peace talks" is amongst the most frequent seen bigrams. Overall, there are 4164 and 982 instances of unigrams with the word 'peace' in the Israeli and Palestinian corpus respectively. The frequency peaked around the time the Oslo Accords were signed in 1993.

Since then, a quasi-independent status has been accorded to the Palestinian authority, which has now come to be seen as largely managing Israeli security concerns through Palestinian security forces. This is however, treated as somehow equating to two equal sides negotiating at a level of parity, overseen by a neutral third party (the United States).

The prominence of n-grams dealing with the peace process raises several important points. Keeping in mind Shupak's observation regarding the both sides narrative, the chief implication is that by constantly referring to discussions between the Israelis and Palestinians as somehow falling within a "process", the dispute is effectively portrayed as being one between two equal warring sides, not one where one group is an occupier and the other the occupied. Moreover, the peace process has been effectively moribund for many years, despite remaining a frequent motif of coverage.

Another key theme that arises is the privileging of Israeli voices and, invariably, Israeli narratives. To put it in quantifiable terms, the bigram "Israel Says" and "Says Israel", are two of the most frequent bigrams in the corpus, implying that Israeli sources are a standard part of headline construction. For example, the overall frequency of the term, 'Says Israel' and variations of it are almost two and a half times as likely to appear in the Israeli corpus as the term 'Says Palestinian" and its affiliated bigrams in the Palestine dataset. Hence, it is evident that not only do Israeli voices and sources outnumber Palestinian ones but are also a critical part in reporting on matters related to Israel.

While the n-gram analysis reveals the broad topics of focus in the coverage of Israel-Palestine; it also shows an absence of certain terms, those that are crucial elements of the in understanding the issue. So, for example, while it's evident that much of the reporting on Israel is connected to the occupation, direct reference to the term itself or descriptions of it as an illegal occupation, (a view widely held across the international community), is limited. The unigram occupation and related terms appear a total of 506 times in the 50-year period in the Israeli corpus. In the Palestinian corpus, the unigram occupation and its affiliated words appear a mere 110 times. In contrast, the unigram terror and its affiliated words appear over 1092 times in the Israeli corpus, while unigrams related to word terror appear almost three times as much in the

Palestinian dataset – 316 to be exact - compared to the word occupation.

Over time, amongst Israeli centric headlines, a large decline in the term occupation can be observed. From the late 60s till the end of 80s, there was a 42% drop in the instances of the word occupation and its affiliated unigrams, and then a further 70% decline from the 90s to the 2010s, an overall drop of 85%. In the Palestine unigrams corpus, there was a 67% *increase* in the use of the term from the late 60s to the end of the 80s, but subsequently declined by 76% from the 90s onwards – an overall decrease of 65%.

The concept of illegality is also seldom explicitly mentioned: for instance, the occupation or Israel's settlements are rarely identified as such. In the Israeli corpus, only nine bigrams were identified where the settlements or settlers are designated as illegal, while in the Palestinian corpus, there were three in total.

On another critical issue, that of East Jerusalem, mentions of the designated capital of a future Palestinian state is largely absent, even though it remains one of the central issues within the conflict.

In total there were just 106 mentions of East Jerusalem in the Israeli bigram dataset over the 50-year period, and only 26 in the Palestinian corpus. This may reflect the tacit acceptance that the United States has long maintained with regards to Israel's claim that the disputed city is its eternal capital. This was recently confirmed with the inauguration of the U.S. embassy there, a move that was widely condemned considering its disputed status (Smith, 2018).

Another downplayed issue is the presence and subsequent absence of n-grams relating to Palestinian refugees. While the bigram 'Palestinian refugee(s)' appears prominently overall (Table 2) and in the 1960s and 1970s (Table 10), there is a subsequent drop in the following decades. From the 60s to the end of the 2010s, there is an overall 93% decline. This is indicative of how concern for refugees has become increasingly relegated to the background in the context of the conflict's coverage over the past 20-30 years, despite the sustained interest of the international community and human rights organizations in affirming their right to return and protection (Amnesty, 2012).

The continuing blockade of Gaza since 2006, one that has seen two major wars in the past decade, is also an infrequent topic. The unigram 'blockade' in the Palestine corpus was mentioned a mere 30 times. In contrast, unigrams mentioning Hamas over the same period was 394. This high frequency dwarfs terms such as 'occupation' and 'East Jerusalem', in both the Israel and Palestine corpus. In fact, the unigram Hamas is one of the most prominent terms that appears in the Palestine corpus - a striking insight considering that Hamas was only formed in 1987 (Laub, 2014).

Unigrams related to terminology around the economic hardships faced by the Palestinians appeared only 122 times as identified in the Palestinian corpus, the absence of which, once again, occludes the daily struggles of living under Israeli control.

LIMITATIONS

While the use of NLP techniques can help draw important insights from a given corpus, they are subject to limitations. For one, measures such as sentiment analysis can provide an indication of whether a headline is positive or negative but may also misclassify text. For example, nuances such as sarcasm, or factual errors will not be detected by simple scoring. In effect, sentiment analysis only captures a very specific aspect of language.

Similarly, the use of unigrams and bigrams (or n-grams generally) also poses limitations. While both methods attempt to uncover patterns in topic distribution, more robust methods exist, which may uncover important patterns that are not reflected by their frequency.

For instance, probabilistic methods, as well as machine learning techniques such as those employing word vectors arguably provide a more robust method of measuring how closely one word is related to another. In other words, n-grams are only one approach of topic discovery.

CONCLUSION

The Israeli occupation of Palestine remains one of the most intractable crises that the international community has faced over the last 50 years. The Israelis have steadily expanded and consolidated their grip over the Palestinians thereby entrenching their occupation.

However, this reality is not reflected in the U.S., either politically or in media coverage. Our results support previous research and claims that the U.S. mainstream media's coverage of the issue favours Israel by providing greater access to Israeli officials, focusing on Israeli narratives both in terms of the quantity of coverage as well as the overall sentiment, as conveyed by headlines.

This is in marked contrast to the Palestinians, who are consistently underrepresented as well as covered more negatively. Furthermore, key elements of the conflict are understated, likely not to provide readers of these publications the full nature and complexities of Israel's over 50-year occupation of the Palestinians.

Critically, this appears to be a systemic problem in coverage, rather than a result of deliberate planned bias. Instead this has likely more to do with what scholars like Dunsky allude to as the U.S. media's affinity to broadly align and support their government's foreign policy objectives.

"Unfortunately, the Israeli narrative is so deeply entrenched in mainstream discourse that it has actually come to define the lexicon on Palestine-Israel" according to Palestinian-American Professor and attorney Noura Erakat (Khader 2014, pg. 108).

"This makes it very difficult for journalists to be able to say anything in response to loaded words like "terrorist," for example" she added. "Using such language yields an immediate result: when Palestinians are terrorists, and Hamas is a terrorist organization, the opposing side conveys a lot without having to say much—a few code words speak volumes. So, it is a struggle for us Palestinians who have to work against this shorthand communication."

While the results of the study provide a strong insight into the coverage of the two sides, there are limitations to our work. Firstly, despite ProQuest being a robust and reliable database for researchers, it remains unknown if the data curated by it truly represents the full extent of headlines for the five publications chosen for the study.

Secondly, this study could be strengthened by undertaking a content analysis into the body of the articles themselves, which would help provide greater context to the types of stories that are covered. Such an enterprise would be, naturally, more resource intensive than using headlines alone.

While our corpus was limited to major mainstream newspapers in the United States, it would be worth investigating the coverage in more regional publications as well. This would demonstrate whether any differences exist coverage at this level. An exploration of both mainstream and local broadcast networks would also be beneficial as an enhancement.

An even richer avenue of exploration would be to undertake a comparative study of the U.S. press with other major international publications, especially those active in other western states. This would help in evaluating how similar or different the coverage of the conflict is, and whether international newspapers also tend to reflect the policies of their national elites.

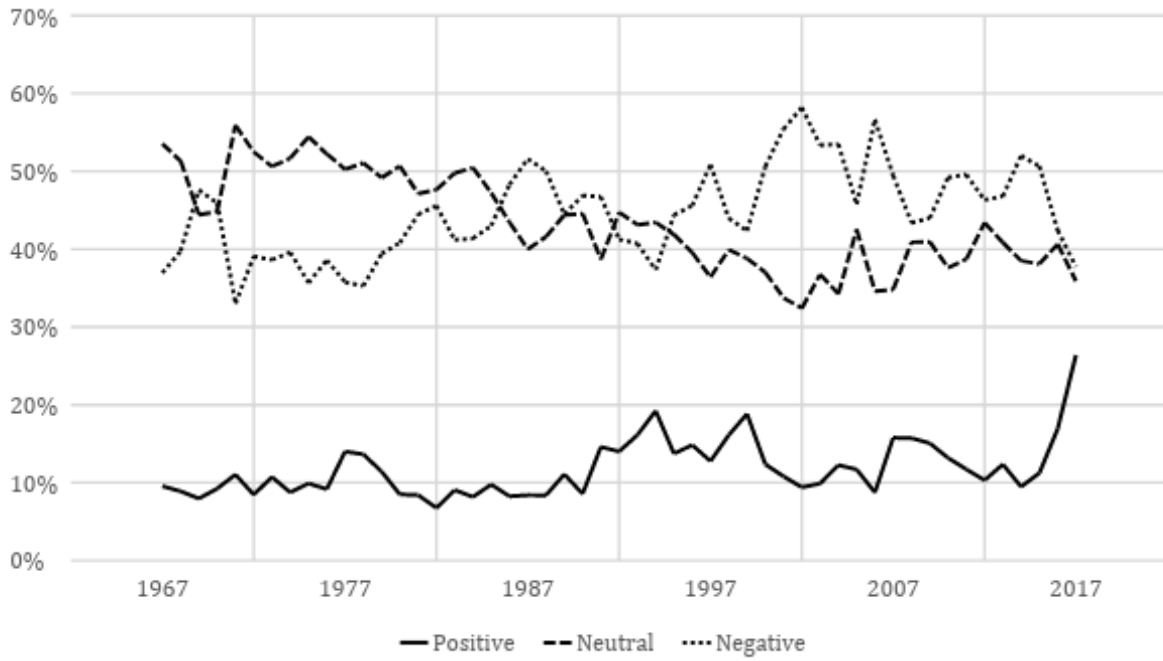# APPENDIX 1 – HEADLINES SENTIMENT OVER TIME

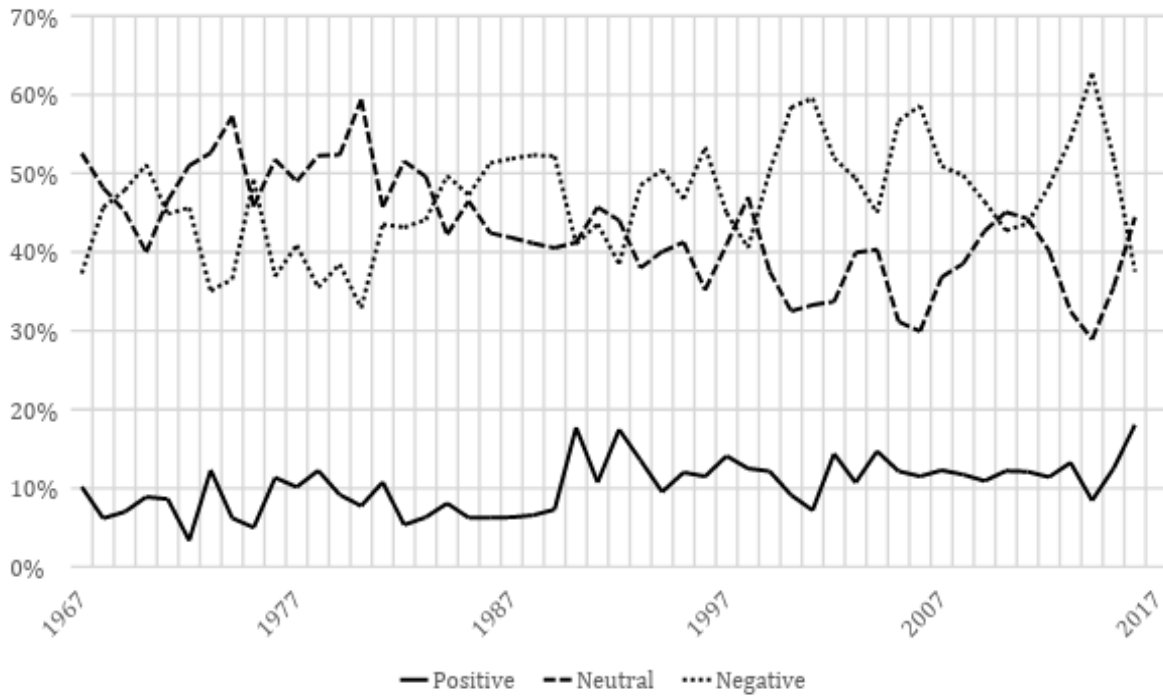**FIGURE 2** – PROPORTION OF ISRAELI CENTRIC HEADLINES BY SENTIMENT

FIGURE 3 – PROPORTION OF PALESTINIAN CENTRIC HEADLINES BY SENTIMENT

APPENDIX 2 – N-GRAMS BY PUBLICATION

TABLE 3 – TOP 30 ISRAEL UNIGRAMS

Chicago Tribune	Los Angeles Times	New York Times	Washington Post	Wall Street Journal
US	US	US	US	US
Peace	World	Lebanon	Talks	World
Talks	Peace	Says	Lebanon	Peace
Arabs	Mideast	Talks	Peace	Worldwide
Lebanon	Lebanon	Arabs	Says	New
Arab	Says	New	Arab	Iran
Says	Talks	Peace	New	Says
New	Arab	UN	UN	Talks
PLO	New	Arab	Arabs	Mideast
Egypt	Arabs	Mideast	Egypt	Netanyahu
Attack	Egypt	Egypt	Syria	Arab
Syria	UN	World	Plan	Minister
Plan	Jews	Plan	Aid	Deal
UN	Syria	Syria	Mideast	Syria
War	War	Jews	Attack	May
Mideast	Jewish	Soviet	War	Attack
Jets	May	PLO	Jews	Military
Arafat	Attack	Attack	Raid	Jewish
Jews	Plan	Raid	Arms	Lebanon
Aid	East	Aid	Lebanese	Leader
Jordan	Say	Said	Netanyahu	Egypt
Troops	Aid	Killed	Jordan	Prime
Raid	Jerusalem	Jordan	Iran	Hamas
Leader	Middle	Arms	Arafat	Obama
Killed	Rabin	East	Jerusalem	State
Kill	Troops	Reported	Army	Nuclear
May	Killed	Jets	Killed	Million
Hamas	Raid	Jerusalem	Seen	Plan
Arms	Visit	Sinai	Strike	Jerusalem
Kills	Minister	Accord	May	Ties

TABLE 4 – TOP 30 ISRAEL BIGRAMS

Chicago Tribune	Los Angeles Times	New York Times	Washington Post	Wall Street Journal
Israeli Jets	Middle East	Middle East	Peace Talks	Prime Minister
Peace Talks	Peace Talks	Israel Says	Israel Says	US Israel
Israeli Troops	Israel Says	Says Israel	US Israel	Middle East
Talks Israel	Mideast Peace	Israel US	Israel US	Israel US
Israel Says	Israeli Troops	Israeli Jets	Israeli Jets	Israeli Leader
US Israel	Prime Minister	Israeli Cabinet	Talks Israel	Israel World
Israeli Soldiers	Says Israel	US Israel	Israeli Army	Peace Talks
Israel US	Israeli Jets	Israelis Say	Israeli Cabinet	Israeli Prime
Israel PLO	Israel US	East Israel	Middle East	Jewish State
Says Israel	Israel Egypt	Peace Talks	Israeli Troops	Mideast Peace
Israel Egypt	US Israel	Israel Egypt	Israel Egypt	Israel Says
Israeli Army	Israeli Soldiers	Israel Reports	Says Israel	White House
Israel Syria	Talks Israel	South Lebanon	Egypt Israel	Israeli Firm
Lebanon Israel	Israel World	Israeli Soldiers	Aid Israel	Peace Process
Israeli Leader	Lebanon Israel	Egypt Israel	Israeli Soldiers	Saudi Arabia
Aid Israel	Egypt Israel	Lebanon Israel	Lebanon Israel	Benjamin Netanyahu
Egypt Israel	Israeli Army	Israelis Report	Lebanon Israeli	Boycott Israel
Israel Bond	Jewish State	Lebanon Israeli	Israel Syria	Tel Aviv
Israel Israelis	Peace Process	Aid Israel	Israeli Leader	Golan Heights
U N	Israeli Cabinet	Israeli Army	Israeli Planes	Iran Nuclear
Peace Plan	Israeli Planes	Israeli Troops	Talks Israeli	Egypt Israel
Israelis Kill	Lebanon Israeli	Talks Israel	Prime Minister	New York
Israeli Soldier	Peace Plan	Israeli Planes	Israel Seeks	Central Bank
Israel Jordan	Soviet Jews	Israel Syria	Israeli Raid	Israeli Leaders
Israeli Cabinet	Israeli Leader	Soviet Jews	Visit Israel	Israel Egypt
Lebanon Israeli	Tel Aviv	Ties Israel	Israel PLO	Israel Iran
Israeli Planes	South Lebanon	Southern Lebanon	Mideast Peace	Israel Hamas
Israeli Police	Visit Israel	Israeli Court	Mideast Talks	Israeli Government
Israeli Court	Says Israeli	Israel Said	Peace Plan	Israeli Soldiers
Middle East	Golan Heights	Israeli Arabs	Israeli Court	Minister Benjamin

TABLE 5 – TOP 30 PALESTINIAN UNIGRAMS

Chicago Tribune	Los Angeles Times	New York Times	Washington Post	Wall Street Journal
Talks	World	US	US	World
Peace	Mideast	Talks	Peace	US
Arafat	Peace	UN	Talks	Peace
Hamas	US	Arabs	Arafat	Hamas
US	Arafat	Peace	New	Worldwide
Killed	Talks	Killed	Hamas	State
New	Hamas	Arafat	State	Aid
Plan	New	Mideast	Killed	UN
Mideast	Says	Arab	Mideast	Talks
Sharon	PLO	Says	Plan	New
Says	Arab	Hamas	Says	Mideast
Arab	Killed	New	Arab	Arafat
Violence	East	World	UN	Authority
State	Leader	Plan	PLO	Leaders
Leader	State	Lebanon	Jerusalem	Leader
Abbas	Plan	PLO	Jewish	Says
Arabs	Middle	State	Violence	War
Militants	Arabs	Aid	War	Politics
Vote	Say	Leader	Leader	Statehood
Police	Jewish	East	Aid	Abbas
UN	UN	Settlers	Arabs	Arab
Settlers	Leaders	Beirut	Attack	Vote
Clash	Violence	Egypt	Leaders	Ceasefire
Attacks	Aid	Middle	East	May
Die	Abbas	War	Clash	Plan
Jerusalem	Lebanon	Sharon	Settlers	Violence
Aid	Settlers	Role	Abbas	Group
Protest	Group	Attack	Lebanon	Terror
Clashes	Jerusalem	Jordan	Police	Economy
Jewish	Egypt	Group	Middle	Fatah

TABLE 6 – TOP 30 PALESTINIAN BIGRAMS

Chicago Tribune	Los Angeles Times	New York Times	Washington Post	Wall Street Journal
Palestinian State	Middle East	Middle East	Peace Talks	Palestinian Authority
Palestinian Leader	Palestinian State	Palestinian State	Middle East	Palestinian State
Peace Talks	Palestinian Leader	Palestinian Leader	Palestinian Leader	Palestinian Leader
Palestinian Police	Peace Talks	Palestinians Killed	Jewish Settlers	Middle East
Talks Palestinians	Mideast Peace	Bank Arabs	Mideast Peace	Palestinian Statehood
Killed Gaza	Palestinian Authority	East Gaza	Palestinians Killed	Palestinian Leaders
Palestinians Killed	Palestinians World	Peace Talks	Palestinian Authority	Palestinian Refugees
Talks Palestinian	Peace Plan	Palestinian Authority	Palestinian Police	Peace Talks
Palestinian Authority	Jewish Settlers	Mideast Talks	Talks Palestinians	Mideast Peace
Palestinians Die	Gaza World	Palestinian Killed	Aid Palestinians	Aid Palestinians
Palestinians Protest	Palestinian Police	Aid Palestinians	Palestinian Refugees	Gaza Ceasefire
Palestinian Group	Prime Minister	Killed Gaza	Palestinian Guerrillas	Gaza Flotilla
Palestinian Leaders	Talks Palestinians	Killed West	Palestinian Prisoners	White House
Palestinian Uprising	Palestinian Leaders	Bank Massacre	Palestinians Say	Mideast Talks
Aid Palestinians	Mideast Talks	Gaza Hamas	Talks Palestinian	Palestinian Premier
Mideast Talks	Bank Arabs	Gaza Palestinian	Gaza War	Palestinian Vote
Palestinian Official	Refugee Camp	Palestinian Leaders	Mideast Talks	Tel Aviv
Bank Settlers	Palestinian Issue	Mideast Peace	Killed West	Mahmoud Abbas
Gaza Border	Peace Process	Palestinian Police	Palestinian Issue	Palestinian Economy
Gaza Palestinians	Mideast Palestinian	Talks Palestinians	Plan Palestinian	Palestinian President
Gaza Plan	Palestinian Autonomy	Bank Settlers	Bank Violence	Peace Plan
Gaza Pullout	Palestinians Killed	Bank Town	Clashes West	Prime Minister
Killed West	World Abbas	East West	Palestinian Statehood	Aid World
Mideast Peace	Palestinians Say	Palestinian Guerrillas	Peace Plan	Arab Spring
Palestinian Boy	Palestinian Camp	Gaza Pullout	East Peace	Gaza Conflict
Palestinian Issue	Aid Palestinians	Palestinian Factions	Gaza Ceasefire	Gaza Truce
Peace Palestinians	Gaza Palestinians	Palestinian Group	Hunger Strike	Gaza World
Peace Process	Gaza Pullout	Palestinian Refugees	Palestinian Autonomy	Hamas Fatah
Gaza Hamas	Gaza West	Palestinians US	Palestinian Camp	News UN
Palestinian Girl	Officials Say	Talks Palestinian	Palestinian Leaders	Palestinian aid

APPENDIX 3 – N-GRAMS BY DECADE

TABLE 7 – TOP 30 ISRAEL UNIGRAMS

1960s	1970s	1980s	1990s	2000s	2010s
Jordan	US	US	US	World	World
Arab	Egypt	Lebanon	Peace	US	US
Arabs	Lebanon	Says	Talks	Peace	Iran
US	Talks	Talks	Mideast	Says	Netanyahu
Egypt	Says	PLO	Says	Mideast	Says
UN	Peace	Arabs	Arabs	Lebanon	New
Says	Arab	Arab	New	Sharon	Syria
Jets	Arabs	Peace	Lebanon	East	Peace
Suez	New	UN	Arab	Talks	Obama
War	UN	New	PLO	New	Deal
Peace	Mideast	Beirut	World	Middle	Hamas
Raid	Sadat	Plan	Jews	Hamas	Talks
Mideast	Syria	Egypt	Rabin	War	Jewish
New	Aid	Raid	Syria	Attack	Minister
Canal	Jets	Lebanese	War	Leader	Leader
Attack	Sinai	Arms	Arafat	Hezbollah	Briefing
Talks	Plan	World	Worldwide	Arab	Attack
Jerusalem	Suez	Jews	Attack	Arafat	Nuclear
Fire	Soviet	Aid	Jerusalem	Brief	Jerusalem
Planes	War	Troops	May	Arabs	Military
Clash	Raid	Begin	Netanyahu	UN	UN
Plan	Jews	War	Jewish	Attacks	Arab
Aid	Arms	Syria	Aid	Say	Egypt
Soviet	Begin	Attack	Pact	Bush	Border
Egyptian	Pact	Reagan	Plan	May	East
Hit	Kissinger	Pullout	Brief	Iran	Prime
Jet	Cairo	Cabinet	UN	Minister	War
Nasser	PLO	Mideast	Jordan	Jewish	State
Cairo	Carter	Soviet	Leader	Syria	Strike
Strike	Attack	Peres	Soviet	Kills	President

TABLE 8 – TOP 30 ISRAEL BIGRAMS

1960s	1970s	1980s	1990s	2000s	2010s
Israeli Jets	Israel Egypt	Israeli Troops	Peace Talks	Middle East	Prime Minister
Israeli Planes	Egypt Israel	US Israel	Israel PLO	Israeli Leader	Middle East
Israel Jordan	Israeli Jets	Israel US	Middle East	Peace Talks	Israeli Leader
Israel Egypt	Israel Says	Israel Says	Talks Israel	Israel World	US Israel
Israel Says	Says Israel	Lebanon Israel	Mideast Peace	Israeli Troops	Israel Says
Jordan Israel	Israel Us	Israeli Cabinet	Peace Process	Prime Minister	Israel US
Says Israel	Israeli Cabinet	Israeli Jets	Prime Minister	Israel Says	Israeli Prime
U N	Aid Israel	Lebanon Israeli	Israeli Soldiers	US Israel	Israel World
Suez Canal	Israeli Planes	Israeli Soldiers	US Israel	Warfare Middle	Israel Hamas
Aid Israel	Peace Talks	Israeli Army	Israel Us	Israeli Army	Peace Talks
Israel Arabs	Talks Israel	Says Israel	Soviet Jews	Israeli Soldiers	Iran Nuclear
Egypt Israel	Israel Reports	South Lebanon	Israel Syria	Jewish State	Jewish State
Israel Reports	Us Israel	Talks Israel	Israel Says	Israel Us	Israeli Strike
Israelis Report	Suez Canal	Israel Egypt	Israel Jordan	Israeli Arabs	White House
Israelis Say	Golan Heights	Egypt Israel	Says Israel	Israeli Premier	Former Israeli
Jordan Israeli	Israel Syria	Peace Plan	Peace Israel	Tel Aviv	Israel Iran
Jets Hit	Lebanon Israel	Israel Israelis	Israeli Army	Israel Syria	Benjamin Netanyahu
Arabs Israel	Mrs Meir	Israel Lebanon	Mideast Talks	Foreign Minister	Israel's Netanyahu
Exchange Fire	Soviet Jews	Israelis Say	Israeli Troops	Israeli Soldier	Syria Posted
Israeli Raid	Lebanon Israeli	Israeli Planes	Attack Israel	Mideast Peace	Tel Aviv
Arab Guerrillas	Peace Plan	Spy Case	Tel Aviv	Peace Plan	Iran Deal
Israel Bond	Israel Bond	Aid Israel	Israeli Court	Suicide Bomber	Israeli Leaders
Israeli Jet	Israeli Troops	Talks Israeli	Israeli Cabinet	Talks Israel	Nuclear Deal
Jets Israel	Israelis Report	Visit Israel	Israeli Leader	Officials Say	Golan Heights
Jordan Says	Mideast Peace	Ties Israel	Loan Guarantees	Says Israel	East Jerusalem
Israeli Troops	Visit Israel	Israeli Coalition	Talks Israeli	Israel Hezbollah	Iran Israel
Israelis Israel	Israelis Say	Lebanon Israelis	Israeli Soldier	White House	Israel Turkey
Jets Israel	Jets Hit	Israeli Raid	Israel May	Israeli Police	Israeli Elections
Across Canal	Arabs Israel	Israeli Court	Israeli Police	Support Israel	Says Israel
War Israel	U N	West Beirut	Israel Arabs	Bomber Kills	Israeli Settlements

TABLE 9 – TOP 30 PALESTINE UNIGRAMS

1960s	1970s	1980s	1990s	2000s	2010s
Arabs	US	US	Peace	World	World
Arab	Lebanon	Talks	Talks	Hamas	Hamas
Refugees	Talks	PLO	Arafat	US	UN
Guerrillas	Arabs	Palestine	Mideast	Arafat	Peace
Dayan	Sadat	Arab	US	Mideast	US
Group	Arab	Arabs	PLO	Peace	Talks
Liberation	UN	Killed	New	Sharon	New
Plan	Peace	Arafat	Police	Abbas	Palestine
Aid	Gaza	Beirut	Arab	Killed	State
Guerrilla	Guerrillas	Plan	Settlers	New	Says
UN	State	Peace	Aid	Plan	Briefing
Hussein	PLO	Says	World	Says	Mideast
Jordan	Begin	New	Arabs	Talks	Leader
New	Says	State	Says	East	Abbas
War	Egypt	Lebanon	Jerusalem	Leader	War
Back	Beirut	World	Leader	Aid	Statehood
Commandos	New	Jordan	Killed	Middle	Ceasefire
Get	Jordan	UN	Worldwide	Fatah	Jerusalem
Peace	Mideast	Mideast	Hamas	State	Authority
Autonomy	Role	Violence	Plan	Violence	Aid
Commando	Carter	Uprising	Jewish	Bush	Jewish
Egypt	Plan	Jewish	Rabin	Security	East
Egyptians	Hussein	Slain	War	Leaders	Egypt
Grenade	Issue	Hussein	Arafats	Militants	Killed
Killed	Attack	Begin	Selfrule	Settlers	Netanyahu
Lebanese	Reported	Protest	State	May	Bid
Mideast	Syria	Shamir	Accord	Vote	Leaders
Reported	Arafat	Shiites	East	Un	Unity
Units	Camp	Camp	Violence	Attacks	Middle
Camp	Lebanese	Settlers	Netanyahu	Authority	Vote

TABLE 10 – TOP 30 PALESTINIAN BIGRAMS

1960s	1970s	1980s	1990s	2000s	2010s
Palestine Liberation	Palestinian State	Palestinian State	Peace Talks	Middle East	Palestinian Authority
Palestine Arabs	Palestinian Guerrillas	Bank Arabs	Palestinian Police	Palestinian Leader	Palestinian State
Palestine Refugees	Bank Arabs	Around World	Middle East	Palestinian State	Peace Talks
Palestinian Arabs	Lebanon Palestinians	Palestinians Killed	Mideast Talks	Palestinian Authority	Middle East
Palestine Group	Palestine Guerrillas	Jewish Settlers	Talks Palestinians	Gaza Pullout	Palestinian Leader
Palestinian Refugees	Palestinian Issue	Palestinian Autonomy	Palestinian State	Palestinians Killed	Gaza Ceasefire
Arabs Gaza	Palestine State	Palestinian Uprising	Palestinian Leader	Prime Minister	Palestinian Statehood
Strip Arabs	Palestinian Camp	Killed West	Jewish Settlers	Aid Palestinians	Gaza War
2 Arab	Mideast Peace	Autonomy Talks	Mideast Peace	Killed Gaza	Mideast Peace
89 Egyptians	Arabs West	Palestinian Group	Aid Palestinians	Palestinian Leaders	Gaza Hamas
Al Fatah	Palestine Group	Bank Arab	Peace Process	Palestinian Premier	Hunger Strike
Arab Commando	Palestinian Role	Mideast Peace	Bank Massacre	Gaza World	Gaza Conflict
Arab Lands	Palestinians Sadat	Palestinian Issue	Palestinian Authority	Palestinians World	Palestinian Unity
Bank Arabs	Palestinians Say	Palestinians Us	Peace Plan	Peace Plan	Gaza Truce
Bank Plan	Peace Talks	Palestinians Die	Talks Palestinian	Peace Talks	Palestinian Leaders
Dayan Says	South Lebanon	Bank Mayor	Palestinian Selfrule	Gaza Hamas	Statehood Bid
Frustration Grips	Talks Palestinian	Palestinian Camp	Bank Settlers	Mideast Peace	Gaza Border
Gaza Arabs	Middle East	Palestinian Talks	Gaza Jericho	Gaza Plan	Tel Aviv
Gaza Refugees	Palestinian Guerrilla	Bank Violence	Palestinian Leaders	Gaza Border	Mahmoud Abbas
Gaza Sinai	Palestinian Refugee	Palestinian Killed	Palestinian Group	Palestinian Police	Palestinian Prisoners
Grenade Blast	Palestinians Said	Palestinian Rights	Palestinian Issue	Hamas Fatah	War Gaza
Hussein Reported	Palestinians Us	Talks Palestinians	Palestinians Get	Jewish Settlers	Gaza Flotilla
Injured Grenade	Support Palestinians	2 Arabs	Palestinians Killed	New Palestinian	Palestinian Bid
Liberation Chief	Arab Leaders	Peace Plan	Gulf War	Palestinian Security	Palestinians UN
Liberation Group	Camp David	Arabs Killed	Palestinian Aid	Security Forces	Gaza Blockade
Liberation Groups	Lebanon Palestinian	Bank Town	Palestinians Gaza	Palestinian Militants	Mideast Talks
Middle East	Mideast Talks	Violence West	Bank Town	Palestinian Official	Palestinian President
Office Beirut	Palestinian Autonomy	Palestinian Guerrillas	Killed West	Amp Economics	Clashes West
Palestine Commandos	Palestinian Leader	Palestinians Slain	Mideast Accord	Palestinian Vote	Rebuild Gaza
Palestine Guerrilla	Palestinian Refugees	State Palestinians	Palestinian Deportees	Palestinians Say	Refugee Camp

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