Background: Duke Kunshan University (DKU) is an interdisciplinary institution that grants dual undergraduate degrees, an MOE Chinese degree and a degree from Duke University in Durham, United States. The principal structure of DKU majors is robustly interdisciplinary. No student confines their study to a single discipline (for example, biology or economics). Instead, all students engage in broad inquiry related to a subject or question (for example, political economy or global health) and take a wide variety of courses related to that area (for example, in public policy, history, ethics, or economics). As a result, our graduates are prepared to engage in a wide variety of inquiries using multiple methodologies to address complex issues that require interdisciplinary approaches.

This has implications for our vision and expectations of undergraduate theses and design projects, which reflect this broad interdisciplinary training. At DKU, every student completes a two-year project known as signature work which consists of multiple interconnected parts including thematic courses, experiential learning, capstones, and a final product. It seeks to integrate students' interdisciplinary educational experience and culminates in the creation of a product in a scholarly, creative, or applied nature in lieu of an undergraduate thesis or design required by JED. Because DKU encourages students to cultivate their independence and creativity as one of its institutional student learning outcomes, the student-led signature work projects often reflect students' own particular interdisciplinary interests and training. In addition, signature work has an intensive emphasis on problem-solving and skill-development which is much needed for any interdisciplinary inquiry; thus, students' final products are evidence of transferrable skills that students have acquired and demonstrated through the 2-year program, rather than content knowledge narrowly defined by disciplinary training.

In sum, while the Chinese major declared with any given student might be construed narrowly, the experience of our students is much broader—and intentionally so. This is a distinctive feature of our curriculum, and this distinctiveness results in broadly interdisciplinary submissions from our graduates' submitting theses or design projects. We have designed this to prepare our students for a wide variety of graduate programs in China and the West, where interdisciplinary training is a competitive advantage.

BRIDGING THE DIVIDE:
GLOBAL HEALTH AND INTERNATIONAL DEVELOPMENT POLICY PRIORITIES IN THE TRUMP AND BIDEN ERAS

by

William Powell

Signature Work Product, in partial fulfillment of the Duke Kunshan University Undergraduate Degree Program

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Signature Work Program

Duke Kunshan University

APPROVALS

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Mentor: Annemieke van den Dool, Social Science

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Abstract

International development is a lifesaving sector, with the U.S. serving as the world's largest donor to global health initiatives. Changes in presidential administration can significantly alter development priorities due to shifts in ideology, public opinion, and global events. This study examines how USAID's global health policy priorities differed between Donald Trump's term (2017–2021) and Joe Biden's term (2021–2025). Using a topic modeling approach (BERTopic) to analyze 2,344 programmatic and policy documents, the research identifies distinct thematic patterns under each administration. The results indicate that the Trump administration's global health focus centered on specific diseases (HIV/AIDS, malaria, tuberculosis) and bilateral programs, with reduced emphasis on multilateral engagement and reproductive health. In contrast, the Biden administration's documents highlighted broader priorities such as antimicrobial resistance, comprehensive sexuality education, pandemic preparedness, and global health leadership. These shifts reflect a transition from a narrow, disease-focused agenda to a more expansive, multilateral approach. By systematically mapping policy attention across administrations, the study provides insights into how political leadership influences global health agendas and discusses implications for the stability of international health initiatives.

Keywords

International Development, Public Policy, Global Health, USAID, Policy Attention

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Introduction

Despite global health funding constituting less than 1% of its federal budget, the United States stands as the largest donor of international health assistance worldwide, contributing $12.9 billion in fiscal year 2023 (KFF, 2023a). Furthermore, 22.3% of all U.S. foreign aid disbursed in fiscal year 2023 went towards health initiatives (DeSilver, 2025). This significant investment underscores the crucial role that global health funding plays in shaping policy outcomes and people's lives. For instance, the President's Emergency Plan for AIDS Relief (PEPFAR) has saved over 25 million lives over two decades (KFF, 2023b). The U.S. Agency for International Development (USAID) further estimates that its maternal and childhood mortality prevention initiatives have saved approximately 4.6 million children and 200,000 women (USAID, 2023). While this funding represents a mere fraction of the U.S. federal budget (KFF, 2023a), it encompasses extensive resources and numerous smaller-scale lifesaving projects, leading to long-term structural and demographic benefits worldwide (Bendavid & Bhattacharya, 2014; Leunig, Dijkstra, & Tuytens, 2024).

Given these projects' reliance on appropriated funds, research indicates that the level of attention policymakers dedicate to them is critical for their success, as effective policy engagement in global health projects can significantly influence health outcomes (McDougall, 2016; Baatiema et al., 2016). To illustrate, in a study exploring differences in global health policy focus across multiple years, Smith and Shiffman (2016) revealed that maternal survival emerged as a priority issue well before newborn survival, impacting the success and impact of newborn survival initiatives. Additionally, the U.N. included maternal mortality as a Millennium Development Goal in 2000, long before newborn survival as a Sustainable Development Goal in 2012, which significantly influenced programmatic support and agenda-setting (Smith & Shiffman, 2016). This highlights how the allocation of attention from policymakers can directly impact the reach and effectiveness of global health initiatives.

Building on this understanding of how policymaker attention shapes global health outcomes, this research examines how differences in the level and focus of policy attention under the Trump and Biden administrations influenced the priorities and effectiveness of U.S. global health programs. Policy attention is not static; it evolves with shifting presidential priorities, funding decisions, and ideological stances. While long-running programs like the President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Health Security program provide

continuity, their implementation and funding allocations can shift dramatically depending on an administration's policy agenda. These fluctuations in policy attention shape funding streams, strategic priorities, and the long-term viability of global health initiatives, creating cycles of expansion and contraction based on political leadership. To systematically examine these shifts, this study analyzes how USAID's global health policy priorities changed between the Trump administration (2017–2021) and the Biden administration (2021–2025), using a topic modeling approach on 2,344 USAID programmatic and policy documents. The findings demonstrate that Trump-era policies prioritized disease-specific, bilateral initiatives, whereas the Biden administration emphasized multilateral health strategies, pandemic preparedness, and reproductive health. These shifts reveal the extent to which presidential leadership influences global health funding priorities and underscore the instability of international health initiatives under shifting political administrations.

This research contributes to the theoretical discourse on policy attention and agenda-setting by employing a topic modeling approach to analyze shifts in USAID's global health priorities. By examining the allocation of policy attention to global health under different administrations, this study identifies patterns influenced by political ideology and administrative priorities in agenda-setting. Beyond its practical applications for stakeholders focused on framing proposals to align with the administration's preferences, this analysis underscores the broader implications of presidential priorities on international development. The theoretical insights derived from the topic modeling framework enhance the understanding of how administrative contexts shape global health agendas, providing a foundation for future research in policy studies, machine learning applications in social science, and the evolving role of metadata in text analysis. To understand how shifts in presidential priorities influence the allocation of policy attention to global health, it is essential to explore theoretical models that explain how issues gain or lose prominence on policy agendas. The following section outlines these models, focusing on policy attention, agenda-setting, and the impact of administrative changes on policy outcomes.

Theoretical Framework

To understand how shifts in presidential administrations influence global health priorities, it is essential to examine theoretical models of policy attention and agenda-setting. These models help explain why some global health issues gain prominence while others are neglected, particularly as political leadership changes. This section draws on bounded rationality, focusing events, and punctuated equilibrium to contextualize stability and change in U.S. global health policymaking. Additionally, it integrates political ideology and partisan preferences to explore how leadership transitions impact USAID's global health initiatives.

Policy Attention and Bounded Rationality

Policy attention refers to the selective focus of policymakers on specific issues while neglecting others. Rooted in bounded rationality theory, it highlights that decision-makers operate under cognitive and institutional constraints that prevent them from addressing all policy concerns simultaneously (Jones, 1999). As a result, administrations prioritize certain issues while de-emphasizing others, leading to observable shifts in policy focus when leadership changes.

For example, shifts in USAID's global health priorities can be seen through the contrast between Trump's focus on disease-specific programs like HIV/AIDS and malaria and Biden's broader emphasis on pandemic preparedness, reproductive health, and multilateral cooperation. These shifts reflect administrations' need to prioritize limited policy bandwidth, aligning with their political and ideological commitments.

Focusing Events and Policy Windows

The bounded nature of policy attention makes external shocks especially influential in shaping political agendas. Thomas Birkland's (2019) focusing events theory explains how crises—such as natural disasters or public health emergencies—can disrupt routine patterns of attention and open policy windows for major changes. In Kingdon's (2003) multiple streams framework, policy windows emerge when the problem stream (public awareness of an issue), policy stream (proposed solutions), and political stream (willingness of leaders to act) align (p. 165).

For example, the COVID-19 pandemic acted as a focusing event, elevating global health security to a priority under Biden's administration (Amri & Logan, 2021). This shift contrasts

with Trump's pre-pandemic focus on disease-specific programs and highlights how external crises can force administrations to reconsider policy priorities.

Punctuated Equilibrium and Presidential Transitions

Baumgartner and Jones' (2005) punctuated equilibrium theory describes how policy systems remain stable for long periods but can undergo sudden shifts when existing priorities are disrupted. While external shocks (such as pandemics) can trigger changes, leadership transitions also serve as critical moments of policy realignment.

In foreign aid and development, presidential leadership is a major driver of policy shifts. Rutledge and Larsen (2014) demonstrate that presidents play a chief role in shaping congressional attention to foreign aid and development assistance, influencing legislative priorities in global health. Similarly, Gibbons and Evans (2023) find that executive leadership significantly shapes health and macroeconomic policy agendas, reinforcing the idea that administrations imprint their ideological priorities onto USAID's global health funding. While leadership transitions and external crises shape global health priorities, political ideology serves as a fundamental force in structuring long-term policy commitments. Partisan shifts influence not only funding allocations but also the specific global health issues prioritized by U.S. administrations.

Political Ideology and Policy Priorities

While institutional constraints and external shocks influence policy attention, political ideology remains a primary driver of policy priorities. Partisan shifts shape not only funding levels but also the thematic focus of U.S. global health initiatives. Bawn et al. (2012) argue that Democrats and Republicans not only favor different policy outcomes but also prioritize distinct policy domains. This partisan divide is evident in foreign aid allocation and global health funding decisions.

A clear example of ideology-driven policy shifts is the Mexico City policy (global gag rule), which restricts USAID funding for NGOs that provide or promote abortion services. Since its introduction in 1984, Republican presidents—including Trump—have reinstated the policy, while Democratic presidents—including Biden—have rescinded it (KFF, 2022). These reversals create funding instability for affected NGOs, leading to reduced service availability in vulnerable regions (Lifchez & Maldonado, 2022).

Similarly, Milner and Tingley (2010) found that conservative legislators and districts tend to oppose economic aid but favor military assistance. However, despite Republican skepticism toward broad foreign aid programs, they have spearheaded targeted health initiatives—such as George W. Bush's PEPFAR and PMI (Ingram, 2019)—suggesting that ideological preferences can be overridden by security and geopolitical interests.

USAID and Policy Attention: Contrasting Trump and Biden's Approaches

As the primary executor of U.S. global health initiatives, USAID serves as a critical site for analyzing how administrative changes influence policy attention and funding allocations. Unlike other federal agencies involved in global health, USAID directly manages large-scale health initiatives such as the President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Health Security Agenda (GHSA). These programs illustrate how shifts in presidential priorities shape global health spending and implementation strategies.

Under Trump, USAID's global health initiatives were narrowly targeted, with funding concentrated on specific disease programs such as HIV/AIDS and malaria, while broader investments in global health security, reproductive health, and multilateral cooperation declined (Oum et al., 2021). This selective focus aligns with bounded rationality theory, which suggests that policymakers prioritize a limited set of issues due to cognitive and institutional constraints (Jones, 1999).

Biden's administration expanded USAID's focus to include health equity, pandemic preparedness, and climate-related health risks, reflecting broader Democratic policy goals and responsiveness to the COVID-19 crisis (Fidler, 2024). This shift aligns with the punctuated equilibrium model, in which external disruptions create opportunities for policy change, although institutional constraints prevent complete realignment (Baumgartner & Jones, 2005).

Budget allocations under both administrations reinforce these theoretical patterns. Under Trump, USAID spent an average of $3.375 billion annually on global health, primarily targeting infectious disease control and maternal and child health (KFF, 2024). However, Biden's administration increased global health funding to an annual average of $5.15 billion, prioritizing pandemic preparedness, health equity, and multilateral cooperation (KFF, 2024). This rapid increase in funding following a crisis aligns with Kingdon's (2003) multiple streams framework,

as the COVID-19 pandemic opened a policy window for a substantial shift in health security priorities.

Despite these shifts, institutional factors within USAID provide some continuity across administrations. Many of USAID's largest global health programs, such as PEPFAR and maternal and child health initiatives, continue to receive funding regardless of political leadership. This stability can be attributed to entrenched bureaucratic structures and congressional support, which prevent total global health policy realignment after each election cycle (Moss & Kates, 2021). This aligns with punctuated equilibrium theory, which predicts that while major changes can occur during policy windows, underlying institutional structures often sustain pre-existing programs (Baumgartner & Jones, 2005).

In sum, USAID's evolving global health priorities under Trump and Biden reflect a combination of political ideology, external shocks, and institutional constraints. While bounded rationality and political ideology explain partisan differences in funding priorities, punctuated equilibrium and focusing events theory highlight how crises like COVID-19 can disrupt existing policy patterns and trigger major shifts in funding and strategic focus. Together, these theoretical perspectives illustrate how political transitions, crises, and institutional constraints collectively determine the trajectory of U.S. global health policy, making USAID a key arena for studying the evolving nature of global health governance.

Methodology

Building on the theoretical frameworks that suggest both stability and change in policy attention under different administrations, this study employs a guided topic modeling approach to empirically examine shifts in USAID's global health priorities. Specifically, the methodology is informed by prior work using topic modeling to track policy attention changes. For example, Biesbroek et al. (2022) applied structural topic modeling to over 600 climate policy communications to compare shifts in attention across themes like governance, adaptation, and vulnerability. Similarly, others have used topic modeling as a proxy for policy attention in the wake of disruptive events – such as changes in government focus after the COVID-19 outbreak in China (Cheng et al., 2021) or shifts in U.S. offshore drilling discourse following oil price spikes (Hughes, 2018). Following these examples, this research analyzes differences in USAID global health focus between the Trump (2017–2021) and Biden (2021–2024) administrations. In contrast to earlier studies that relied on the Structural Topic Model in R (which has seen limited updates since 2018), this study utilizes the newer BERTopic algorithm in Python for greater flexibility and dynamic analysis (Grootendorst, 2023). The guided topic modeling approach allows the incorporation of domain knowledge and metadata (e.g. presidential term) to improve the interpretability of topics, ensuring that the analysis directly addresses how administrative changes correlate with shifts in policy attention.

Data Collection and Corpus Construction

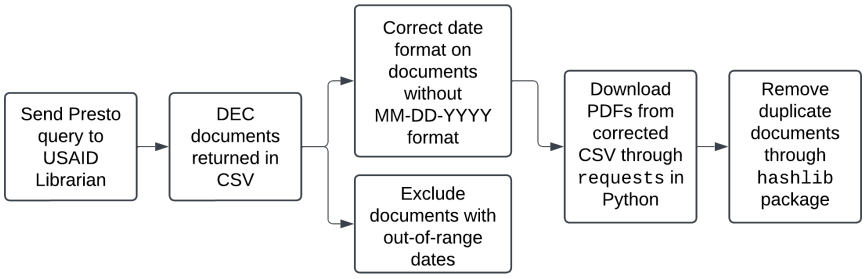
To systematically compare policy attention across administrations, documents were sourced from USAID's Development Experience Clearinghouse (DEC)—a public repository of technical and programmatic reports (Data.gov, 2024). Filtering was applied to isolate relevant global health documents published between January 20, 2017, and October 23, 2024, with a focus on strategic planning materials, congressional reports, and project overviews.

A total of 2,374 documents were retrieved (1,548 from Trump, 1,470 from Biden), with fewer Biden-era documents due to the ongoing term at the time of collection. Inclusion criteria ensured that only policy-relevant materials were analyzed, filtering out 208 unrelated categories while retaining 43 thematic areas (e.g., maternal health, infectious diseases, health systems), detailed in Appendix C. Likewise, 13 document types (such as reports to Congress, strategic planning documents, project overviews, policy documents) were retained out of 40 types

available, excluding those not pertinent to programmatic content. As API limitations prevented direct extraction, a USAID librarian assisted in exporting metadata and document links as a CSV file, ensuring a reliable dataset.

Figure 1.

International Development Document Collection Process and PDF Retrieval



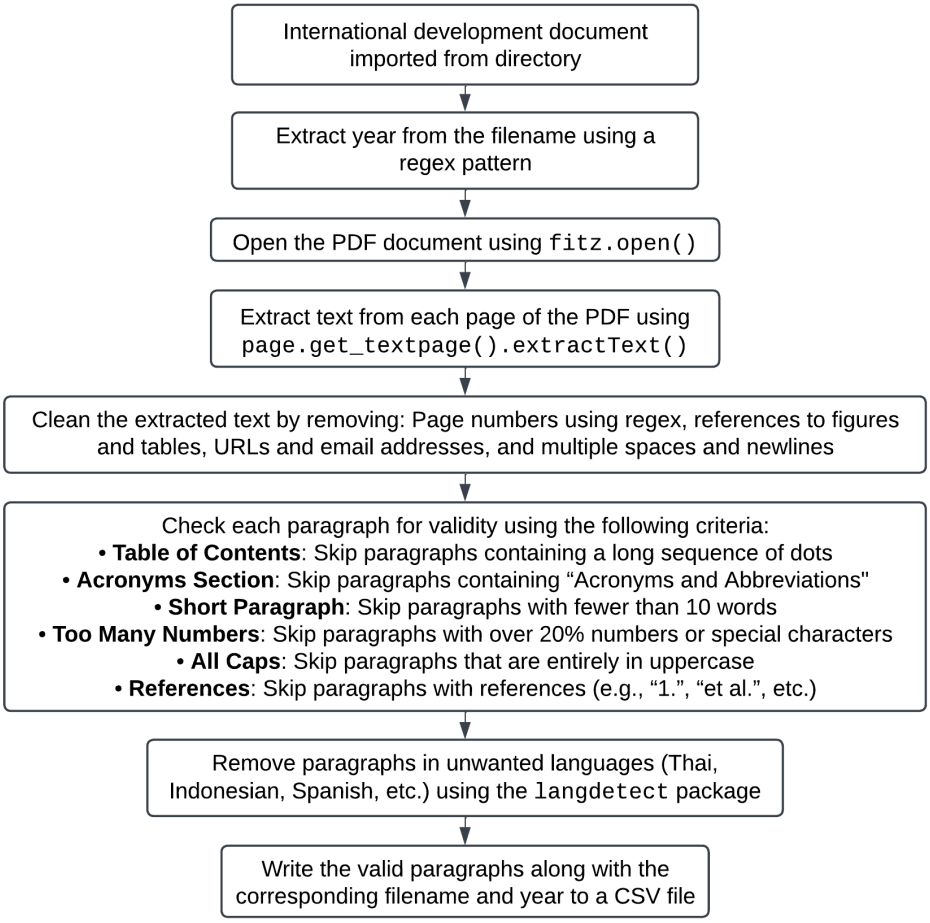
After obtaining the dataset through the Development Experience Clearinghouse (DEC), several cleaning steps were performed to prepare the corpus for analysis, shown in Figure 1. First, document metadata were checked for accuracy: entries with missing or clearly incorrect dates (e.g. typographical errors in year) were corrected or removed. Duplicate documents – identified via identical MD5 hashes – were eliminated to avoid double-counting in the analysis. These steps yielded a final dataset of 2,374 unique documents with correct date attribution. Ensuring consistent and accurate dates was particularly important because the analysis examines topic trends over time and across administrations. At this stage, each document was labeled with its corresponding presidential administration (Trump or Biden) to enable comparative analysis in later steps. The finalized corpus (with documents categorized by administration and time) provided a robust foundation for subsequent text preprocessing and topic modeling.

Text Preprocessing

To prepare the dataset for topic modeling, a systematic preprocessing pipeline, shown in Figure 2, was implemented to extract, clean, and filter paragraphs from the collected USAID documents. This process was necessary to ensure that only relevant and high-quality text was included in the analysis while maintaining the integrity of the original content structure.

Figure 2.

International Development Document Preprocessing and Final Corpus Preparation



The first step involved text extraction from PDF files using PyMuPDF (fitz), which was selected for its accurate handling of document layouts. The extracted text was then segmented into paragraphs, preserving natural breaks to ensure that contextually meaningful units of text were analyzed. While an initial attempt was made using PDFplumber, the extracted text exhibited coherence issues, leading to the selection of PyMuPDF as the preferred tool.

Following text extraction, a significant portion of preprocessing focused on filtering out irrelevant or unusable paragraphs, particularly those that could distort topic modeling results. Structural elements such as tables of contents, acronym lists, and reference lists were removed, as they did not contribute substantive content. Non-Latin script paragraphs, including text in Thai and Arabic, were excluded to maintain linguistic consistency, alongside formatting anomalies like entirely uppercase paragraphs, which could impact model coherence. To reduce

noise, extremely short paragraphs (fewer than 10 words) and those dominated by numerical data were also filtered out. Additionally, while the dataset primarily contained English-language documents, some sections included text in other languages, such as Bahasa Indonesian, French, Spanish, Arabic, and Thai, which were systematically removed. Finally, corrupt or unreadable documents were excluded due to extraction errors, ensuring the dataset remained clean and suitable for analysis. The full removal criteria and the number of documents removed in each step are available in Appendix F.

This filtering produced 93,800 valid paragraphs from 2,344 valid documents, providing a robust textual foundation. Unlike traditional NLP workflows, lemmatization and stopword removal were not performed, as BERTopic's pipeline integrates text transformations within its vectorization step (Grootendorst, 2023).

Guided Topic Modeling with BERTopic

The core methodological framework employs BERTopic, a topic modeling technique that integrates transformer-based embeddings with dimensionality reduction, clustering, and class-based TF-IDF to extract interpretable topics (Grootendorst, 2023). The implementation begins with document vectorization using the paraphrase-MiniLM-L6-v2 SentenceTransformer model, which generates 384-dimensional embeddings that effectively capture contextual meaning while maintaining computational efficiency (Reimers & Gurevych, 2019). This pre-trained model establishes a strong foundation for semantic similarity detection, ensuring that related documents are positioned in proximity within vector space.

To address the high dimensionality of these embeddings, Uniform Manifold Approximation and Projection (UMAP) reduces the vectors to 5 dimensions before clustering, using parameters that preserve both local neighborhoods and global structure (n_neighbors=15, n_components=5, min_dist=0.1, spread=1.5, with cosine distance metric). This dimensionality reduction step maintains semantic relationships between documents while creating a more manageable space for clustering algorithms to identify coherent document groups (Grootendorst, 2023).

The clustering implementation represents a significant methodological decision. While BERTopic typically employs HDBSCAN, this research pivots to KMeans clustering with n_clusters=50, balancing specificity and interpretability. This decision stemmed from practical

constraints—HDBSCAN proved computationally intensive and produced less interpretable clusters given USAID's structured global health topics. When HDBSCAN was used instead, topics had unexplainable spikes and were subjectively less coherent. KMeans offers a complete partitioning of the dataset, assigning every document to a topic, which aligns with Grootendorst's observation that KMeans can be particularly effective when underlying topics are well-defined (2023). To mitigate potential noise from this complete assignment approach, an aggressive stopword removal strategy incorporating both standard English and domain-specific stopwords was implemented (detailed in Appendix E).

Following clustering, topic representation was enhanced through BERTopic's class-based TF-IDF (c-TF-IDF) approach, which modifies traditional TF-IDF to operate at a cluster level rather than at the individual document level and is the default way that the model operates (Grootendorst, n.d.). This method concatenates all documents within a cluster into a single 'class document' and computes term frequency within each class before applying inverse document frequency weighting across all clusters (Grootendorst, n.d.). Additionally, L1-normalization is applied to account for differences in topic sizes, ensuring that frequent but non-distinctive terms do not dominate the representation. The resulting topic representations emphasize words that are both prevalent within a cluster and distinctive compared to other clusters, improving coherence and interpretability (Grootendorst, n.d.)

To support this computation, a CountVectorizer was configured to consider n-grams up to three words, enabling the identification of key phrases such as "health systems strengthening" as single features. The vectorizer model was also set to exclude documents appearing in less than 20 paragraphs in the dataset or more than 95% of the paragraphs. The enhanced stopword list was applied here to filter out generic corpus-wide terms like "quarterly" or "procurement", as well as unwanted terms that showed up in pilot results like "pennsylvania ave" or "ali". This ensures that prominent keywords for each topic remained specific and meaningful. This combination of multi-word concept capture and domain-specific stopword filtering significantly improves the granularity and interpretability of topic representations.

Domain Knowledge Integration and Topic Interpretation

A distinguishing feature of this methodology is its semi-supervised approach to topic discovery, incorporating domain expertise through seed topics derived from USAID's global

health framework. Rather than treating these predefined categories rigidly, an AI-driven keyword augmentation process using Anthropic's Claude 3.7 (2025) expanded each thematic area with additional relevant keywords, phrases, and sub-topics, included in Appendix D. This expansion enriched the vocabulary used to capture how USAID documents describe these issues across various contexts. A subsequent manual review ensured that the keywords were relevant and appropriate.

The seed topics were directly integrated into BERTopic's guided topic modeling approach, steering clustering toward meaningful, domain-relevant themes while still permitting data-driven adjustments (Grootendorst, 2023). This semi-supervised approach strikes a balance between leveraging existing domain knowledge and allowing unexpected themes or emerging trends to surface organically from the data, avoiding the imposition of a predetermined structure, like in a zero-shot approach that forces all documents into a seed topic. Furthermore, the model automatically determined an optimal number of topics based on clustering.

Topic interpretation was further refined through AI-assisted labeling using GPT-4o, which generated concise, policy-relevant labels based on each topic's representative keywords and sampled text passages. The prompt design emphasized clarity, succinctness, and alignment with global health and international development discourse. Each model-generated label underwent manual review to ensure accuracy and interpretability for stakeholders. This combined approach—seed topic guidance, AI-driven keyword expansion, guided clustering, and LLM-assisted labeling—creates a robust framework that balances domain expertise with data-driven discovery.

Temporal and Comparative Analytical Framework

The methodology extends beyond topic identification to enable nuanced temporal and administrative comparisons. BERTopic's topics_over_time functionality tracked the evolution of each topic throughout the 2017-2024 period, grouping documents into yearly time bins to observe frequency fluctuations (Grootendorst, 2023), which was adjusted in the final graph to be proportional, as the 2024 bin contained less paragraphs and thus appeared smaller. This temporal analysis identified notable patterns, including topics that surged or waned during specific years, providing insights into shifting USAID focus areas in global health.

Administrative comparison was conducted by quantifying topic prevalence between Trump administration documents (2017-2020) and Biden administration documents (2021-2024). For each discovered topic, the analysis calculated the percentage of documents from each administration classified under that topic, yielding comparative distribution profiles. This was complemented by a class-based TF-IDF analysis that treated the two administrations as distinct classes, highlighting terms characteristically associated with each administration's corpus. This dual approach—comparing topic distributions and distinctive terminology—provides a comprehensive view of policy emphasis differences between administrations.

Advanced Analytical Dimensions

The methodology incorporates additional analytical dimensions to deepen understanding of topic dynamics. Topic trajectory analysis quantified growth and decline patterns by measuring prevalence changes from the beginning to the end of the study period. This approach identified topics with the greatest growth (emerging issues gaining prominence) and steepest decline (fading priorities), constructing a narrative of evolving USAID global health focus over time. Document similarity analysis investigated corpus homogeneity within and between administrations using cosine similarity calculations on document embedding. By comparing within-group and between-group similarity statistics, this analysis determined whether each administration maintained a distinct thematic or linguistic profile. Higher internal similarity (with lower cross-administration similarity) would suggest discrete clusters in semantic space, while comparable cross-administration similarity would indicate continuity in topics and terminology despite leadership changes. This quantitative approach provides an additional perspective on continuity versus change, measuring the degree of shift in global health document focus beyond what topic labels and frequencies alone reveal.

Overall, this methodology blends computational rigor with domain knowledge. It combined state-of-the-art topic modeling techniques with human and AI-guided insights to ensure the extracted topics are meaningful in the context of USAID’s work. Each step — from data cleaning and model configuration to validation and comparative analysis — was designed to build confidence in the findings and to uncover how USAID’s global health priorities and communications have progressed from 2017 to 2024. The result is a thorough and nuanced

understanding of the thematic landscape of these documents, grounded in both quantitative analysis and policy context.

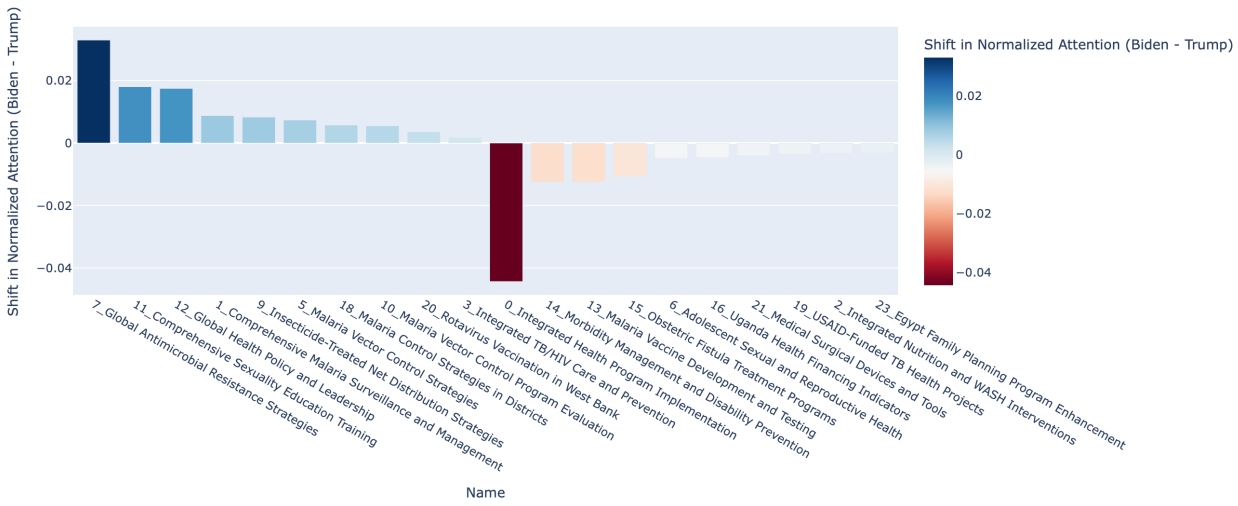
Analysis

This section presents findings from a computational examination of 2,344 USAID global health documents spanning two presidential administrations (2017-2024). The results reveal distinct patterns in policy attention across different global health topics, temporal shifts in topic prominence, and varying degrees of agenda diversity between administrations. The analysis proceeds in three parts: distribution and relative prominence of identified topics across the full corpus, the relationship between specific policy initiatives and topic emergence, and robustness and significance checks.

Topic Allocation across the Dataset

Figure 3.

Largest Topic Attention Differences Between Biden and Trump



The topic modeling analysis identified 29 distinct topics, with “Integrated Health Program Implementation” comprising approximately 60% of the content across both the Trump and Biden administrations (Figure 3). This predominance likely reflects USAID’s ongoing program execution, performance monitoring, and logistical management rather than fundamental shifts in policy direction. Through manual review, documents in this category primarily focused on implementation progress, health system performance assessments, and service continuity, reinforcing USAID’s long-term commitment to established global health programs.

Beyond this dominant category, the remaining 28 topics capture a range of thematic areas, including disease-specific programs such as malaria, HIV/AIDS, and tuberculosis; cross-cutting strategies like antimicrobial resistance and comprehensive sexuality education; and

targeted interventions in maternal and child health. Some of these topics exhibited notable shifts in attention between administrations, revealing changes in global health priorities over time. A key metric, attention_shift, measures these differences in policy focus, with larger values indicating areas where Biden placed significantly more emphasis than Trump (Figure 4). Topics such as "Global Antimicrobial Resistance Strategies," "Comprehensive Sexuality Education Training," and "Global Health Policy and Leadership" saw the most substantial increases under Biden, while others, including "TB/HIV Care and Prevention" and "Nutrition and WASH Interventions," remained relatively stable across both presidencies.

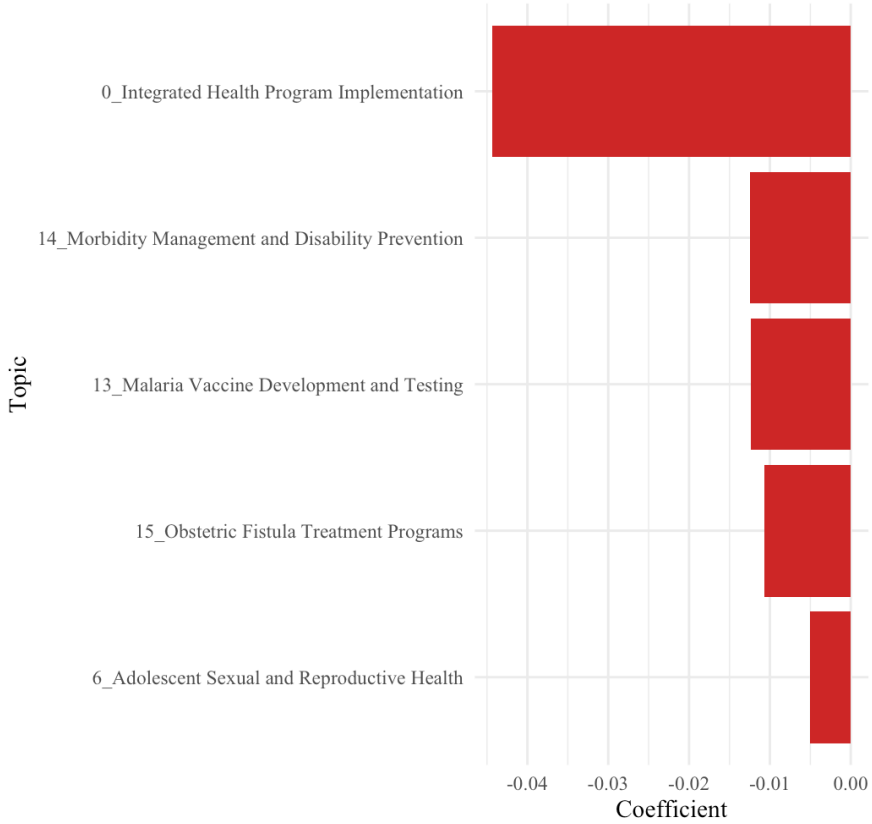
A methodological consideration in BERTopic analysis is the potential overlap of closely related topics. For instance, "Malaria Vector Control Strategies," "Malaria Vector Control Program Evaluation," and "Malaria Vaccine Development and Testing" appeared highly similar, raising questions about whether they should be merged for greater coherence. However, consolidating topics introduces an element of subjectivity that could bias results. To maintain methodological rigor, topics were preserved as originally classified by BERTopic, ensuring that the analysis accurately reflects the model's automated distinctions while still allowing for meaningful interpretation of policy attention shifts.

While these broader trends highlight areas of shifting policy attention, a more focused examination of the Trump administration's health programming reveals a pattern of maintaining established initiatives while prioritizing disease-specific interventions. USAID's documentation from this period indicates that many integrated health programs continued operations, even as foreign aid budgets faced proposed reductions. However, certain health initiatives, particularly those with clear, quantifiable outcomes, received heightened attention under Trump.

Topic Allocation Under Trump

Figure 4.

Five Topics with the Most Attention Under the Trump Administration Compared to Biden



The substantial representation of Integrated Health Program Implementation (62%) in USAID documentation during Trump's first term reflected the administration's approach to maintaining established health infrastructure while focusing on specific disease control initiatives. This emphasis on integration was evident across multiple regions and country programs.

USAID funded and implemented several major integrated health programs during this period, including the Integrated Health Program (IHP) in the Democratic Republic of Congo, which began operations in July 2018 (Hotchkiss et al., 2020). This comprehensive initiative focused on strengthening health systems, governance, and leadership at the provincial, health zone, and facility levels while increasing access to quality, integrated health services (Hotchkiss et al., 2020). Similarly, the USAID Integrated Health Systems Strengthening and Service Delivery (IHSS-SD) Activity in Pakistan, which began in October 2017, supported three health

system priorities: strengthening the health system at federal and local levels, operationalizing the Global Health Security Agenda, and improving maternal, child, and newborn health outcomes (JSI, n.d.).

The administration maintained these programs despite broader attempts to reduce foreign aid budgets. As noted in congressional reports, while the Trump administration proposed significant reductions in foreign assistance funding during budget cycles, many of these integrated health programs continued to operate with congressional support (Morgenstern et al., 2021). This continuity reflected a pragmatic approach to maintaining existing infrastructure while attempting to align programs with administration priorities.

Malaria Control Programs

Malaria control remained a key priority during Trump's first term, with continued support for the President's Malaria Initiative (PMI). According to USAID's reporting, PMI-focused countries in sub-Saharan Africa showed significant declines in all-cause mortality rates among children under five years of age, ranging from 10 to 67 percent (Koek, 2019). In fiscal year 2018 alone, financing to scale up insecticide-treated nets protected over 125 million people (Koek, 2019). This continued emphasis on malaria control represented one of the administration's most substantial investments in disease-specific programming.

The administration approved 24 Annual Malaria Operational Plans for the 24 priority Presidential Malaria Initiative countries and one sub-region in 2018, demonstrating ongoing commitment to this area (Koek, 2019). This focus aligned with the administration's preference for disease-specific interventions with measurable outcomes rather than broader systemic approaches.

Obstetric Fistula Management

Addressing obstetric fistula remained a significant focus area during Trump's first term, building upon earlier initiatives. USAID had previously implemented the Fistula Care project in 2007, which increased access to emergency obstetrical care and strengthened hospitals' capacity to provide surgical fistula repair (Drakes & Kim, 2013). This program continued during Trump's administration, reflecting the priority placed on maternal health interventions with clear, measurable outcomes.

The USAID-funded Fistula Care project worked throughout Trump's administration with community groups to increase understanding about obstetric fistula and steps to prevent this condition, while also conducting research to strengthen the quality of fistula services (Stanton, 2018). This focus area represented one of the clearer examples of program continuity from previous administrations.

Integrated TB/HIV Care

Tuberculosis and Human Immunodeficiency Virus (TB/HIV) integration remained a priority during Trump's first term, with USAID continuing to serve as the lead implementing agency for U.S. funding for global tuberculosis control. Despite tuberculosis incidence rates declining globally partially due to USAID projects, progress remained too slow to meet eradication targets by 2035, and TB continued to be the leading cause of death for people living with HIV (Curran, 2020). In response, USAID and PEPFAR funded the RISE project, a five-year initiative (2019–2024) designed to improve TB case finding, expand preventive treatment coverage, and strengthen integration of TB and HIV services. The initiative provided technical assistance to ministries of health and other local partners, supporting the adoption of newer diagnostics and shorter, more tolerable TB treatment regimens (Curran, 2020).

The Trump administration's approach to TB control maintained existing USAID programs while emphasizing disease-specific interventions with measurable outcomes. Estimates indicate that USAID and its partners have saved the lives of more than 58 million TB patients since 2000, a trend that continued through Trump's first term (Dall, 2025). The administration's focus on TB/HIV integration aligned with its broader global health strategy, prioritizing targeted, high-impact programs rather than systemic health system reforms.

Global Health Leadership

Documentation from Trump's first term shows a reduced emphasis on global health leadership initiatives. While maintaining bilateral health programs, the administration proposed significant reductions in foreign assistance funding during budget cycles between 2017 and 2021 (Morgenstern et al., 2021). This approach reflected the administration's "America First" philosophy, which prioritized bilateral over multilateral engagements.

The administration's budget proposals for fiscal years 2018 through 2021 consistently proposed cuts to environmental and global health programs, though these were often moderated by Congress (Morgenstern et al., 2021). For example, for FY2018, the administration proposed a 71% reduction in funding for environmental programs from FY2017 allocations (Morgenstern et al., 2021). This trend toward reducing American global health leadership presaged the more dramatic withdrawal from the World Health Organization during Trump's second term (Public Health on Call, 2025).

Comprehensive Sexuality Education

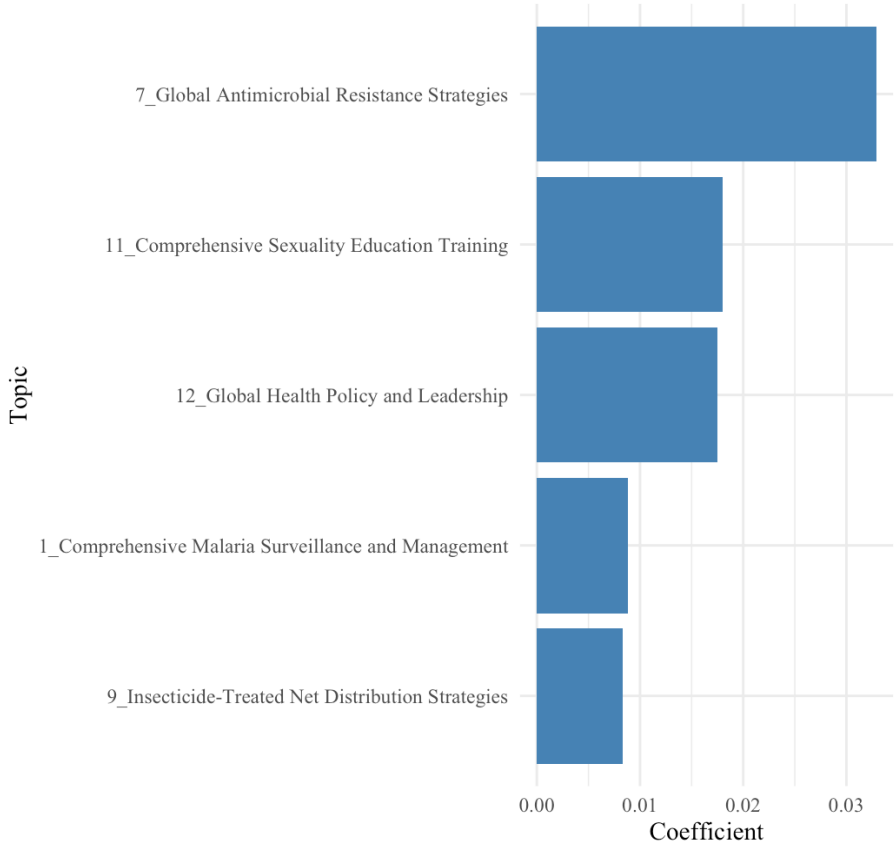
The Trump administration significantly deprioritized comprehensive sexuality education in favor of abstinence-focused approaches. Evidence of this deprioritization came through the expansion of the Mexico City policy, rebranded as "Protecting Life in Global Health Assistance" (PLGHA), which restricted funding to organizations that provided abortion services or referrals (Primorac, 2023). This expanded policy created obstacles for comprehensive sexuality education programs that were often implemented by organizations also involved in broader reproductive health services.

While Trump's approach centered on maintaining existing programs and emphasizing disease-specific interventions, the Biden administration demonstrated a more diversified focus. A comparison of topic allocation under Biden's first term reveals notable shifts, with certain global health areas receiving renewed or increased attention. These trends suggest a strategic rebalancing of USAID's health priorities, incorporating both established programmatic continuity and a broader commitment to emerging health challenges.

Topic Allocation Under Biden

Figure 5.

Five Topics with the Most Attention Under the Biden Administration Compared to Trump



In contrast, the Biden administration (2021–2024) exhibited a slightly broader distribution of topics, with "Integrated Health Program Implementation" comprising a smaller but still substantial 58% of document content. Notably, the Biden administration significantly increased attention to previously low-profile topics, including "Global Antimicrobial Resistance Strategies" (rising from <1% to approximately 4.2%) and "Global Health Policy and Leadership" (from nearly nonexistent to 1.8%). Additionally, “comprehensive sexuality education training” emerged as a new and distinct focus, likely reflecting policy changes such as the repeal of the Mexico City policy.

While the Biden administration maintained a strong focus on Integrated Health Program Implementation (58% of document content, compared to 62% during the Trump years), this slight reduction reflected a strategic rebalancing toward additional health priorities. The

administration continued investing in comprehensive health system strengthening while broadening the scope of integration.

The USAID Integrated Health System Activity in Timor-Leste exemplifies this sustained commitment, with a $17 million investment from July 2024 through June 2027. This initiative builds upon previous health system sustainability work while expanding its approach to include "strengthening primary health care-based health systems and improving demand generation approaches to achieve health outcomes" (USAID, n.d.). The program maintained focus on family planning, reproductive health, maternal health, and nutrition components that characterized integrated approaches under the previous administration.

This continuity-with-evolution approach represented the Biden administration's recognition of integrated health programs as foundational to effective global health assistance. Rather than dramatically reducing this focus area, the administration maintained substantial investment while creating space for emerging priorities within the global health landscape.

Significant Expansion of Global Antimicrobial Resistance Strategies

Perhaps the most dramatic shift in USAID's focus under the Biden administration occurred in Global Antimicrobial Resistance Strategies, which rose from less than 1% of documentation during the Trump years to approximately 4.2% in the Biden era. This substantial increase reflected a comprehensive policy initiative to address what the administration viewed as a critical global health security threat.

In January 2024, USAID launched the Antimicrobial Resistance Access and Stewardship Initiative (AMRASI), a "groundbreaking initiative that will use a sustainable, market-driven approach to address critical gaps in access to diagnostics and antimicrobials while incentivizing their appropriate use in low- and middle-income countries" (Milic, 2024). This coalition, led by the Clinton Health Access Initiative (CHAI) and Global Environment and Technology Foundation (GETF), represented a significant new investment in combating antimicrobial resistance globally.

The President's budget request for FY 2023 further demonstrated this shift, including "significant increased funding to revitalize and sustain antimicrobial research and development" and enhanced support for CDC's Antibiotic Resistance Solutions Initiative (IDSA, 2022). The

administration highlighted antimicrobial resistance as a strategic priority within its global health security agenda, integrating it into broader pandemic preparedness efforts.

Reasserting Global Health Leadership and Expanding Public Health Priorities

The Biden administration dramatically reengaged with global health policy, reversing many of the previous administration's isolationist measures and restoring U.S. leadership in international health governance. Under Biden, the United States renewed commitments to multilateral health organizations, strengthened global partnerships, and expanded investments in pandemic preparedness, reproductive health, and disease prevention.

From 2020, the administration had invested more than $3 billion in global health security, advancing what it described as "a bold agenda to prevent the devastating toll of outbreaks and pandemics" (The White House, 2024). This renewed focus was exemplified by the decision to remain in the World Health Organization (WHO), reversing the previous administration's withdrawal notification. Similarly, the administration restored funding to the United Nations Population Fund (UNFPA), a critical partner in reproductive health programs that had lost U.S. support under Trump (The White House, 2021). These moves signaled a shift toward cooperative global health governance, reinforcing the belief that strategic, multilateral investments could yield measurable health security benefits.

A major policy shift within this broader agenda was the expansion of comprehensive sexuality education training, reflecting the administration's commitment to reproductive health as a key public health priority. This shift began with the January 28, 2021, memorandum *"Protecting Women's Health at Home and Abroad,"* which rescinded the Mexico City policy (Global Gag Rule). Previously, this policy had restricted all U.S. global health assistance—approximately $9 billion annually—from funding organizations that provided abortion-related services or referrals (Abrams, 2021). Beyond limiting reproductive health services, studies found that the policy also disrupted U.S.-funded HIV programs and, paradoxically, led to higher abortion rates due to gaps in contraceptive access (Abrams, 2021).

With these restrictions lifted, USAID expanded its engagement in comprehensive sexual and reproductive health education, which was further reinforced by the National Strategy on Gender Equity and Equality (October 2021). This strategy called for permanently eliminating restrictions like the Mexico City policy ensuring sustained investment in sexual and reproductive

health services (The White House, 2021). Policy experts urged the administration to "double down on bilateral and multilateral investments to protect sexual and reproductive health and rights," advice that appears to have shaped USAID's increasing focus on integrated reproductive health education programs during the 2021–2024 period.

Through these global health initiatives, the administration sought to restore the U.S. as a leading force in international health governance, emphasizing that "smart, targeted investments can save lives" (The White House, 2024). The policy realignment reflected a fundamental shift away from narrow, disease-specific interventions toward a broader, equity-focused approach that prioritized multilateral cooperation, pandemic preparedness, and reproductive health as key components of global health security.

Robustness Checks

Permutation testing with 100 iterations confirmed the statistical significance of observed differences between administrations. Nearly all topics demonstrated shifts in attention significant at the $p < 0.05$ level, strongly indicating that the identified changes were not due to random variation. Only "Multisectoral Nutrition Governance in Nepal", "Integrated TB/HIV Care and Prevention", "Global Health Systems and Policies", and "Mobile Health Monitoring in IRS Campaigns" (i.e. malaria spraying indoors) did not have statistically significant differences.

To assess the quality and interpretability of the extracted topics, this study employed two coherence metrics: c_v and u_mass, calculated using Gensim's CoherenceModel. The c_v score for the entire dataset was 0.5595, reflecting a moderate level of coherence. This metric evaluates how often a topic's most representative words co-occur within the corpus, with values closer to 1 indicating better-defined and more interpretable topics.

The u_mass metric, which relies on word co-occurrence within documents rather than external embeddings, provided additional insights into individual topic coherence. UMass scores are negative, with values closer to zero indicating greater internal consistency. The results varied across topics, suggesting differences in thematic clarity. Topics such as "Adolescent Sexual and Reproductive Health" (-0.69) and "Comprehensive Sexuality Education Training" (-0.75) exhibited relatively high coherence, indicating that their key terms appeared together frequently within the dataset. In contrast, topics such as "Global Antimicrobial Resistance Strategies" (-2.71) and "Malaria Vaccine Development and Testing" (-2.63) showed slightly weaker

coherence, suggesting that these clusters contained more diverse or less tightly related documents.

At the lower end of the coherence spectrum, topics such as “Uganda Health Financing Indicators” (-9.63) and “Rotavirus Vaccination in the West Bank” (-12.48) exhibited poor coherence, indicating fragmentation or topic dilution. This pattern is likely due to the inclusion of specific geographic references, as it is unlikely that an entire topic would be dedicated exclusively to a single territory such as Uganda or the West Bank. These results may reflect methodological challenges, such as overly granular topic segmentation, where certain themes were broken down into excessively narrow categories, or document sparsity, where topics with fewer representative documents lacked the lexical density needed to form well-defined clusters. Additionally, low coherence scores may also stem from cross-topic contamination, in which documents covering multiple policy areas were grouped under a single theme, thereby reducing the semantic distinctiveness of the topic.

Results from a cosine similarity analysis indicate only slight differentiation, with within-administration similarity scores of 0.319 (Trump) and 0.313 (Biden) compared to a cross-administration score of 0.315. This suggests that while policy attention shifted across administrations, the overall structure, language, and framing of USAID’s global health documentation remained largely stable.

The findings highlight both the strengths and limitations of the topic modeling approach used in this study. While most topics were interpretable and meaningfully aligned with USAID’s global health focus, certain clusters exhibited thematic overlap or lacked clear conceptual boundaries. To improve coherence, future iterations of this analysis could refine topic segmentation by merging highly similar topics, adjusting clustering parameters to optimize topic distinctiveness, or implementing enhanced stopword removal techniques to reduce noise from policy jargon and generic terminology. Despite these challenges, the coherence metrics provide critical validation of the model’s ability to capture shifts in USAID’s policy attention while identifying areas where further refinements could improve the clarity and granularity of topic categorization.

Discussion

This study aims to empirically assess how the U.S. Agency for International Development (USAID) directed its attention to global health topics under the Trump and Biden administrations. It specifically addresses the research question: *How did differences in the level and focus of policy attention under President Trump and President Biden influence the priorities of U.S. global health programs?* The analysis revealed substantial shifts in USAID's global health policy priorities between the Trump (2017–2020) and Biden (2021–2024) eras, reflecting changes in emphasis corresponding to the change in administration.

The goal was to measure and compare policy attention to global health under two different administrations. Earlier analyses suggested that Republican administrations tend to scale back multilateral health initiatives and focus on sustaining established disease-specific programs (Smith & Shiffman, 2016), and this study's results confirm this partisan pattern. Under Trump, USAID's global health attention centered on continuing existing vertical programs (e.g. targeting malaria and HIV/TB), whereas under Biden there was a marked rise in attention to multilateral cooperation, global health leadership, and comprehensive sexual and reproductive health education. This outcome aligns with prior observations in the literature. For instance, the U.S. Government Accountability Office reported that funding for reproductive health programs fell during the Trump era (2020) – paralleling this study's finding that family planning topics virtually disappeared from Trump-era documents and then re-emerged under Biden. Such alignment with existing research underscores that political ideology plays a significant role in shaping U.S. global health priorities.

However, this study also uncovered a surprising trend: the topic of Adolescent Sexual and Reproductive Health had greater attention in Trump's documents than Biden's. This is counterintuitive, given expectations that a Republican administration would de-prioritize such issues. One possible explanation is that many of these programs were legacy efforts that continued through 2017–2020 despite the administration's stance, whereas the Biden administration may have integrated adolescent health into broader education initiatives (explaining the rise in the Comprehensive Sexuality Education topic under Biden). This finding suggests that not all health priorities align neatly with partisan shifts – institutional momentum and pre-existing project pipelines can sustain attention on certain issues even under less supportive political leadership.

Furthermore, despite the COVID-19 pandemic being a major global health crisis—and despite the guided topic modeling approach explicitly including COVID-19 and pandemic-related keywords as seed terms—the analysis did not yield a distinct COVID-19-focused topic. Instead, references to COVID-19 appeared dispersed across multiple topics, including health systems strengthening and antimicrobial resistance (AMR). This aligns with Birkland's (1998) theory, which proposes that major focusing events elevate existing issues onto the policy agenda rather than creating entirely new, distinct policy streams. Thus, rather than forming a standalone topic, the COVID-19 pandemic was absorbed into pre-existing global health priorities, reflecting its broad impact across multiple policy domains.

These findings reinforce earlier qualitative analyses that noted the Trump administration placed less emphasis on multilateral health initiatives and more on continuing established disease programs. For instance, the U.S. Government Accountability Office (2020) found that under Trump funding for reproductive health fell – consistently, this analysis shows topics like family planning virtually disappeared in Trump-era documents, whereas they re-emerged under Biden.

Overall, the patterns of attention observed fit the bounded rationality model – each administration had a limited set of issues it highlighted, resulting in trade-offs. When one issue gained priority, another lost prominence, illustrating the fact that not all issues can be balanced equally (Jones, 1999). The transition between administrations acted as a policy window in the Kingdon sense, especially for global health security: the conjunction of the COVID crisis and new leadership allowed previously underemphasized issues (like AMR) to surface in the agenda. At the same time, the data reflect punctuated equilibrium: after relative stability during each term, the handover of power led to a punctuation – a large shift in the distribution of topics (as evidenced by the statistically significant changes).

The volatility observed in USAID's policy attention raises critical concerns about global health stability. Organizations dependent on U.S. assistance must navigate unpredictable shifts in funding priorities, and with only 8% of preexisting USAID grants expected to remain intact, strategic adaptation is necessary. Future research should explore how these shifts translate into tangible funding allocations and on-the-ground program effectiveness. Additionally, integrating qualitative content analysis could provide deeper contextual insights into how USAID justifies these shifts in global health priorities.

Conclusion

This study provides a quantitative assessment of how USAID's global health policy attention evolved under different administrations. Through topic modeling analysis, a clear divergence in priorities becomes clear: the Trump administration emphasized disease-specific, bilateral health programs, while the Biden administration expanded focus to multilateral engagement, reproductive health, and antimicrobial resistance. These shifts highlight the extent to which political ideology drives global health funding priorities—and how each administration eagerly redefines what constitutes a "global health priority."

Political transitions do not occur in isolation; they have reverberating impacts around the world. The recent restructuring of USAID, including the elimination of 92% of grants and major workforce reductions (Haltiwanger & Lu, 2025; Tanis & Langfitt, 2025), suggests that the agency's capacity to implement global health programs in a second Trump term will look fundamentally different from the first. This contraction of U.S. global health engagement could open the door for other global actors—such as China and Russia—to fill the leadership vacuum (Duke Global Health Institute, 2025).

Several challenges arose from the data itself, including the reliance on publicly available documents and the exclusion of classified information, which could have provided deeper insights. The DEC API's limitations during the study period as well as the restructuring of USAID in Trump's second term made it difficult to address errors or expand the dataset after the cutoff date. Future research should aim to address these gaps, particularly by exploring alternative data collection methods and ensuring the transparency and accessibility of USAID's historical data.

Ultimately, this study underscores a larger tension in international development: while U.S. global health funding is extensive, its priorities are highly susceptible to political shifts, creating instability and risk for long-term programs. If global health stakeholders wish to mitigate the risks of ideological volatility, they must proactively diversify funding sources, strengthen multilateral collaborations, and advocate for bipartisan protections for essential global health programs. In a landscape where political transitions dictate policy direction, resilience and adaptability are no longer optional—they are essential for survival.

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Signature Work Narrative

Throughout my academic journey, I have developed a deep appreciation for the interconnectedness of global health systems, policy design, and the analytical tools used to assess and evaluate health interventions. My Signature Work project embodies this evolution, synthesizing insights from various courses and practical experiences into a focused analysis of U.S. policy attention in global health. Three central themes have emerged throughout this journey: the importance of system-level analysis in international development, the necessity of valid research design, and the transformative role of modern technology in research. These themes have shaped my approach to this project and align with my long-term goal of working at the intersection of global health policy and program evaluation. My work with USAID policy research has provided me with valuable insights into how international organizations allocate resources and assess impact—skills I aim to further refine during my MS in Global Health at NTU before transitioning into a policy advisory role with organizations such as the Millennium Challenge Corporation, the U.S. Department of State, or the World Health Organization.

The Importance of System-Level Analysis in International Development

A major lesson I've learned is the value of analyzing global health through a systems perspective. This approach involves understanding how interconnected components—such as governance, funding mechanisms, and social determinants of health—interact to influence health outcomes. The concept became fundamental during my Global Health Systems course at Duke. My independent research on HIV/AIDS funding in Vietnam allowed me to explore the strengths and vulnerabilities of vertically integrated health systems. By examining Vietnam's collaboration with U.S. and U.N. agencies, I gained insight into how policy frameworks and funding priorities are shaped by complex local and international dynamics.

An interview with an American epidemiologist who had worked for the CDC deepened my understanding of the fragility of these systems. His experience highlighted how political resistance and economic shifts can undermine even well-funded programs. This insight has been pivotal to my Signature Work project, as it reinforces the importance of evaluating U.S. policy attention not only through financial allocations but also in terms of the structural impacts and long-term sustainability of interventions. Understanding these systemic vulnerabilities has

strengthened my commitment to global health policy evaluation. In my future career, I hope to contribute to evidence-based strategies that fortify health systems in resource-limited settings.

The theme of systems thinking also emerged in my War and Public Health in Africa course, which explored how conflict exacerbates systemic vulnerabilities. Whether analyzing the impact of civil wars on health systems or studying the cascading effects of health crises like Ebola in politically unstable regions, I learned that effective interventions must address underlying systemic issues, not just the symptoms. This insight has informed my Signature Work project, particularly as I explore how U.S. policy shifts respond, or fail to respond, to systemic health crises. I believe that strong knowledge of how to improve and rehabilitate global health systems is crucial in addressing the challenges of the 21st century.

The Necessity of Valid Research Design

Another critical aspect of my academic journey has been learning how to design rigorous research. The Program Evaluation course was pivotal in teaching me how to craft systematic, evidence-based evaluations. In this course, I honed skills in hypothesis testing, stakeholder analysis, and designing replicable research frameworks. One impactful project involved designing an evaluation for a housing-first program aimed at reducing homelessness in Phoenix. The process of defending our design before the class taught me to balance research objectives with real-world constraints—an experience that directly informed the methodological framework for my Signature Work project.

In addition to technical skills, this course emphasized the importance of validity and reliability in research. For my Signature Work project, these lessons have proven invaluable. As I analyze shifts in U.S. policy attention, I rely on robust methodologies, such as BERTopic, to ensure my findings are not only insightful but also replicable. The program evaluation framework also highlighted the value of considering multiple perspectives in research, a principle I applied in my analysis of USAID documents by incorporating contextual factors like political transitions and global health crises.

This experience has prepared me to design and evaluate large-scale policy interventions—skills I will continue to develop during my graduate studies and apply in future global health policy roles focused on impact assessment and program improvement.

The Transformative Role of Modern Technology in Research

Modern technology has revolutionized how we approach global health challenges, and its integration into my academic work has been transformative. My Signature Work project, which uses BERTopic to analyze USAID's policy attention, illustrates how cutting-edge tools can reveal patterns and trends that would be difficult to uncover through manual analysis alone. This focus on technology was fostered through my coursework and independent research, where I first encountered data visualization and text analysis tools.

In Program Evaluation, I learned how software platforms can enhance the evaluation process by enabling real-time data collection and analysis. Collaborating with classmates to create mock dashboards for our housing-first program evaluation demonstrated how technology can make complex findings accessible to diverse stakeholders. These skills have been crucial in my Signature Work project, where I use advanced text analysis methods to interpret large datasets of USAID documents.

Given the increasing role of AI and machine learning in global health policy, I see immense potential in leveraging these technologies to improve decision-making in international health agencies. In my future career, I hope to further explore how computational methods can enhance policy analysis and the implementation of effective solutions in global health.

The promise of transformers and reasoning models in text-based computational research

Before embarking on this project, my understanding of how to structure datasets within a Python environment and process them for meaningful analysis was quite limited. I frequently encountered roadblocks and errors in my code and found it difficult to navigate the complexities of presenting and processing large-scale datasets effectively. As an undergraduate researcher, I had little experience with the intricacies of computational methods like those used in natural language processing, particularly in areas like topic modeling.

However, the introduction of powerful models such as OpenAI's o3-mini-high, GitHub Copilot Pro, and Perplexity's Deep Research model greatly enhanced my workflow. These tools proved invaluable in several ways. For instance, they served as effective "bug checkers," helping me identify issues with my code that I might have otherwise been severely hindered by. More importantly, these models assisted with presentation, providing insights into how to structure the data for clearer visual output and more interpretable results. Given my previous lack of

experience, this functionality saved me a significant amount of time, allowing me to focus more on the analytical aspects of the project rather than troubleshooting technical challenges.

It's important to note, however, that relying on these models did come with certain limitations. Much of the existing documentation for these tools, while robust, doesn't always offer tailored advice for specific datasets or help improve the coherence of models like BERTopic. There is often a gap in providing practical, step-by-step guidance on overcoming dataset-specific issues, as corpuses for natural language processing are too large for a model to evaluate in an economic manner. In this sense, models like o3-mini-high and Deep Research served as both a crutch and a resource, helping me navigate challenges quickly but also highlighting the need for more accessible resources and documentation for researchers with limited computational expertise.

Many researchers and academics often regard these tools with skepticism, dismissing them as prone to hallucinations and plagiarism. However, in my experience, these models offer significant promise by providing new ways to reason through substantial amounts of data, which may not always be feasible with traditional methods or coursework alone. They allow researchers to explore areas that are not extensively covered in academic settings, offering insights into computational techniques that would otherwise remain out of reach.

It is worth noting that BERTopic itself is a transformer-based model, which can utilize advanced tools like GPT-4o for labeling topics. I have incorporated this approach in my analysis to improve the accuracy of topic identification, further highlighting the utility of such models in this field. While the use of these models might be contentious or controversial, they serve as powerful resources for exploring and refining research in ways that traditional methods cannot always facilitate.

While these tools offered a valuable shortcut, they also underscored the importance of developing a deeper understanding of the computational methods behind them. This project has significantly improved my understanding of these models and has encouraged me to explore how they might be leveraged more effectively in future research endeavors.

Conclusion

The themes of system-level analysis, valid research design, and the transformative role of modern technology have shaped both my academic growth and my Signature Work project.

These themes reflect lessons from my coursework and research, and together they have deepened my understanding of global health policy and prepared me for the challenges ahead.

As I look forward, I am excited to continue applying these principles to create meaningful, systemic change in global health. My experiences throughout my Signature Work project have reinforced my commitment to advancing equitable and effective health systems worldwide. This work has been invaluable in preparing me for my next step: the MS in Global Health at National Taiwan University, where I will continue to refine my research skills and explore how policy interventions can be optimized for real-world impact. Ultimately, I aspire to work in global health policy implementation and evaluation, contributing to the development of evidence-based solutions that strengthen health systems globally.

Appendix A: Scripts for Data Collection and Analysis

GitHub Repository: https://github.com/liampwl/signature-work

Appendix B: DEC Queries and Filtering

I constructed a Presto query based on appropriate column identifiers, determined through DEC's power search function. Using "AND" operators exclusively ensured complete and accurate query results, avoiding partial document returns. Due to the DEC API's 2,000-record retrieval limit per query, I executed separate queries for each administration's period.

Given the extensive corpus of U.S. international development documents in the DEC, applying strict inclusion and exclusion criteria ensures that selected documents accurately represent USAID policy priorities, particularly in health-related initiatives. The DEC offers two key filters for this: "Primary Subject" and "Document Type." A full list of included and excluded categories, along with their frequencies in the corpus, is provided in Appendix B. For the **Primary Subjects** filter, I included any category directly mentioning "health," such as "Alternative Health Delivery Services" or "Health Finance," as well as related areas managed by USAID's Bureau for Global Health, like "Human Nutrition." Topics related to infectious disease management, including "HIV/AIDS" and "Tuberculosis," were also included since they fall within the Bureau for Global Health's responsibilities. Conversely, categories more closely related to the Bureau for Humanitarian Assistance, such as those focused on direct food assistance, were excluded to maintain focus on health-related interventions like malnutrition. I conducted a manual review of the primary subjects to ensure comprehensive coverage of health and infectious disease topics.

For the **Document Types** filter, I set the objective criterion that the document must be produced by or for USAID to ensure alignment with agency policy rather than the priorities of local partners, NGOs, or contractors. Non-USAID documents were excluded, as well as document types unrelated to policy formulation or dissemination, such as trip reports and audit reports. Ambiguities arose with categories like "Journal Articles," which include a mix of policy-oriented and technical content. To maintain a clear policy focus, I excluded these. However, documents related to funding mechanisms, such as "Loan/Grant Agreements," were retained as they contain specific directives related to USAID policy. Documents connected to individual projects or programs, such as "Program/Project Evaluation Guides" and "Preliminary Designs," were also included, as they reflect broader policy priorities through their programmatic focus.

Filtering

Upon receiving the CSV, I imported it into Excel via Power Query to verify data accuracy. Manual checks ensured all entries matched the intended date ranges, as the document creation date in DEC did not always align with the "Publication Date" field. During this process, I removed 432 documents published before January 20, 2017. An additional 199 documents lacked publication dates, so I reviewed the corresponding PDFs and manually added the dates where available, removing the document if no date was clear. Excel formulas (assisted by ChatGPT) were then used to standardize date formats for uniformity.

For documents with only partial date information:

- Month and Year Only: Documents with only a month and year were assigned a publication date as the first day of that month, e.g., "23-Jan" was set as "01/01/2023".
- Reporting Periods: Documents listing only a reporting period were assigned the first day of the month following the period's end date, e.g., a report for "January–March 2021" was set as "04/01/2021."
- Year Only: Documents providing only a year were assigned a date placeholder as January 1.

Query for the Dates of Trump's Presidency

datecreated:([20170120120000 TO 20210120120000]) AND (Documents.Class=("Vitamins and vitamin deficiency" OR "Tuberculosis" OR "Reproductive health care" OR "Private health care" OR "Primary health care" OR "Nutrition education" OR "Nutrients" OR "Nutrition" OR "Medical equipment" OR "Maternal child health care" OR "Malaria" OR "Integrated health care" OR "Infant nutrition" OR "Immunization" OR "Human nutrition" OR "HIV / AIDS" OR "Health research" OR "Health professional education" OR "Health policy" OR "Health occupations" OR "Health insurance" OR "Health finance" OR "Health facilities" OR "Health education" OR "Health delivery" OR "Health care education" OR "Health care case management" OR "Health care administration" OR "Health care" OR "Health (General)" OR "Family planning services" OR "Family planning education" OR "Family planning behavior" OR "Family planning" OR "Environmental / preventive health care" OR "Diseases" OR "Disease prevention and control" OR "Contraceptive methods" OR "Community health workers" OR "Community health care delivery" OR "Child nutrition" OR "Alternative health delivery services")) AND

(Documents.Language_of_Text=("English")) AND (Documents.Bibtype_Name=("USAID Report to Congress" OR "USAID Strategic Planning Document" OR "USAID Project/Program Overview" OR "USAID Program Planning Document" OR "USAID Policy Document" OR "USAID Memorandum of Understanding (MOU)" OR "USAID General Program Document" OR "USAID Contract/Grant Agreement" OR "Project/Program/Activity Design Document" OR "Preliminary Design" OR "Loan/Grant Agreement" OR "Annual Report"))

Query for the Dates of Biden's Presidency

datecreated:([20210120120000 TO 20241023235959]) AND (Documents.Class=("Vitamins and vitamin deficiency" OR "Tuberculosis" OR "Reproductive health care" OR "Private health care" OR "Primary health care" OR "Nutrition education" OR "Nutrients" OR "Nutrition" OR "Medical equipment" OR "Maternal child health care" OR "Malaria" OR "Integrated health care" OR "Infant nutrition" OR "Immunization" OR "Human nutrition" OR "HIV / AIDS" OR "Health research" OR "Health professional education" OR "Health policy" OR "Health occupations" OR "Health insurance" OR "Health finance" OR "Health facilities" OR "Health education" OR "Health delivery" OR "Health care education" OR "Health care case management" OR "Health care administration" OR "Health care" OR "Health (General)" OR "Family planning services" OR "Family planning education" OR "Family planning behavior" OR "Family planning" OR "Environmental / preventive health care" OR "Diseases" OR "Disease prevention and control" OR "Contraceptive methods" OR "Community health workers" OR "Community health care delivery" OR "Child nutrition" OR "Alternative health delivery services")) AND (Documents.Language_of_Text=("English")) AND (Documents.Bibtype_Name=("USAID Report to Congress" OR "USAID Strategic Planning Document" OR "USAID Project/Program Overview" OR "USAID Program Planning Document" OR "USAID Policy Document" OR "USAID Memorandum of Understanding (MOU)" OR "USAID General Program Document" OR "USAID Contract/Grant Agreement" OR "Project/Program/Activity Design Document" OR "Preliminary Design" OR "Loan/Grant Agreement" OR "Annual Report"))

Appendix C: Included Primary Subjects and Document Types

Included Primary Subjects

- Alternative health delivery services
- Child nutrition
- Community health care delivery
- Community health workers
- Contraceptive methods
- Disease prevention and control
- Diseases
- Environmental / preventive health care
- Family planning
- Family planning behavior
- Family planning education
- Family planning services
- Health (General)
- Health care
- Health care administration
- Health care case management
- Health care education
- Health delivery
- Health education
- Health facilities
- Health finance
- Health insurance
- Health occupations
- Health policy
- Health professional education
- Health research
- HIV / AIDS
- Human nutrition
- Immunization
- Infant nutrition
- Integrated health care
- Malaria

- Maternal child health care
- Medical equipment
- Nutrients
- Nutrition
- Nutrition education
- Primary health care
- Private health care
- Public health care
- Reproductive health care
- Tuberculosis
- Vitamins and vitamin deficiency

Excluded Primary Subjects

- Access to education
- Adult education
- Agribusiness
- Agricultural development
- Agricultural economics
- Agricultural education
- Agricultural enterprises and cooperatives
- Agricultural finance
- Agricultural management
- Agricultural markets
- Agricultural policy
- Agricultural research
- Agricultural technology
- Agriculture (General)
- Air transportation
- Alternative energy technology
- Animal husbandry
- Animal nutrition and health
- Aquaculture and fisheries
- Basic education
- Biological diversity and ecology
- Breastfeeding
- Business enterprises
- Capital assistance (money transfers)
- Cash crops
- Child survival
- Civil society
- Climate change
- Coastal resource management
- Communications (General)
- Communications media and equipment
- Communities
- Complex emergency
- Conflict prevention
- Conflict resolution
- Cooperatives
- Credit
- Crop diseases and control

- Crop pests and control
- Crop production
- Crop protection
- Culture and society
- Demobilization
- Democratization
- Demography and vital statistics
- Development activity planning and management
- Development assistance
- Development cooperation
- Development finance
- Development organizations
- Development program and activity evaluation
- Development program planning and management
- Disaster prevention
- Disaster recovery
- Disaster relief and response
- Displaced persons
- Economic administration
- Economic cooperation
- Economic growth and development
- Economic policy
- Economic reform
- Economic regions
- Economic research
- Economic sectors
- Economics (General)
- Education (General)
- Education administration
- Education policy
- Education research
- Educational delivery
- Educational development
- Elections
- Electric power
- Employment
- Energy (General and research)

- Energy conservation
- Energy economics
- Energy policy
- Energy resource development
- Energy supply
- Energy technology
- Environmental degradation
- Environmental disasters
- Environmental management
- Environmental planning
- Environmental policy
- Environmental protection and conservation
- Environmental technology
- Evaluation
- Exports
- Famine and malnutrition
- Farming systems
- Fertilizers
- Finance
- Financial (capital) markets
- Financial institutions
- Financial management
- Food aid programs
- Food crops
- Food processing
- Food security
- Food supply
- Foreign assistance
- Forestry
- Gender analysis
- Gender based violence
- Gender equality
- Gender issues (General)
- Girls' education
- Governance
- Government and law (General)
- Government programs
- Government reform

- Higher education
- Housing
- Housing finance
- Housing policy and planning
- Human behavior
- Human capacity development
- Human rights and social justice
- Human settlements (General)
- Humanitarian assistance
- Hydrology and water resources
- Industry and technology (General and research)
- Information management, systems and equipment
- Internal conflict
- International politics
- International trade
- Investment
- Irrigated farming and water management
- Labor (General and research)
- Labor economics
- Labor relations
- Land mines
- Land reform
- Land transportation
- Laws and legislation
- Legislative strengthening
- Livestock
- Management (General and research)
- Management operations and methods
- Management reform and development
- Management training
- Markets
- Maternal nutrition
- Natural resources (General)
- Natural resources and the environment (General, research)
- Natural resources management
- Nonformal education
- Nonrenewable energy resources
- Non-traditional crops

- Occupations
- Organizations
- Participant training
- Performance measurement
- Personnel management
- Plant breeding, seeds and physiology
- Political development
- Pollution
- Population and demography (General)
- Population groups
- Population surveys
- Post conflict societies
- Potable water
- Poverty reduction
- Private sector
- Private voluntary organizations
- Privatization
- Psychology
- Public administration
- Public land records and registration
- Quality of life
- Railroads
- Reengineering
- Regional development
- Renewable energy resources
- Renewable natural resources
- Research (General)
- Resilient societies
- Roads and road transport
- Rule of law
- Rural areas / rural development
- Safety
- Sanitation engineering
- Science (General)
- Sciences
- Small scale enterprises
- Social problems
- Societies in transition

- Socioeconomic development
- Sociology (General)
- Soil sciences and research
- Strategic planning
- Structural adjustment
- Sustainable agriculture
- Teacher education
- Technology
- Technology transfer
- Transportation (General)
- Transportation systems
- Urban areas and urbanization
- Vocational training
- Water quality
- Water supply and sanitation
- Water supply engineering
- Water transportation
- Wildlife trafficking
- Women in development

Included Document Types and Rationales

Category	Decision	Rationale
Annual Report	Keep	Provides summaries of programs, objectives, and overall performance.
Project/Program/Activity Design Document	Keep	Includes specific directives for loans and grants, offering valuable insight into financial agreements and terms.
Preliminary Design	Keep	Offers important insights into the design and early conceptualization of programs.
Loan/Grant Agreement	Keep	Details clear objectives for specific projects and activities, providing useful context.
USAID Contract/Grant Agreement	Keep	Though project-focused, it offers valuable context regarding contracts and grants, making it a worthy consideration.
USAID General Program Document	Keep	Encompasses a broad view of programming, allowing for an analysis of agency priorities across various sectors.
USAID Memorandum of Understanding (MOU)	Keep	Provides critical insights into the reasoning and strategic purpose behind collaborative projects and agreements.
USAID Policy Document	Keep	Essential for understanding the policies shaping USAID's approach to global development and priorities.
USAID Program Planning Document	Keep	Offers a detailed look at the agency's planning processes and evolving priorities.
USAID Project/Program Overview	Keep	Highlights the key objectives and goals of individual projects, offering a focused view of agency initiatives.
USAID Report to Congress	Keep	Contains extensive data and figures, offering a comprehensive look at agency performance and legislative priorities.
USAID Strategic Planning Document	Keep	Provides valuable insights into the agency’s long-term strategies and future development plans.

Excluded Document Types and Rationales

Category	Decision	Rationale
Assessment	Remove	Not directly related to policy-level analysis or the broader scope of international development, making it less relevant for this project.
Bibliography/Literature Review	Remove	Does not contribute significantly to policy analysis; its focus is more on narrower topics that don't align with the project's primary objectives.
Conference Proceedings/Paper	Remove	Lacks direct relevance to policy discussions or global health priorities, making it unsuitable for inclusion in this analysis.
Design/Implementation Workplan	Remove	While informative for operational aspects, it does not offer insights into policy-related areas critical to this study.
Data Management Plan (DMP)	Remove	Focused primarily on technical or data aspects, which detract from the broader policy-oriented goals of the research.
Activity Monitoring, Evaluation, and Learning (MEL) Plan	Remove	Primarily centered around specific projects or activities rather than overarching policy or development strategies, making it less pertinent to the research focus.
Evaluation Plan (PPL Use Only - For Evidence Act Deliverables)	Remove	Narrowly focused on specific projects, with limited applicability to policy-level discussions or the broader context of international development.
Evaluation Summary	Remove	Deals with operational or project-level evaluation, which is not central to the policy analysis required for this research.
Final Contractor/Grantee Report	Remove	Though of interest, these reports are more focused on specific aspects of programs and do not contribute to understanding high-level agency priorities or policy impacts.
Final Evaluation Report	Remove	Despite containing valuable data, these reports do not provide the broader strategic insights into policy or agency priorities necessary for this research.
Handbook/Manual	Remove	Primarily provides operational guidance and procedural details, rather than contributing directly to policy analysis or development strategies.
Journal Article	Remove	Too focused on scientific research rather than policy or programmatic analysis in the context of global health.
Miscellaneous Document	Remove	Difficult to properly classify or filter as it may contain low-quality or non-USAID-affiliated content, reducing its relevance to the policy-focused analysis.
Non-USAID Operational Review	Remove	These documents are from non-USAID entities, and as such, they do not provide relevant insights into USAID's agency priorities or policy direction.

Non-USAID Technical	Remove	Like the above, these documents are from non-USAID sources and do not reflect USAID's internal policy perspectives or objectives.
Other Authorized Design Document	Remove	Likely to be too technical and specific to individual programs, which makes them less useful for the high-level policy analysis required for this project.
Other USAID Evaluation	Remove	Focused on specific technical evaluations of projects, which may not align with the broader policy goals and strategic direction of the research.
Other USAID Supported Study/Document	Remove	These documents, while valuable for specific evaluations, are too focused on operational details and not on the overarching policy landscape.
Periodical	Remove	Contains primarily administrative updates, which are more logistical in nature and do not offer insights into policy formulation or long-term strategic goals.
Periodic Report	Remove	The DEC documents reviewed did not provide sufficient depth on policy priorities, making them less suitable for inclusion in this policy-focused research.
Program/Project Evaluation Guide	Remove	The focus here is largely on technical aspects of design, which may require further scrutiny, but likely lacks the strategic policy insights needed for this research.
Project/Program/Activity Design Document	Remove	The design elements are highly specific and technical, and as such, are less relevant to the policy-level analysis this research requires.
Reference Document	Remove	Limited to definitions and acronyms, which do not provide the analytical depth needed for understanding policy priorities.
Significant Evaluation (PPL Use Only - For Evidence Act Deliverables)	Remove	These evaluations are conducted by USAID's Bureau for Policy, Planning, and Learning, but they are typically not publicly available and do not align with the scope of this project.
Special Evaluation	Remove	Focused more on specific project activities and less on broader policy implications, making them less aligned with the research objectives.
Trip/End of Tour Report	Remove	Likely to focus on technical aspects and operational details rather than global health policy, making them not directly applicable to this research.
USAID OIG Audit Report	Remove	Focused on auditing operations rather than analyzing policy or programmatic impact, thus not relevant for this policy-centered analysis.
USAID Operational Assessment	Remove	Primarily focused on the state of the agency's internal operations rather than the strategic direction and policy priorities relevant to this research.

Appendix D: Seed Topics

The following predefined seed topics were used to enhance the interpretability of BERTopic modeling by aligning extracted themes with USAID's global health priorities. These topics were derived from established global health domains, refined with Anthropic's Claude 3.7 model to expand terminology, and structured to reflect major areas of USAID programming.

- **HIV/AIDS Programs and Implementation:** HIV/AIDS, PEPFAR, antiretroviral therapy, viral suppression, pre-exposure prophylaxis, DREAMS initiative, key populations, 90-90-90 targets, test and treat, AIDS-free generation, UNAIDS, HIV testing, ART adherence, prevention of mother-to-child transmission, PMTCT.

- **Malaria and Vector-Borne Disease Control:** malaria, President's Malaria Initiative, PMI, vector control, insecticide-treated nets, indoor residual spraying, artemisinin-based combination therapy, rapid diagnostic tests, integrated vector management, malaria elimination, surveillance systems, entomological monitoring, drug resistance, seasonal malaria chemoprevention, larviciding.

- **Maternal and Child Health:** maternal health, child health, maternal mortality, newborn care, childhood immunization, obstetric care, kangaroo mother care, integrated management of childhood illness, IMCI, antenatal care, postnatal care, skilled birth attendance, emergency obstetric care, maternal nutrition, child survival.

- **Reproductive Health and Family Planning:** family planning, contraceptive security, reproductive health, unmet need, birth spacing, LARC methods, contraceptive prevalence, method mix, reproductive rights, Demographic Health Surveys, total fertility rate, UNFPA, voluntary family planning, adolescent reproductive health, population dynamics, contraceptive counseling, unintended pregnancy.

- **Health Systems Strengthening:** health systems strengthening, governance, health workforce, human resources for health, supply chain management, health information systems, DHIS2, health financing, quality improvement, universal health coverage, UHC, district health systems, public financial management, community health systems, resilient health systems, decentralization.

- **Global Health Security and Emerging Threats:** global health security, pandemic preparedness, disease surveillance, outbreak response, International Health Regulations, One Health approach, zoonotic diseases, antimicrobial resistance, emergency operations centers, biosafety, biosecurity, rapid response teams, event-based surveillance, GHSA, emerging infectious diseases, biological threats.

- **COVID-19 Response and Recovery:** COVID-19, SARS-CoV-2, vaccine equity, vaccine hesitancy, health system resilience, oxygen supply, therapeutic treatments, PPE, testing capacity, genomic sequencing, COVAX facility, pandemic response, infection prevention control, social distancing, vaccine distribution, vaccine cold chain, COVID variants.

- **Digital Health and Innovation:** digital health, mHealth, telemedicine, electronic medical records, interoperability, health management information systems, geospatial analysis, artificial intelligence, digital technologies, connectivity, digital literacy, data protection, digital solutions, mobile applications, remote monitoring, digital transformation.

- **Nutrition and Food Security:** nutrition, stunting, wasting, micronutrient deficiencies, infant and young child feeding, breastfeeding, complementary feeding, food fortification, Scaling Up Nutrition, SUN movement, nutrition-sensitive agriculture, first 1000 days, anemia, nutrition surveillance, food security, malnutrition treatment, RUTF.

- **Water, Sanitation, and Hygiene (WASH):** WASH, water security, sanitation, hygiene, water quality, open defecation, handwashing, water treatment, community-led total sanitation, CLTS, menstrual hygiene, water point sustainability, safely managed services, WASH in healthcare facilities, water resource management, water access, sanitation marketing.

- **Tuberculosis Prevention and Control:** tuberculosis, TB, drug-resistant tuberculosis, MDR-TB, DOTS, GeneXpert, TB case finding, TB preventive therapy, isoniazid preventive therapy, TB diagnosis, contact tracing, TB/HIV co-infection, treatment success rate, latent TB infection, TB infection control, national TB programs.

- **Health Equity, Gender, and Vulnerable Populations:** health equity, gender equality, gender-based violence, marginalized populations, disability inclusion, LGBTQ+ health, social determinants of health, indigenous health, adolescent health, women's empowerment, gender analysis, gender integration, youth engagement, equity analysis, inclusive programming, intersectionality.

- **Private Sector Engagement and Health Financing:** private sector engagement, public-private partnerships, domestic resource mobilization, health financing, health insurance, results-based financing, social health insurance, financial protection, blended finance, corporate social responsibility, social entrepreneurship, market-based solutions, sustainability planning, total market approach, financial sustainability, revenue generation.

- **Community Health Systems and Community Health Workers:** community health workers, CHWs, community-based services, task shifting, community engagement, community health strategy, village health teams, community case management, community mobilization, community platforms, integrated community case management, iCCM, peer educators, community health committees, community participation, last mile health services, CHW incentives.

- **Health Policy, Governance, and Leadership:** health policy, governance, strategic planning, health legislation, regulatory frameworks, accountability, transparency, policy dialogue, stakeholder engagement, evidence-based policymaking, policy implementation, health systems governance, leadership development, institutional capacity building, country ownership, sustainability planning, transition planning.

- **Climate Change and Environmental Health:** climate change, environmental health, climate resilience, climate adaptation, vector distribution, extreme weather events, heat-related illness, air pollution, climate-sensitive diseases, planetary health, climate vulnerabilities, climate mitigation, climate-smart healthcare, environmental determinants, eco-health, climate risk assessment, One Health.

- **Neglected Tropical Diseases:** neglected tropical diseases, NTDs, mass drug administration, lymphatic filariasis, schistosomiasis, trachoma, soil-transmitted helminths, onchocerciasis, disease mapping, preventive chemotherapy, morbidity management, disability prevention, NTD elimination, water-related diseases, vector control, integrated NTD control, surveillance and response.

- **Non-Communicable Diseases and Mental Health:** non-communicable diseases, NCDs, cardiovascular disease, diabetes, chronic respiratory diseases, cancer, mental health, risk factors, NCD prevention, tobacco control, alcohol abuse, physical activity, healthy diets, health promotion, integrated services, mental health integration, depression, anxiety disorders, psychological first aid, trauma-informed care.

These seed topics guided the topic modeling process, ensuring alignment with known global health domains while allowing for the emergence of additional themes from the dataset.

Appendix E: Stopwords

The following stopwords were excluded from analysis to reduce noise and improve the interpretability of topic modeling results. The list includes common English stopwords retrieved from the Natural Language Toolkit (NLTK) stopwords corpus, as well as additional terms identified based on document structure, formatting inconsistencies, and frequent non-substantive words in USAID reports.

Additional Excluded Terms:

prepared, publication, suggested, citation, isbn, report, washington, dc, agreement, review, official, views, positions, contents, executive, summary, background, overview, methodology, appendix, annex, page, section, chapter, paragraph, figure, table, reference, bibliography, footnote, note, volume, https, www, january, february, march, april, may, june, july, august, september, october, november, december, jan, feb, mar, apr, jun, jul, aug, sep, oct, nov, dec, month, monthly, quarter, quarterly, annual, annually, year, years, fiscal, fy, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, fy17, fy18, pennsylvania ave, de, la, les, en, des, et, le, de la, du, para, dan, pa, za, ke, ali, tes, primer, wa, ts, ee, tr, ea, ti, te, ie, io, ro, sb, fn, aa, uo, ye, na na na, na, na na, tbd, 90 90, 600, 200, 85, 90, total, number, percent, frequency, details, questionnaire, respondents, procedure, guidelines, outreach, reference, budget, procurement, cooperative, agreement, implemented.

This refined stopword set ensures that non-relevant, structural, and frequently occurring administrative terms do not interfere with the extraction of meaningful policy topics.

Appendix F: Paragraph Filtering

Category	Description	Paragraphs Removed
Structural Elements	Tables of contents, acronyms and abbreviation lists, and reference lists were removed as they did not contribute substantive content.	2088
Language and Formatting Issues	Non-Latin script paragraphs, including text in Thai and Arabic, were excluded. Additionally, paragraphs written entirely in uppercase were removed to maintain formatting consistency.	560
Length and Content Constraints	Extremely short paragraphs (fewer than 10 words) and those dominated by numerical data were excluded to reduce noise in the dataset.	4104
Unwanted Languages	Paragraphs in languages other than English, including Bahasa Indonesian, French, Spanish, Arabic, and Thai, were removed to maintain linguistic consistency.	1159
Corrupt or Unreadable Documents	Corrupt or unreadable documents were excluded due to extraction errors.	30