

Relation Extraction Across Entire Books to Reconstruct Community Networks: The AFFILKG Datasets

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Abstract

When knowledge graphs (KGs) are automatically extracted from text, are they accurate enough for downstream analysis? Unfortunately, current annotated datasets cannot be used to evaluate this question, since the knowledge graphs that they correspond to, constructed by mapping entities in the text to nodes and relations to edges, are typically highly disconnected, too small, or overly complex. To address this gap, we introduce AFFILKG, which is a collection of six datasets that are the first to pair complete book scans with large, labeled knowledge graphs. Each dataset features affiliation graphs, which are simple KGs that capture MEMBER relationships between PERSON and ORGANIZATION entities—useful in studies of migration, community interactions, and other social phenomena. In addition, three datasets include expanded KGs with a wider variety of relation types. Our preliminary experiments demonstrate significant variability in model performance across datasets, underscoring AFFILKG's ability to enable two critical advances: (1) benchmarking how extraction errors propagate to graph-level analyses (e.g., community structure), and (2) validating KG extraction methods for real-world social science research.

Keywords: knowledge graph extraction, OCR, relation extraction, social networks

1. Introduction

Extracting social networks from text is vital for social scientists aiming to understand how elite communities interact and how network structures evolve over time (O'Brien, 2025; Broad, 1996; Wellman and Wetherell, 1996; Kossinets and Watts, 2006). Traditionally, networks have been constructed through painstaking manual curation with high precision, for example in mapping financial acquisitions from news articles (Gugler et al., 2003; Clougherty et al., 2014) or interpersonal relationships in literary sagas (Mac Carron and Kenna, 2013). However, manual annotation remains labor-intensive and difficult to scale. Automated approaches are increasingly popular for their efficiency, but their evaluation is often insufficiently rigorous (Drury et al., 2022), raising concerns about their reliability for downstream graph analyses.

In parallel, hundreds of papers on relation extraction (RE), a.k.a. knowledge graph (KG) extraction, aim to automate the construction of these networks from text. In this approach, information is represented using triplets (e.g., ⟨BOB; MEMBER; IEEE⟩), where each triplet encodes a relation (MEMBER) between two entities (BOB, IEEE) that is expressed in the text. In the resulting KG, entities correspond to nodes and relations correspond to edges (Fig.1)(Ding et al., 2021; Nadgeri et al., 2021; Xu and Barbosa, 2019; Trisedya et al., 2019; Han et al., 2021). While early work found that large language models (LLMs) performed poorly on RE tasks (Jimenez Gutierrez et al., 2022), recent research demonstrates increasing success,

even with limited supervision (Wadhwa et al., 2023; Wan et al., 2023; Zhou et al., 2024; Zhang and Soh, 2024; Tao et al., 2024; Xue et al., 2024; Zhang et al., 2024; Rajpoot and Parikh, 2023). However, a fundamental question remains: Do widely used evaluation strategies for RE and KG extraction (Zhao et al., 2024; Detroja et al., 2023) reliably predict model performance on downstream, graph-level analyses that actually matter in practice—for example, identifying key individuals or communities in a social network (Cai et al., 2024)?

Most existing NLP datasets for RE make it difficult to evaluate how KG extraction errors propagate to downstream graph analyses. Many such datasets label triplets drawn from collections of unrelated sentences or paragraphs, resulting in knowledge graphs that are fragmented and disconnected, since their entities and relations rarely form a coherent network structure (Zhang et al., 2017; Han et al., 2018; Riedel et al., 2010; Chen et al., 2021; Gardent et al., 2017; Huguet Cabot et al., 2023). Other datasets contain highly complex KGs with hundreds of relation types, or focus only on brief documents, leading to small or fragmented graphs even when all relations are extracted (Yao et al., 2019). Furthermore, in datasets that do yield connected KGs, extraction models often achieve low performance (typically below 50 F1 points), making it difficult to systematically assess the impact of extraction errors on real-world graph-based analyses or practical applications (Luan et al., 2018; Jain et al., 2020).

To address these challenges, we introduce AF-

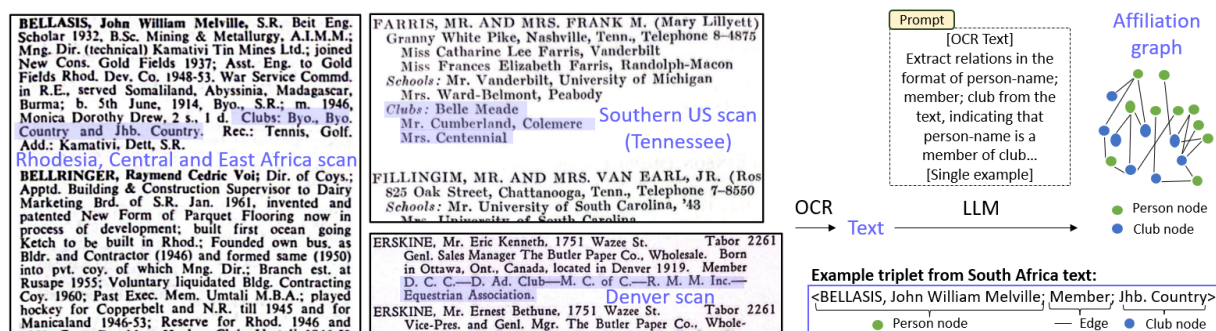


Figure 1: Pipeline of converting scans of historical text to affiliation graphs, where highlighted text indicates clubs.

FILKG¹, the first collection of datasets that pair full scanned books—along with their text extracted via optical character recognition (OCR)—with large, labeled knowledge graphs. Each of the six datasets in AFFILKG provides an affiliation graph, which is a bipartite KG where edges denote MEMBER relationships between PERSON and CLUB entities. These graphs are particularly valuable for studying community cohesion, interaction dynamics (Prem Sankar et al., 2015; Tisch and Ischinsky, 2023), and broader topics such as social stratification and network evolution (Corradi et al., 2024; Bichler et al., 2015; Young and Ready, 2015; Grund and Densley, 2015). Three datasets are further expanded to include triplets of 4 to 11 additional relation types, such as COLLEGE and YACHT NAME, enabling richer relational analyses.

The texts in AFFILKG are unique archival repositories of information on elite families in specific locations. Known as ‘social registers’, these texts document elite individuals from diverse geographic regions and time periods, including the Southern US (Whitmarsh, 1951), Denver (1931), Rhodesia (1963), Boston (1903), Miami (Jackson, 1965), and New York City (1892). Social register texts served to connect elite families with one another in a common directory of an area, typically listing family members, addresses, club memberships and educational backgrounds. As a historical text, a given social register thus provides a comprehensive record of a local social network, making it ideal for evaluating RE methods their downstream impact on graph analyses. Affiliation graph triplets were generated either through manual annotation or by applying regular expressions and rule-based algorithms, which were rigorously validated against manually constructed ground truth.

AFFILKG addresses critical limitations in existing datasets and provides a foundation for studying how RE errors impact downstream graph analyses. We present preliminary results using both

widely used NLP evaluation metrics and higher-level, graph-based analyses relevant to real-world applications. Our findings indicate that, while extraction performance can be high enough to yield meaningful insights, there is also substantial variation across settings. This suggests that further investigation into the propagation of RE errors within graph analyses could uncover important patterns and provide actionable knowledge for practical use.

2. AFFILKG Dataset Construction

AFFILKG contains six datasets pairing scanned historical social register books with large, labeled knowledge graphs. Each individual dataset includes an affiliation graph, and three provide expanded KGs with additional relation types. All datasets include high-quality scans, OCR text, and graph annotations, enabling robust evaluation of relation extraction and higher-level graph analyses (Fig. 1).

Texts. The books in AFFILKG are archival social registers, which serve as historical “who’s who” directories that catalog elite individuals and their affiliations within a locality at a specific time, and have been used by social scientists aiming to represent elite populations and their networks (O’Brien, 2024; Broad, 2020; Baltzell, 1958). These sources connect prominent figures to clubs, educational institutions, and other organizations, and often include additional details such as household members, life events, and possessions, offering a rich context for studying elite community structure and interaction (O’Brien, 2025; Broad, 1996). Each register serves as a comprehensive record of a local social network, defined according to the authors’ notion of prominence. Despite widely recognized value of social register texts for over half a century (O’Brien, 2024; Broad, 2020; Baltzell, 1958), they have been used sparingly because they are very laborious to collect and use for applied research. A vast amount of knowledge about elite communities has thus been missing from social science, despite

¹<https://doi.org/10.5281/zenodo.15427977>

| Loc./Year | # pages | # nodes (person / org) | # edges |
|-----------------|---------|------------------------|---------|
| NYC/1892 | 299 | 5553 / 178 | 14061 |
| Boston/1903 | 150 | 2534 / 188 | 6228 |
| Denver/1931 | 34 | 358 / 248 | 1352 |
| S. US/1951 | | | |
| All (13 states) | 826 | 6188 / 3107 | 13262 |
| Alabama | 49 | 401 / 236 | 753 |
| Arkansas | 22 | 167 / 83 | 292 |
| Florida | 164 | 1395 / 728 | 3208 |
| Georgia | 100 | 685 / 289 | 1275 |
| Kentucky | 28 | 227 / 121 | 501 |
| Louisiana | 67 | 544 / 206 | 1328 |
| Mississippi | 26 | 149 / 98 | 293 |
| North Carolina | 51 | 375 / 224 | 747 |
| South Carolina | 33 | 235 / 145 | 515 |
| Tennessee | 47 | 399 / 174 | 872 |
| Texas | 153 | 993 / 394 | 2026 |
| Virginia | 55 | 401 / 274 | 995 |
| West Virginia | 31 | 217 / 135 | 457 |
| Rhod./1963 | 169 | 898 / 767 | 2367 |
| Miami/1965 | 503 | 3775 / 1471 | 11830 |

Table 1: Details about *Denver*, *Southern US* (13 states aggregated and separate), individual southern states, *Rhodesia*, *Miami*, *Boston*, and *New York City* text/affiliation graph pairs.

| Loc./Year | # nodes (person / other) | # edges | # rel types |
|-------------|--------------------------|---------|-------------|
| NYC/1892 | 13054 / 5182 | 29263 | 4 |
| Boston/1903 | 6748 / 4619 | 18945 | 5 |
| Miami/1965 | 6340 / 8065 | 30845 | 11 |

Table 2: Details about *Miami*, *Boston*, and *New York City* expanded KGs.

the widely recognized importance of club membership to the study of elite communities (Bond, 2012; Weber, 1947; Mills, 1956; Keller, 1963).

The six registers are selected to support ongoing research into historical elite networks, drawing from several U.S. (and one non-U.S.) locations, over the late 19th to mid-20th centuries (Table 1).² The texts themselves represent some of the variety in layout and writing styles used for social registers (Fig. 1).

Bipartite affiliation graphs (Table 1). Each book yields a bipartite affiliation graph of MEMBER relational edges between PERSON and CLUB entity nodes (Breiger, 1974; Lattanzi and Sivakumar, 2009), represented as a collection of ⟨PERSON; MEMBER; CLUB⟩ triplets: for example, ⟨“BELLASIS, John William Melville”; MEMBER; “Byo.”⟩ in Fig. 1’s

²Our dataset, drawn from six books, actually includes 18 separate text/network pairs, since the *The Southern Social Register* (Whitmarsh, 1951) contains 13 individual sections for each state, which we separate.

Rhodesia snippet. Affiliation graphs are widely used to model memberships in elite groups, terrorist organizations, and other social networks, and are well-suited for studying diverse social science questions (Prem Sankar et al., 2015; Tisch and Ischinsky, 2023; Corradi et al., 2024; Isah et al., 2015; Holme et al., 2007; Marotta et al., 2014; Duxbury, 2020).

Expanded knowledge graphs (Table 2). For the Miami, Boston, and New York City datasets, we further expanded the KGs by including additional relation types, such as COLLEGE, EVENT, PLANE NAME, and YACHT NAME, reflecting the complexity commonly found in NLP research (Dodding-ton et al., 2004; Riedel et al., 2010; Zhang et al., 2017; Han et al., 2018; Yao et al., 2019; Gardent et al., 2017; Huguet Cabot et al., 2023). Table 2 summarizes the number of relation types incorporated into the expanded knowledge graphs for the *Miami*, *Boston*, and *NYC* social register texts. Specifically, the relation types for *Miami* include: Address, Address - Northern, Address - Summer, Address - Permanent, Address, Yacht, Clubs, College, School, Cruiser, Yacht, Plane, Sailer, and Racer. In the *Boston* data, we included Address, Club, Phone, College, and Event relation types. For *NYC*, the relation types expanded to Address, Club, College, and Event.

Construction of ground truth triplets. To construct ground truth triplets, we developed a semi-automatic approach based on the observation that each book, despite containing relatively free-form text, followed several complicated patterns when presenting information. These patterns varied significantly across social register texts, requiring tailored strategies for each dataset. To capture the patterns, one author designed regular expressions and rule-based algorithms to extract triplets of ⟨PERSON, MEMBER, CLUB⟩ relations for affiliation graphs, or of multiple relationship types for expanded KGs. For validation, two additional authors independently annotated four to six randomly selected pages from different sections of each book, resulting in approximately 200 ground truth triplets per book. To ensure consistency across all datasets, all authors first discussed and agreed on a standardized labeling scheme prior to annotation.

Because the structure and conventions for encoding affiliations and relationships varied considerably between datasets, our extraction rules were customized for each book. For the Southern US and Miami texts, we linked adults to clubs based on the presence of titles (e.g., “Mr.”, “Mrs.”); in Rhodesia, we identified clubs following specific string markers and parsed lists with varied delimiters. Boston and NYC data relied on abbreviations and line formatting, and required context-sensitive parsing for more complex cases such as couples or

household groupings. Addresses, colleges, phone numbers, and events were extracted using pattern matching for characteristic markers and by resolving ambiguities in name and household references, such as differentiating households by last name appearance or adult status. When matching was ambiguous, we used default associations consistent with social register conventions.

Annotation quality and validation. Most AFFILKG annotations were generated using a semi-automatic pipeline: customized rule-based extraction, refined through careful manual review. For each book, the author responsible for rule design examined hundreds of pages of text to develop rules that captured the core structural conventions, of which there were a countable number for each dataset. While the vast majority of entries followed these primary patterns, we also checked for and addressed occasional less-common cases, which were infrequent.

To formally assess extraction quality, we randomly sampled 200 triplets per dataset for manual annotation by two additional authors and compared these to the rule-based output. For all datasets except *NYC*, this spot-checking confirmed 100% accuracy. In the *NYC* dataset, a very small number of rare cases, often involving addresses that spanned many lines or household boundaries, occasionally introduced ambiguity. To supplement the sampling, we also manually inspected many additional samples, until further inspection yielded no unseen cases. For the *Denver* dataset, which is smaller, two authors manually annotated the entire dataset without any automation. This protocol gives us high confidence that the resulting gold data approaches manual-quality annotation across all books.

To enable the application of rule-based algorithms to the text, we first converted the scanned book images into machine-readable text using Claude Sonnet (Anthropic, 2024) as an OCR model. We then manually corrected transcription errors by systematically comparing the OCR output with the original scanned images to ensure accuracy.

Significant manual effort required. The regular expressions and rule-based algorithms were highly complex, with up to 540 lines of code, due to the variability and intricacy of the text formats. In the *Southern US* states and *Miami* datasets, entire families were described in contiguous blocks of text, using complex structural patterns based on titles to identify both people and their club memberships. In the *Rhodesia* dataset, the varying formats for club memberships within text blocks required flexible regular expressions. For *Boston* and *New York City* books, the text formats lacked explicit family delineations. Family members were listed

sequentially—adults first, then children, all on separate lines—with addresses, phone numbers, and events spanning multiple lines on the right side of the page. Club information for a person might appear on the same line as their name or on the following line next to another individual’s name, linked correctly only through punctuation like brackets.

Constructing these regular expressions and annotating parts of the ground truth demanded significant manual effort, in particular for the older social register texts. This labor-intensive process underscores the need for more efficient methods to reduce manual intervention. We propose using the high quality labels generated here as benchmarks to evaluate alternative approaches that require less manual effort.

3. Benchmarking LLMs for Extracting Local and Global Structure

AFFILKG is the first ground truth resource to support both micro-level evaluation at the edge level—consistent with evaluations in the NLP literature—and macro-level evaluation based on high-level graph structure, which is crucial for real-world applications. In our preliminary evaluation, we demonstrate AffilKG’s unique value by assessing both granular extraction accuracy and higher-level graph properties, exemplified by analysis of club membership sizes.

Scope of experimental evaluation. We benchmark three datasets (*Denver*, *Tennessee*, *Rhodesia*) with bipartite PERSON–CLUB affiliation graphs, chosen for their conceptual simplicity, which enables straightforward, interpretable evaluation of extraction methods and their impact on real-world downstream graph analyses. In contrast, our expanded-relationship datasets (Miami, Boston, NYC) present greater annotation complexity and enable more advanced, real-world analyses that require further methodological development. By establishing clear baselines on these simpler cases, we lay the foundation for future work with the complex, multi-relational AffilKG datasets. Rigorous evaluation of high-level graph analyses on these multi-relational datasets is left for future work, as they present new and different methodological challenges than the bipartite case.

We emphasize that our resource release includes all annotated datasets, including those with multi-relational KGs, to foster future research and community-driven benchmarking.

Experimental pipeline. To evaluate extraction methods under these conditions, we use the following experimental pipeline:

Step 1: OCR. *Input:* Image scans; *Output:* Text. A vast amount of text, encompassing mil-

| Dataset | LLM Prompt |
|-------------|--|
| Denver | [text entry] Extract relations in the format of person-name; member; club from the text, indicating that person-name is a member of club. In the text, — indicates a different club. List each relation as a bullet point. An example is: [example text entry and outputted relation triplets] |
| Southern US | [text entry] Extract relations in the format of person-name; member; club from the text, indicating that person-name is a member of club. Schools are not clubs. If no title such as 'Mr.', 'Mrs.', 'Miss', 'Rev.', 'Dr.', etc. is in front of a list of clubs, then the first two persons mentioned are members in each of the listed clubs. Otherwise, only the person with the corresponding title is in each of the listed clubs. List each relation as a bullet point. [example text entry and outputted relation triplets] |
| Rhodesia | [text entry] Extract relations in the format of person-name; member; club from the text, indicating that person-name is a member of club. Consider only the clubs that are listed after "Club(s):". List each relation as a bullet point. An example is: [example text entry and outputted relation triplets] |

Table 3: LLM prompts used for relation extraction in each dataset. Prompts are shown exactly as given to the models.

lions of historical documents, exists solely in print (Gotscharek et al., 2009; Piotrowski, 2012), making OCR an essential step in extracting KGs from these texts. We compare two OCR models: Google DocumentAI³, which outperforms prior methods (Hegghammer, 2022), and Gemini-1.5-pro, which we find to also perform well.

Step 2: LLM. *Input: Text; Output: Relation triplets of* $\langle \text{PERSON}; \text{MEMBER}; \text{CLUB} \rangle$. To perform RE with LLMs as in existing literature, we use 1-shot in-context learning by providing an LLM with instructions about triplets to extract from an entry of text, plus one illustrative example (see Table 3 for prompts and examples; Fig. 1). We evaluate four LLMs: two proprietary models—Gemini-1.5-pro (Gemini, 2024) and GPT-4o (OpenAI, 2024)—and two open-weight models, Llama 3 (8B and 70B) (AI@Meta, 2024). Each model uses the same prompt.

Step 3: Analysis of the extracted KG. We perform the experiments over the text of *Denver*, *Tennessee*, and *Rhodesia* in AFFILKG and measure each model’s output triplets using two metrics:

Triplet precision, recall, and F1 (Edge F1). In line with hundreds of previous papers (Zhao et al., 2024; Detroya et al., 2023), we compute precision,

³<https://aws.amazon.com/texttract/>

| Dataset | OCR | Metric | Gem | 4o | ll-70b | ll-8b |
|---------|--------|--------|------|------|--------|-------|
| Denver | Doc AI | F1 (%) | 92.8 | 90.0 | 85.5 | 66.0 |
| | | RMAE | 0.03 | 0.07 | 0.08 | 0.31 |
| | Gemini | F1 (%) | 95.9 | 94.1 | 91.5 | 90.6 |
| | | RMAE | 0.01 | 0.03 | 0.02 | 0.06 |
| Tenn. | Doc AI | F1 (%) | 93.8 | 91.4 | 84.2 | 57.1 |
| | | RMAE | 0.04 | 0.13 | 0.23 | 0.40 |
| | Gemini | F1 (%) | 94.3 | 91.8 | 84.2 | 54.0 |
| | | RMAE | 0.04 | 0.12 | 0.21 | 0.37 |
| Rhod. | Doc AI | F1 (%) | 76.8 | 79.1 | 69.9 | 60.9 |
| | | RMAE | 0.15 | 0.21 | 0.14 | 0.19 |
| | Gemini | F1 (%) | 83.7 | 86.1 | 77.5 | 68.9 |
| | | RMAE | 0.19 | 0.19 | 0.17 | 0.17 |

Table 4: Edge-triplet F1 (%) and club-size error (RMAE) for the top 10 largest clubs, across four LLMs on OCR outputs from better (Gemini) and worse (TextRact) OCR models.

recall, and F1 on relation triplets of $\langle \text{PERSON}; \text{MEMBER}; \text{CLUB} \rangle$ across 4 LLMs, over texts outputted by the two OCR models. We refer to these as "edge correctness" metrics because each triplet uniquely defines an edge in the affiliation graph, where PERSON and CLUB entities correspond to nodes and MEMBER relations correspond to edges. A true positive requires that all three components of an LLM triplet—PERSON, MEMBER, and CLUB—match that of a ground truth triplet. To account for minor spelling or naming differences (such as omitted middle initials or suffixes in person names, or LLM outputs with abbreviated or parenthetical club names), we allowed a flexible entity match: either an exact match, or both strings exceeding six characters and one is a substring of the other. We also counted matches between common abbreviations and their expanded forms (e.g., "Bulawayo" and "Byo"; "Assn" and "Association"), after normalizing to remove spaces and punctuation. For PERSON entities, titles such as "Mr." or "Mrs." were required to match if present in the text. This approach was validated by manually reviewing 150 entity pair comparisons per dataset. Table 4 shares F1 performance across four LLMs on text produced by two OCR models, revealing substantial variability: differences between LLMs on the same OCR output range from 5 to 40 points, with the highest F1 reaching 95.9.

Relative Mean Absolute Error (RMAE) for number of people in a club. Among many graph analyses that are useful for real applications, we select a simple one that captures higher-level KG structure: number of people in a club. Club membership is deemed to be vital to how elite communities socialize and cohere as a social group, as they convey status, facilitate socialization and the development of norms within elite communities (Accominotti et al., 2018; Cousin and Chauvin, 2014). To compute the number of people in a club c on an affiliation graph, we count the number of neighbors

each club node has, as: $n_c = \sum_{neighbors(c)} 1$. To quantify errors, we use the following error formula:

$$RMAE = (1/|C|) \sum_{c \in C} |\hat{n}_c - n_c|/n_c$$

where C is the gold-standard set of clubs, and n_c and \hat{n}_c are the true and predicted sizes of club c respectively. Our analysis focuses on the ten largest clubs, as they typically play the most central roles in elite social networks—serving as hubs of influence, status, and social cohesion—and most strongly influence downstream applications. Details about these clubs, including their names, full descriptions, and membership counts in *Denver*, *Tennessee*, and *Rhodesia* appear in Tables 5, 6, and 7. Table 4 shows that club-size RMAE may be as low as 0.01 and as high as 0.37.

Implications for future work. Our preliminary results on three AFFILKG datasets show that OCR and LLM combinations can construct meaningful KGs for real-world use, but performance varies significantly by model and dataset. Higher edge accuracy corresponds to lower club-size errors in *Denver* and *Tennessee*, but not in *Rhodesia*, suggesting other factors at play.

A core motivation for AffilKG is to enable rigorous evaluation not just of extraction performance, but of the impact of extraction errors on downstream graph analyses, including tasks such as community detection, centrality, clustering, and connectivity. For example, Cai and O’Connor (2025) use AffilKG to systematically quantify how real-world extraction errors propagate to these analyses, empirically establish performance thresholds for reliable results, and reveal new patterns of error bias not captured by existing datasets. By providing large-scale, text-derived ground truth networks, AffilKG uniquely enables this kind of end-to-end evaluation, addressing shortcomings of prior resources that were limited to disconnected, small, or low-accuracy graphs.

Future research should continue to test additional OCR models and LLMs, expand coverage to all AffilKG datasets and relation types, and further explore how various extraction errors influence a range of graph-based analyses in real-world contexts.

4. Conclusion

AFFILKG establishes a new benchmark for evaluating knowledge graph extraction, as the first dataset collection that pairs complete, scanned books with large, high quality annotations of affiliation and knowledge graphs. Unlike prior resources, AFFILKG captures coherent, connected networks from real-world historical texts, enabling the first rigorous investigations of how extraction errors affect downstream graph analyses, which is an important

concern for practical and scientific applications. By covering diverse geographical regions and time periods, our datasets support robust benchmarking of KG extraction methods and foster research into both methodological advancements in relation extraction and substantive questions about social network analysis. We release AFFILKG to the community with the aim of driving forward comprehensive, application-relevant evaluation of KG extraction systems, and we encourage future work to build upon this resource to advance both NLP and social science research.

5. Limitations

We did not carry out extensive prompt engineering for LLMs because our goal was to explore the impact of LLM errors on higher-level graph analyses, rather than to push performance. Early tests showed that rewording instructions produced similar results. Our prompts included detailed instructions and a carefully chosen example.

While semi-structured text (i.e., text that may have a few patterns, such as names on the first line) may seem easier to extract affiliation graphs from, its prevalence in real applications (O’Brien, 2024; Broad, 2020; Baltzell, 1958) and the numerous errors by all LLMs on all texts in AFFILKG highlight the need for its study. In particular, performance on *Rhodesia* struggles significantly more overall.

6. Ethical considerations

The collected manual annotations (for the Denver book) were conducted by two of the coauthors. No human subject study was performed.

The collection of these social register books is part of a larger project to map out and analyze elite social networks, which may shed light on social questions about the dynamics of power and community, especially among individuals at the top of a social hierarchy. The books are historical, focusing on elite adults from 80 to 110 years ago, and do not uniquely identify living individuals.

While this paper’s focus is on historical social networks, accurate inference of contemporary social networks has numerous uses not only in academic social science, but also applications with more complex ethical considerations such as marketing, law enforcement, etc.

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| Club name in text | Full club name | Description | # members |
|-------------------|------------------------|--|-----------|
| D. C. C. | Denver Country Club | An exclusive organization devoted principally to golf and outdoor recreation. | 174 |
| D. C. | Denver Club | One of Denver's most exclusive social organizations. Membership composed of financiers, representative business and professional men. | 150 |
| M. C. of C. | Motor Club of Colorado | Devoted to the motoring interest. Membership composed of auto owners. | 110 |
| D. A. C. | Denver Athletic Club | Devoted to athletics. Membership composed of prominent business and professional men. | 104 |
| C. H. C. | Cherry Hill Club | A country club devoted to outdoor recreation. Membership composed of representative men and women. | 98 |
| U. C. | University Club | An exclusive organization composed of representative business and professional men who are college graduates. | 64 |
| M. H. C. | Mile High Club | An exclusive organization to entertain national and international notables at dinner. | 43 |
| L. C. C. | Lakewood Country Club | A representative organization devoted to golf and outdoor recreation. | 42 |
| R. C. | Rotary Club | An organization composed of prominent merchants from every line of trade. Formed for commercial and civic betterment. | 36 |
| C. C. | Cactus Club | An organization for literary and dramatic purposes. Largely used as a downtown lunch and dinner club by professional and business men. | 35 |

Table 5: 10 largest clubs in *Denver* (1931), with descriptions and membership counts, where descriptions are copied from the Denver 1931 Social Register 1931.

| Club name in text | # members | Club name in text | Full club name | # members |
|--------------------------------------|-----------|-------------------|--------------------------|-----------|
| Junior League | 93 | Sby. | Salisbury Club | 299 |
| Fairyland | 73 | Byo. | Bulawayo Club | 146 |
| Belle Mead Country | 65 | Royals Byo. Golf | Royal Bulawayo Golf Club | 88 |
| Memphis Country | 63 | Byo. Country | Bulawayo Country Club | 55 |
| Mountain City | 38 | Ruwa Country | Ruwa Country Club | 51 |
| Cumberland | 26 | Sby. Sports | Salisbury Sports Club | 48 |
| Centennial | 25 | Umtali | Umtali Club | 44 |
| Cotillion | 24 | New | New Club | 42 |
| Daughters of the American Revolution | 23 | Lon. | London Club | 35 |
| Colonial Dames | 22 | Rotary | Rotary Club | 30 |

Table 6: 10 largest clubs in *Tennessee* (1951) with membership counts.

Table 7: 10 largest clubs in *Rhodesia, Central and East Africa* (1963) with abbreviated/full names and membership counts.

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