Bureaucratic Capacity and Urban Planning: Evidence from Los Angeles *

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March 25, 2026

Abstract

Using data from the Los Angeles City Planning Commission, we document the role of bureaucratic capacity in influencing urban development outcomes. We show that public opposition and familiarity of cases matter. Cases that are fairly typical are more likely to sail through approvals, but cases exhibiting peculiar features are less likely to be approved and more likely to be delayed. We measure familiarity by how semantically unique the proposal is compared to other proposals of its category. A one standard deviation increase in uniqueness decreases the log odds of approval by 0.283. Public opposition matters as well: a doubling of the number of opposition letters reduces the log odds of approval by 0.137. The results are consistent with a model of bureaucratic choice with public monitoring, reputational risk, and cognitive constraints.

Keywords: local land-use regulation, bureaucratic efficiency
JEL Classification: D73, R14, R38, R52.

*This project was supported in part by the UCLA Ziman Center for Real Estate Research. We thank the Ziman Center for its financial support. We also thank Ignacio Ramirez for his invaluable research assistance. The views expressed in this paper are solely those of the authors and do not necessarily reflect those of the Ziman Center. All errors are our own.

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1 Introduction

Modern cities struggle to build housing at the scale required to sustain growth. Rising housing costs have become one of the central economic challenges facing cities in the United States and much of the Western world.[1] A large body of work in urban economics documents that stringent land-use regulations substantially constrain housing supply, contributing to high prices, reduced construction, and spatial misallocation of labor and capital (e.g., Glaeser and Ward, 2009; Turner et al., 2014; Hilber and Vermeulen, 2016; Ganong and Shoag, 2017; Albouy and Ehrlich, 2018; Hsieh and Moretti, 2019; Brueckner and Singh, 2020; Gabriel and Painter, 2020; see Gyourko and Molloy, 2015 and Molloy, 2020 for reviews). The implications extend well beyond housing markets, shaping regional inequality, migration patterns, and aggregate productivity.

Despite this growing literature, most empirical work treats regulation as a static constraint—a set of zoning rules, density limits, or statutory requirements that determine what can be built and where. Much less is known about the *regulatory production process* itself—how development proposals are evaluated, modified, delayed, or approved by administrative bodies, and how this process affects urban outcomes over and above the formal text of land-use regulations. Yet in practice, housing supply is mediated through discretionary review and appeals, which require administrative processing. Even when projects ultimately comply with zoning rules or are eventually approved, conditions introduced during the administrative process can slow the pace of construction. Recent evidence suggests that prolonged approval timelines alone can significantly depress housing production (Gabriel and Kung, 2025), highlighting the importance of bureaucratic capacity as a potential bottleneck in urban development.

[1] Klein and Thompson (2025) have recently brought the issue to popular attention in their book *Abundance*.

This paper studies the regulatory production process in the context of urban land use. We examine decision-making by the Los Angeles City Planning Commission (LA CPC), the administrative body responsible for approving large development projects in the City of Los Angeles. Commissioners act on behalf of the city, charged with advancing development while ensuring compliance with zoning rules and public expectations. They evaluate proposals combining legal, architectural, and community considerations under time constraints. The public nature of the process generates a rich paper trail: every meeting produces agendas, minutes, and written comments that record both the information presented and the decisions made. These records provide a window into the regulatory production process.

At its core, the LA CPC's task reflects a classic principal-agent problem shaped by two binding constraints. First, commissioners face oversight risk. Decisions are scrutinized by residents, community organizations, and the media, and public opposition can trigger political backlash. We capture this dimension by applying sentiment analysis to public correspondence as an indicator of monitoring pressure. Second, they face cognitive constraints. Development proposals vary widely in complexity and novelty, and evaluating unfamiliar cases requires greater interpretive effort. When administrative attention is scarce, routine or familiar projects may be easier to process than idiosyncratic ones. We capture this dimension by constructing a measure of semantic uniqueness that quantifies how atypical a development proposal is relative to other cases. Using high-dimensional text embeddings of agenda items, we cluster proposals into comparable categories and measure how far each project lies from the center of its cluster. Projects with greater semantic distance are less familiar and impose higher cognitive demands on commissioners.

We use this framework to estimate how oversight risk and cognitive constraints relate to approval outcomes using an ordered logit specification. The results reveal a

systematic pattern. Less familiar projects face a penalty: controlling for project type, council district, and other case characteristics, a one-standard-deviation increase in semantic uniqueness reduces the log odds of full approval by about 0.283. Public opposition matters as well: doubling the number of opposition letters reduces the log odds of approval by 0.137, while support letters provide little offsetting benefit. In contrast, routine projects move more smoothly through the process. Placement on the Commission's consent calendar—a procedural device that bundles standard, non-controversial items for joint approval—nearly quadruples the probability of full approval. These findings provide evidence on a key mechanism through which bureaucratic performance affects housing supply. Regulatory outcomes are shaped not only by statutory rules or political incentives, but also by limits on administrative capacity to process information at scale. In this setting, bureaucratic capacity acts as an implicit constraint on development, reinforcing delay and discouraging innovation in project design.

The paper contributes to two strands of the literature. First, it extends research in urban economics on land-use regulation and housing supply by opening the "black box" of the regulatory production process. We show that the pace of development depends not only on statutory constraints but also on the administrative capacities of the regulatory apparatus itself. Second, the paper contributes to the literature on bureaucratic decision-making by providing field-based evidence of bounded rationality in an organizational setting. Rather than treating cognitive limits as an abstract behavioral assumption, we measure familiarity directly from policy documents and show how it shapes real regulatory outcomes.

The remainder of the paper proceeds as follows. Section 2 presents a simple model of bureaucratic decision-making that formalizes the trade-off between cognitive effort and oversight risk. Section 3 describes the Los Angeles City Planning Commission and

the construction of the text-based dataset. Section 4 outlines the empirical strategy and variables, including the computation of semantic uniqueness. Section 5 presents the main results and robustness checks, and Section 6 concludes.

2 A Basic Model

Two recurring constraints arise in bureaucratic decision-making: reputational risks under public oversight and cognitive limits in processing complex proposals. We review these institutional features of the decision environment, then present a simple model in which commissioners choose actions and effort under both constraints. The model shows how these trade-offs generate a systematic bias against unfamiliar or contested projects, while routine items sail through with little resistance.

2.1 Oversight, Cognition, and Bureaucratic Choice

Bureaucratic decision-making is shaped by the limited contractibility and imperfect measurability of tasks, which create persistent incentive problems (Dixit, 2002). Public officials therefore operate under binding institutional and cognitive constraints that systematically shape their choices.

One constraint arises from the cost of oversight. Establishing and operating monitoring institutions is expensive (Huber and Shipan, 2000; Damonte et al., 2014). Consequently, oversight depends on indirect signals. Since the public cannot directly observe bureaucratic effort or expertise, it relies on "fire alarms" such as complaints or organized opposition (Prendergast, 2003). Such monitoring is asymmetric; failures generate complaints, while successes rarely do. This asymmetry makes bureaucrats rationally defensive, leading them to minimize exposure by avoiding novel or controversial decisions. Moreover, accountability is rarely unitary. Agencies are monitored

by legislators, courts, media, and citizens, whose expectations are often incompatible (Black, 2008; Maggetti and Papadopoulos, 2018). Such polycentric accountability multiplies reputational risks and encourages defensive choices over efficiency (Carpenter and Krause, 2012; Gilad et al., 2015; Busuioc and Lodge, 2016). Opposition letters, in this sense, are not merely signals of constituent concern but reputational threats.

A second constraint arises from the internal limits of decision-makers. Officials cannot fully process all information and must selectively allocate scarce attention (Simon, 1955; Sims, 2003; Besley and Ghatak, 2003; Hébert and Woodford, 2023). Unfamiliar proposals therefore impose higher cognitive costs and are more likely to be screened out, pushing bureaucrats towards routine or standardized options (De Francesco et al., 2012; Jakobsen, 2020). Goal ambiguity further complicates evaluation. When standards are unclear, performance falls and risk aversion rises (Anderson and Stritch, 2016). In such settings, the safest course is to stress procedural appropriateness or technical diligence, often at the expense of innovation (Gilad, 2015; Duvanova, 2012).

Because the risks are concentrated while the benefits are diffuse, bureaucrats are incentivized to delay or modify proposals even when those projects may generate social value. The result is a systematic bias: recognizable, routine projects advance, while novel or contested ones are sidelined regardless of their potential.

2.2 Model

We imagine a model in which a commissioner decides on the outcome of a project. The commissioner chooses an action $a \in \{0, 1, 2\}$, where $a = 0$ denotes delay, $a = 1$ denotes modification, and $a = 2$ denotes full approval. The commissioner may also

exert effort $e \geq 0$, representing the diligence devoted to evaluating and justifying a project. Effort simultaneously increases the cognitive burden of processing unfamiliar projects and decreases the expected penalties from oversight.

Two observable project attributes matter:

- **Unfamiliarity** $\delta \geq 0$: Low values correspond to routine, standardized projects; high values correspond to unusual, novel, or hard to evaluate proposals.
- **Opposition** $\chi \geq 0$: The volume of opposition letters received, which increases the salience of oversight.

The commissioner's utility is

$$U_A(a, e, \delta, \chi) \;=\; B(a) \;-\; C(e, \delta) \;-\; M(a, e, \chi) \tag{1}$$

where:

- $B(a)$ is the baseline benefit from taking action a. These benefits can be interpreted broadly, but in general, approving projects creates visible productivity. We assume $B(2) \geq B(1) \geq B(0)$, so that in the absence of processing costs or oversight risk the commissioner would prefer more approvals.
- $C(e, \delta)$ is the information-processing cost, increasing in both effort and unfamiliarity ($C_e > 0$, $C_\delta > 0$). This term captures the cognitive demands of evaluating non-routine projects. As unfamiliarity δ rises, commissioners face greater goal ambiguity (unclear standards for what counts as an acceptable project) and bounded rationality constraints (limited attention to fully process all pieces of the project).

- $M(a, e, \chi)$ is the monitoring penalty function from the reputational, political, or legal cost associated with taking action a with effort e when opposition intensity is χ. It is increasing in approval intensity ($M_a > 0$) and in opposition ($M_\chi > 0$), but decreasing in effort ($M_e < 0$). Decreasing in e reflects the idea that additional due diligence makes decisions more defensible under scrutiny, thereby reducing expected penalties.

For any given action a, the commissioner chooses optimal effort e^* satisfying the first-order condition

$$C_e(e^*, \delta) \;=\; -\,M_e(a, e^*, \chi). \tag{2}$$

The commissioner chooses effort so that the marginal cost of diligence offsets the marginal reduction in expected monitoring penalties. Greater unfamiliarity raises the burden of processing, while higher levels of opposition increase the salience of oversight.

To capture the joint choice of action and effort, we impose a mild regularity so that monitoring responds in the intuitive way, where stronger approval requires greater diligence under scrutiny, and opposition makes diligence more consequential by increasing how much it reduces expected penalties. Formally, the restrictions

$$M_{ea}(a, e, \chi) < 0$$
$$M_{e\chi}(a, e, \chi) < 0$$
$$C_{e\delta}(e, \delta) > 0$$

imply that optimal effort responds monotonically: e^* increases in action a and opposition χ, but decreases in unfamiliarity δ. This means that approving a contested project requires additional diligence to limit expected penalties, while unfamiliar projects make each unit of diligence more costly. After selecting the optimal ef-

fort e^*, the commissioner then chooses the action a that maximizes U_A^*, evaluating processing costs and monitoring penalties at e^*.

2.3 Comparative Statics

We derive two simple predictions.

Proposition 1. *Unfamiliarity reduces approvals.*

Holding opposition χ fixed, higher unfamiliarity δ reduces the probability that the commissioner chooses full approval. Since $C_\delta > 0$, greater unfamiliarity raises the processing cost $C(e, \delta)$, making each unit of effort more expensive. Because approving an unusual project also requires more diligence to withstand scrutiny, unfamiliarity couples higher approval outcomes with prohibitively costly effort. Commissioners therefore choose modification or delay as δ rises. Projects on the consent calendar correspond to $\delta \approx 0$, implying minimal processing costs $C(e, 0)$ and low baseline monitoring penalties. Routine projects therefore require little effort to justify and face low scrutiny, making them strictly more likely to receive full approval than otherwise comparable non-consent items.

Proposition 2. *Opposition reduces approvals.*

Higher opposition χ reduces the probability that the commissioner chooses full approval. Since $M_\chi > 0$, greater opposition raises the expected monitoring penalty $M(a, e, \chi)$, reflecting the heightened likelihood of ex post scrutiny. Commissioners can respond by increasing effort to reduce these penalties, but additional diligence

is costly and cannot fully neutralize political or reputational blowback. As a result, when opposition is substantial, the safer course is to shift toward modification or delay rather than approve a contested project.

3 Data

3.1 Institutional Background

The Los Angeles planning and approvals process for urban development is a multi-layered process that requires the input of multiple agencies. If a development is "by-right", meaning that it conforms to all zoning regulations within its applicable zone, then development can proceed with a permit from the Department of Building and Safety. If, however, the planned development requires an exception to the zoning code, or has a planned purpose not normally allowed by the zoning code, then approval needs to be obtained from the Planning Department and potentially from the City Planning Commission (CPC).

The LA CPC is a nine member administrative body with members appointed by the Mayor of LA and confirmed by the City Council. The CPC is responsible for reviewing citywide zoning changes, approving conditional use permits for large developments, and handling appeals of decisions made by lower bodies. The LA CPC is the second highest planning agency within the City of Los Angeles. Its decisions on appeals from lower bodies are final, and initial determinations made by the CPC can only be appealed to the City Council.

The CPC meets approximately every two weeks. The agenda for each meeting is set by the Commission itself and made available to the public at least seven days

before each meeting. After each meeting, the meeting minutes are published online. The minutes record the order of discussion, the members present, the motions made on each agenda item, and the votes made on each motion. Motions are passed by majority rule, subject to a quorum of five members present. In addition, members of the public are allowed to submit comments on any agenda item either in writing or in person during the meeting.

3.2 Data Acquisition

The Los Angeles Planning Department's website maintains robust public documentation of City Planning Commission meetings. For each meeting, the agenda, minutes, and any supplemental documents relevant to the meeting (letters from the public, traffic assessments, architectural reports, etc.) are available for download as PDF files.[2] We downloaded these documents for all City Planning Commission meetings from May 10th, 2018 to December 19th, 2024. This resulted in documentary data for 156 meetings, covering 1,542 agenda items, with 5,390 supplemental documents, spanning 23,712 pages of PDF documents. Download occurred on April 10th, 2025.

Since we are primarily interested in bureaucratic decision making, we limit our attention to the agenda items that require a decision from the board. These are identified by agenda items titled according to their Planning Department case numbers, which have a standardized format of "[CASE PREFIX]-[YEAR]-[SERIAL NUMBER]-[CASE SUFFIXES]". The prefix identifies the decision-making body initially responsible for approval, and the case suffixes identify requested entitlements and other case features. Other agenda items include items like "Director's Report" and "General Public Comment" which typically do not require any decision-making on the part of

[2]As of August 26th, 2025, these documents are available at the URL: `https://planning.lacity.gov/about/commissions-boards-hearings`.

the board. Altogether, there were 727 agenda items requiring a decision from the board, as identified by their Planning Department case numbers.

A typical agenda item is a request from a developer to approve a development plan that goes beyond what the site's zoning designation would allow, or an appeal of a previously approved plan. Figure 1 shows an example of an agenda item. The case number is DIR-2019-6048-TOC-SPR-WDI-1A. This was a project that was initially approved by the Director of Planning (DIR). The suffixes indicate that the project was granted bonuses under the Los Angeles Transit Oriented Communities program (TOC), the project requires a site plan review (SPR), and the project was granted a waiver of dedications and improvements (WDI). However, this previously approved plan was appealed (1A), and the appeal is now being considered by the City Planning Commission. In addition to the information contained in the case number, the agenda document shows additional information such as the Council District that the project is located in and other specific details about the project proposal.

Figure 2 shows the associated minutes for this agenda item. From the minutes, we can see that the appeal was granted in part and denied in part. The CPC upheld the Director of Planning's previous decision, but additional conditions were applied, thus allowing the project to move forward as long as the developer adheres to the new conditions. This outcome—the partial granting of an appeal, or the approval of a project with conditions or modifications—is common but not the only kind of outcome. Sometimes, the applicant's requested actions are granted in their entirety without additional conditions or modifications. Rarely, the requested actions are denied entirely. A more common occurrence than denial is that the CPC puts the decision off to a later date.

Figures 3 and 4 show examples of letters submitted by the public in support of and in opposition to the above project. The support letter emphasizes how the project will

ease traffic, reduce air pollution, and increase housing availability. The opposition letter emphasizes concerns about displacement and how the proposed units will be unaffordable to current residents of the neighborhood. These letters typify the kinds of concern expressed by community residents in this dataset; however, the number of letters that this project attracted is atypical (DIR-2019-6048 just happens to be a particularly controversial project). We will discuss the distribution of support and opposition letters across projects later in Section 4.

3.3 Data Extraction

The documentary data provides a wealth of information about CPC cases and their outcomes. However, the information is locked within textual documents that are difficult to extract using traditional methods. For example, traditional NLP methods based on token and pattern matching would have a hard time comparing the agenda to the minutes and determining whether the requested actions were approved, partially approved, approved with conditions, denied, or whether the decision was postponed to a future date.

To extract usable features from the textual content more robustly, we make use of Anthropic's `claude-opus-4-6` generative language model. The model can be asked to read the text of the agenda, read the text of the minutes, and to extract structured information about the decisions of the commission. For example, it can be asked explain what the result of committee's proposed motion was in terms of its implications for the development project—whether the project was approved, approved with conditions, denied, or whether the decision was postponed to a later date. The methodology and prompts we used to perform the data extraction are described in detail in the appendix. In this section, we will instead focus on the data features that

were extracted from the text.

Agenda items. For each agenda item, we extracted the following information from the text:

- Agenda item number (used primarily for identification);
- Item title (for cases requiring a decision, this is always a Planning Department case number);
- Short AI-generated summary of the agenda item's content;
- The Council District(s) to which the item applies.

Minutes. For each agenda item, we extract the following information from its minutes text:

- Short AI-generated summary of the deliberations and the motion that was ultimately voted on;
- Implication of the motion for the proposed project: were the requested actions approved, approved with minor conditions, approved with major conditions, denied, or were deliberations continued to a future date?
- Result of the vote (whether the motion passed or failed);[3]
- Vote tallies: the number of ayes, nays, absences, abstentions, and recusals.

Supplemental documents. For each supplemental document, we extract the following information from its text:

- Type of document: whether it is a public comment expressing support or opposition to the case, or whether it was technical documentation attached to the

[3]Note that a motion passing is not the same as the project getting approved, nor is a motion failing the same as the project getting denied. A Member may move to deny the project's requested actions, or move to accept an appeal of a previously approved project, in which case the motion passing implies a denial of the project. These nuances highlight why LLMs are helpful in the data extraction process.

project or an administrative or procedural document;

- Which agenda item(s) it references;
- Short AI-generated summary of the document contents;
- Support or opposition: For each agenda item that the document references, whether the document supports, opposes, or is neutral towards the requested actions in the referenced agenda item(s).

The resulting dataset contains 727 agenda items with motions voted on by the CPC. Table 1 shows the distribution of the motion outcomes by the unanimity of the vote. Two important facts emerge about the CPC process. First, a minuscule number of projects are denied outright (1.1% of all cases). Rather than being denied, a more common occurrence is that the decision is postponed to a later date (15.7% of cases) or the requested actions are approved with major or minor conditions attached (3.7% and 38.4% repsectively). 41.1% were approved without any further conditions.

Second, most decisions were unanimous (91.3% of all cases). Because of these two facts, we do not view disagreement *within* the board as a significant source of friction in moving development projects through the pipeline. Moreover, few projects are denied outright, so the impact of CPC hearings on final outcomes must come through either i) a slowing down of the process due to having to wait for the decision, which itself may be delayed multiple times; or ii) changes to the project plan that potentially add cost or time to the development, or which could dissuade the developer from even moving forward with the project. Our primary analysis will therefore focus on the bureaucratic factors which lead to either delayed decision making or attaching conditions to the project proposal.

4 Methodology

We model the CPC hearings as having three possible outcomes:

0. The project is denied or the decision is postponed;

1. The project is approved with conditions;

2. The project is approved without further conditions.

Each project proposal i is assumed to have a latent quality variable y_i^* which determines the likelihood of the three outcomes. y_i^* is modeled as a linear function of observed project characteristics and bureaucratic factors, $\mathbf{X}_i$, plus an error term ϵ_i:

$$y_i^* = \mathbf{X}_i\beta + \epsilon_i \tag{3}$$

The latent quality of the project proposal determines its outcome at the CPC hearing. Let $y_i \in \{0, 1, 2\}$ denote project i's outcome. The relationship between y_i^* and y_i is as follows:

$$y_i = \begin{cases} 0 \text{ if } y_i^* < \mu_0 \\ 1 \text{ if } \mu_0 \leq y_i^* < \mu_1 \\ 2 \text{ if } \mu_1 \leq y_i^* \end{cases} \tag{4}$$

with $\mu_0 < \mu_1$. The model is therefore an ordered logit model, and the outcomes are monotonic in $\mathbf{X}_i\beta$. The parameters β, μ_0, and μ_1 are estimated by maximum likelihood.

4.1 Explanatory Variables

We now turn to discussing the explanatory variables we include in the model.

Semantic uniqueness. In that one of our goals is to quantify the role of bureaucratic frictions in the CPC approvals process, we here develop a concept which we call "semantic uniqueness". At a high level, semantic uniqueness is designed to capture how unique an agenda item is relative to other agenda items that the CPC is accustomed to hearing. Our hypothesis is that agenda items which are highly unusual may be less likely to be approved outright, more likely to be approved with conditions, and more likely to be denied or delayed. We thus expect to estimate a negative coefficient on semantic uniqueness.

To compute a measure of semantic uniqueness, we first calculate the semantic embedding of each agenda item using OpenAI's `text-embedding-3-small` embeddings model.[4] For each agenda item, the model returns a 1,536 dimensional numerical vector that represents the semantic meaning of the text. Two agenda items with very similar proposals will have embeddings that are close to each other, while two agenda items with very different proposals will have embeddings that are far away from each other.

Because `text-embedding-3-small` was trained on a general corpus of documents, not specialized to the topic of municipal planning and zoning, not all 1,536 dimensions may be relevant for capturing the important differences between our agenda items. We therefore use principal components analysis to extract the 10 linear combinations of these dimensions which explain the most variance in our corpus. Figure 5 shows the scree plot of the principal components analysis. By the 10th principal component, there are diminishing returns to including more components.

After reducing the embeddings down to 10 dimensions, we group the agenda items into three clusters using K-Means clustering. Identifying clusters in our data is impor-

[4]For an introduction to the concept of embeddings, see Mikolov et al. (2013) and Le and Mikolov (2014).

tant because the CPC handles many different types of cases, and the language used could be very different across different case types. For example, the language used in a case involving the demolition of an existing building followed by the reconstruction of a multifamily home would be very different from a request for a conditional use permit to operate a school. Thus, it only makes sense to measure semantic uniqueness within a set of similar case types.

Figure 6 shows a scatter plot of the agenda items according to their first two principal components, colored by cluster. Cluster 0, the smallest cluster, consists mainly of non-development actions, such as citywide code amendments, plan updates, or conditional use permits on existing properties. Cluster 1 consists primarily of large scale private development projects in which the CPC is the initial approver. Cluster 2 consists primarily of appeals of decisions made by lower level agencies.

To measure the semantic uniqueness of an agenda item, we calculate the Mahalanobis distance between the agenda item's 10-dimensional PCA-reduced embedding to its cluster's centroid. We chose Mahalanobis distance because it accounts for the correlation structure of the reduced embedding space (Rencher and Christensen, 2012, p. 93). A simple Euclidean distance assumes that each principal component is uncorrelated and equally informative, and even if rescaled by per-dimension variance, it would still treat dimensions as independent. In contrast, the Mahalanobis distance rescales and rotates the coordinate system so that correlations between dimensions are removed. The estimated coefficient are interpreted as the change in log odds associated with moving one standard deviation farther from the cluster centroid. This provides a scale-free and cluster-comparable measure of uniqueness. A value of 1.0 indicates that an agenda item lies one standard deviation away from its centroid, regardless of which cluster it belongs to or how dispersed that cluster is in the original embedding space. In addition to including the Mahalanobis distance to the cluster

centroid as a measure of semantic uniqueness, we include fixed effects for each cluster. This allows each cluster to have a separate baseline probability distribution over outcomes.

Using our measure of semantic uniqueness, we can get a sense of which cases are most atypical for each cluster. In cluster 0, the most atypical case was an application for a conditional use permit to operate cultural events such as charitable fundraisers, film screenings, and concerts, and to sell alcoholic beverages on an existing 53-acre cemetery. In cluster 1, the most atypical case was an application to permit development of a 143.5 foot tall, 201,292 square foot multi-disciplinary research facility on the USC Health Sciences Campus. In cluster 2, the most atypical case involved a Writ of Mandamus issued by the Los Angeles Superior Court ordering the City to set aside a previous approval on a 20-unit housing development because it hadn't adequately demonstrated TOC Tier 3 eligibility. However, the Writ did not limit the discretion vested in the City as to how to proceed with the project.

Agenda order. We also hypothesize that the order in which a case appears in the agenda may matter for its outcome. We use the order in which the case appears in the agenda, not the order in which the case was discussed at the actual meeting. The committee chair has the ability to discuss agenda items out of order, and this may be endogenous to the meeting outcomes, so we focus on the order in which the item appears in the agenda published prior to the start of the meeting.

Number of agenda items. We hypothesize that the number of items on the agenda can have an effect on outcomes. In particular, we hypothesize that a case is more likely to be postponed if there are a large number of items on the agenda.

Consent calendar. The Los Angeles CPC utilizes a practice for streamlining meetings known as the "consent calendar". The consent calendar takes multiple agenda items and groups them into a single motion that the committee votes on together as a whole. The consent calendar tends to include cases that the committee chair has deemed non-controversial and therefore not requiring separate discussion. The consent calendar is published *before* the meeting starts, and items can be taken off the consent calendar during the meeting. We hypothesize that being on the consent calendar significantly predicts approval.

Number of support and opposition letters. We hypothesize that the amount of public support and public opposition matters for hearing outcomes. We hypothesize that greater public support improves a proposal's probability of being approved, whereas greater public opposition increases the likelihood that the proposal is denied, delayed, or approved with conditions. We include public support and public opposition as two separate explanatory variables to allow for heterogeneous impacts of support vs. opposition. Note that a proposed project can receive multiple letters both in support and in opposition. We measure public support as the log base 2 of the number of letters written in support, and we measure public opposition as the log base 2 of the number of letters written in opposition, as discussed in Section 3. Figure 7 shows the distribution of the number of letters in support and in opposition across cases.

Council districts. Council districts may matter for case outcomes for a variety of reasons. For one, although City Planning Commission members are appointed from a variety of professional backgrounds, most of them come from backgrounds of urban planning, public service, real estate development, or community advocacy. A CPC

member, despite best efforts to remain impartial, may therefore still be influenced by the specific politics of the council district. For another, the Los Angeles City Council has veto power over City Planning Commission decisions, and the Council usually defers to the member whose district the project is located in for such decisions. CPC members may therefore be cognizant of the opinions of the project district's council member when making their decisions. To control for these possibilities, we include council district fixed effects as explanatory variables.

Case suffixes. As discussed in Section 3, case suffixes indicate the types of entitlements requested or required by the project, as well as other project indicators. In the data, there are 76 unique suffixes, some of which are quite sparsely populated, which is problematic for our dataset of 727 observations. We therefore collapsed the suffixes into 15 logical groups with fixed effects for each. The largest suffixes by frequency were retained as their own buckets, and the remaining were grouped according to similarity in their legal descriptions and procedural functions. The suffixes were grouped into the following categories: Conditional Use Permits; Appeals, Amendments & Modifications; Site Plan Review; Zone Changes; Density Bonus; Housing Crisis Act; Specific Plan Actions; Dedications, Subdivisions & Infrastructure; Transit Oriented Communities; General Plan Amendments; Zoning Admin Adjustments & Variances; Design Review & Historic Preservation; Code Amendments & Agreements; Housing & Public Benefit Projects; Overlay Districts & Special Plans.

5 Results

Table 2 reports the results from the ordered logit regression. To main coefficient of interest is the effect of semantic uniqueness on case outcome. Four specifications are

presented which show the effect of progressively adding more explanatory variables to the regression. The coefficient on semantic uniqueness is robust to the gradual inclusion of more and more confounding variables. Importantly, by including suffix, semantic cluster, and council district fixed effects, we show that the effect of semantic uniqueness on case outcome is not driven by selection on case type or geography.

The results suggest that evaluating proposals is cognitively demanding, and unfamiliar ones are harder to process. The coefficient on semantic uniqueness is negative and statistically significant across specifications, indicating that unfamiliar cases are less likely to be approved outright, and more likely to be approved with conditions or delayed or denied. In the full model, a one-standard-deviation increase in semantic uniqueness decreases the log odds of full approval by 0.283 ($p < 0.05$). By contrast, being placed on the consent calendar increases the log odds of full approval by 1.477 ($p < 0.01$). These results demonstrate the measurable penalty that unfamiliar projects face from imposing higher cognitive costs on commissioners. Meanwhile, routine consent calendar items move through the process almost automatically. Other institutional factors such as agenda order and agenda length are small and statistically insignificant, indicating that bureaucratic frictions may stem less from meeting logistics than from project familiarity or project typicality.

Commissioners also weigh the effects of opposition on reputational and political exposure. The results indicate that doubling the number of opposition letters decreases the log odds of approval category by 0.137 ($p < 0.01$). In contrast, the coefficient on support letters is small and statistically insignificant. Commissioners appear systematically more sensitive to community opposition than to community support, perhaps reflecting a defensive orientation in their decision-making.

Table 3 reports the marginal effects, which can be interpreted as the predicted effect on outcome probability for a one unit change in the regressor, averaged over

cases. The results indicate that a one standard deviation increase in semantic uniqueness reduces the average probability of full approval by 6.0% ($p < 0.05$), while raising partial approval by 2.5% ($p < 0.05$) and denial/postponement by 3.5% ($p < 0.05$). Likewise, for opposition letters, doubling their number lowers the average likelihood of approval by 2.9% ($p < 0.01$), and increases partial approval by 1.2% ($p < 0.01$) and denial/postponement by 1.7% ($p < 0.01$). Placement on the consent calendar has the opposite effect. Full approval increases by 32.2% ($p < 0.01$), partial approval decreases by 19.0% ($p < 0.01$), and denial/postponement decreases by 13.2% ($p < 0.01$).

To assess the robustness of our findings to omitted variable bias, we follow the approach of benchmarking selection on unobservables against selection on observables (Altonji et al., 2005). If adding a rich set of controls barely shifts the coefficient of interest while substantially increasing explanatory power, then unobservables would have to be implausibly more important than observables to overturn the result (Oster, 2019). To reduce the coefficient to zero would require unobservables to be more than six times as strongly correlated with the outcome as the included covariates ($\delta = 6.12$), suggesting the results are unlikely to be driven by omitted variables.

Overall, these results are consistent with our central argument that bureaucratic decision-making at the CPC reflects both bounded rationality and oversight risk. Unfamiliar projects are penalized because they require greater cognitive processing, while contested projects are penalized because they expose commissioners to greater political and reputational scrutiny. By contrast, routine and uncontested projects proceed with little resistance. These patterns highlight how the regulatory process itself shapes outcomes as a function of the trade-offs faced by commissioners.

6 Conclusion

This paper examined how cognitive and oversight constraints shape bureaucratic decision-making in the Los Angeles City Planning Commission. We developed a text-based measure of semantic uniqueness to capture the cognitive effort that unfamiliar proposals impose on commissioners, and used sentiment analysis of public correspondence to measure monitoring pressure. The results reveal that both constraints have significant effects on regulatory outcomes. Less familiar projects, which require greater interpretive effort, are less likely to receive full approval, while routine items proceed with little resistance. Public opposition exerts a similarly negative effect, whereas public support provides little offsetting influence. These patterns provide empirical evidence of bounded rationality in administrative decision-making, with bureaucrats allocating scarce attentional resources across proposals, prioritizing those that are familiar or safe under scrutiny. Institutional mechanisms such as the consent calendar function help economize on attention.

The results also have implications for urban development. Land-use regulation remains one of the central bottlenecks in housing supply, yet little is known about the role of the bureaucratic process vis-à-vis the statutory requirements. Our analysis shows that administrative capacity itself may constrain housing production beyond the direct impact of statutory restrictions. Negative public pressure clearly shapes outcomes, but cognitive limits—and thus, bureaucratic capacity—also constrain approval of novel or complex projects. The result is a form of institutional lock-in. By favoring projects that are easiest to interpret and defend, the process may reinforce its own expectations, narrowing the range of designs it can evaluate, limiting innovation in development to meet the needs of residents.

More broadly, our framework demonstrates how text can be used to represent the

decision architecture within organizations. With such data becoming increasingly available, semantic uniqueness provides a scalable measure to study how information is processed, attention is allocated, and discretion is transformed into routines. These mechanisms deepen our understanding of how organizations adapt, and the conditions under which they resist change.

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Figure 1: Example of an Agenda Item

6. **DIR-2019-6048-TOC-SPR-WDI-1A**
CEQA: ENV-2016-273-MND-REC1
Plan Area: Northeast Los Angeles

Council District: 1 – Cedillo
Last Day to Act: 10-08-20
Continued from: 08-13-20
08-27-20

PUBLIC HEARING REQUIRED

PROJECT SITE: 135 – 153 West Avenue 34; 3401 – 3437 North Pasadena Avenue

PROPOSED PROJECT:
Construction, use, and maintenance of a new, five-story, 514,756 square-foot mixed use building with 468 dwelling units, including 66 dwelling units set aside for Very Low Income Households (or 14 percent of the proposed density) and 16,395 square feet of commercial space. The development will be constructed within two phases, and is designed as one building which includes two levels of subterrean parking across the entire site with three structures above that include residential and commercial uses. The structures will be four and five stories tall with a total of 311 automobile parking spaces, 35 short-term and 264 long-term bicycle parking spaces, and a total of 49,152 square feet of open space for residents.

APPEAL:
An appeal of the June 12, 2020, Planning Director's Determination which:

1. Based on the independent judgment of the decision-maker, after consideration of the whole of the administrative record, the Project was assessed in Mitigated Negative Declaration, No. ENV-2016-273-MND adopted on August 22, 2017; and pursuant to CEQA Guidelines 15162 and 15164, as supported by the addendum dated December 2019, no major revisions are required to the Mitigated Declaration; and no subsequent EIR or negative declaration is required for approval of the Project;
2. Approved, pursuant to Section 12.22 A.31 of the Los Angeles Municipal Code (LAMC), a 70 percent increase in density bonus consistent with the provisions of the Transit Oriented Communities Affordable Housing Incentive Program for a Tier 3 project with a total of 468 dwelling units, including 66 dwelling units reserved for Very Low Income (VLI) Households occupancy for a period of 55 years, along with the following two Additional Incentives:
   a. Setback. To permit the use of any or all the yard requirements for the RAS3 Zone in lieu of the [T][Q]CM-2D Zone; and
   b. Transitional Height. To utilize the Transit Oriented Communities transitional height requirements in lieu of those found in LAMC Section 12.21.1 A.10;
3. Approved, pursuant to LAMC Section 12.37 I, a Waiver of Dedication and Improvement for a five-foot dedication and three-foot widening along Avenue 34 and a 15 feet by 15 feet chamfer or a 20 foot radius corner cut along northwest intersection of Avenue 34 and Pasadena Avenue, in order to maintain the existing condition along Avenue 34 and the corner of Avenue 34 and Pasadena Avenue;
4. Conditionally Approved, pursuant to LAMC Section 16.05, a Site Plan Review for the construction, use and maintenance of a new, five-story, mixed-use building with 468 dwelling units, and 16,395 square feet of commercial space in the [T][Q]CM-2D Zone; and
5. Adopted the Conditions of Approval and Findings.

Applicant: [redacted]

Appellant: [redacted]

Staff: [redacted]

Figure 2: Example of a Minutes Item

ITEM NO. 6

DIR-2019-6048-TOC-SPR-WDI-1A
CEQA: ENV-2016-273-MND-REC1
Plan Area: Northeast Los Angeles

Council District: 1 – Cedillo
Last Day to Act: 10-08-20
Continued from: 08-13-20
08-27-20

PUBLIC HEARING HELD

PROJECT SITE: 135 – 153 West Avenue 34; 3401 – 3437 North Pasadena Avenue

IN ATTENDANCE VIA ZOOM WEBINAR/TELECONFERENCE:
[redacted], City Planning Associate, [redacted], City Planner and [redacted], Senior City Planner representing the Department; [redacted] and [redacted], representing the Applicant; and [redacted] representing the Appellant and [redacted], Appellant.

At approximately 10:55 a.m. President Millman announced Commissioner Leung left the zoom webinar/teleconference meeting during Public Comment for this item.

MOTION:
Commissioner Ambroz put forth the actions below in conjunction with the approval of the following Project with modifications, if any, stated on the record:

Construction, use, and maintenance of a new, five-story, 514,756 square-foot mixed use building with 468 dwelling units, including 66 dwelling units set aside for Very Low Income Households (or 14 percent of the proposed density) and 16,395 square feet of commercial space. The development will be constructed within two phases, and is designed as one building which includes two levels of subterrean parking across the entire site with three structures above that include residential and commercial uses. The structures will be four and five stories tall with a total of 311 automobile parking spaces, 35 short-term and 264 long-term bicycle parking spaces, and a total of 49,152 square feet of open space for residents.

1. Find, based on the independent judgment of the decision-maker, after consideration of the whole of the administrative record, the Project was assessed in Mitigated Negative Declaration, No. ENV-2016-273-MND adopted on August 22, 2017; and pursuant to CEQA Guidelines 15162 and 15164, as supported by the addendum dated December 2019, no major revisions are required to the Mitigated Declaration; and no subsequent EIR or negative declaration is required for approval of the Project;
2. Deny the appeal in part and grant the appeal in part of the Planning Director's decision dated June 12, 2020;
3. Approve, pursuant to Section 12.22 A.31 of the Los Angeles Municipal Code (LAMC), a 70 percent increase in density bonus consistent with the provisions of the Transit Oriented Communities Affordable Housing Incentive Program for a Tier 3 project with a total of 468 dwelling units, including 66 dwelling units reserved for Very Low Income (VLI) Households occupancy for a period of 55 years, along with the following two Additional Incentives:
   a. Setback. To permit the use of any or all the yard requirements for the RAS3 Zone in lieu of the [T][Q]CM-2D Zone; and
   b. Transitional Height. To utilize the Transit Oriented Communities transitional height requirements in lieu of those found in LAMC Section 12.21.1 A.10;
4. Approve, pursuant to LAMC Section 12.37 I, a Waiver of Dedication and Improvement for a five-foot dedication and three-foot widening along Avenue 34 and a 15 feet by 15 feet chamfer or a 20 foot radius corner cut along northwest intersection of Avenue 34 and Pasadena Avenue, in order to maintain the existing condition along Avenue 34 and the corner of Avenue 34 and Pasadena Avenue;
5. Conditionally Approve, pursuant to LAMC Section 16.05, a Site Plan Review for the construction, use and maintenance of a new, five-story, mixed-use building with 468 dwelling units, and 16,395 square feet of commercial space in the [T][Q]CM-2D Zone;
6. Adopt the Conditions of Approval, as modified by the Commission, including Staff's Technical Modification dated August 10, 2020 and October 7, 2020; and
7. Adopt the Findings.

Commissioner Perlman seconded the motion and the vote proceeded as follows:

Moved: Ambroz
Second: Perlman
Ayes: Khorsand, Millman, Mitchell
Nay: Mack
Absent: Choe, Leung

Vote: 5 – 1

MOTION PASSED

Figure 3: Example of a Support Letter

DIR-2019-6048-TOC-SPR-WDI-1A

[redacted] <[redacted]> Mon, Oct 5, 2020 at 7:18 PM
To: cpc@lacity.org, [redacted]

Dear City Planning Commission and/or [redacted]

My name is[redacted] and I am a resident of Lincoln Heights, only a few blocks away from the proposed project on 135-153 West Avenue 34. Due to my job I am unable to attend the City Planning Commission hearing on October 8th in person, but I would like to make a brief comment in support of the project.

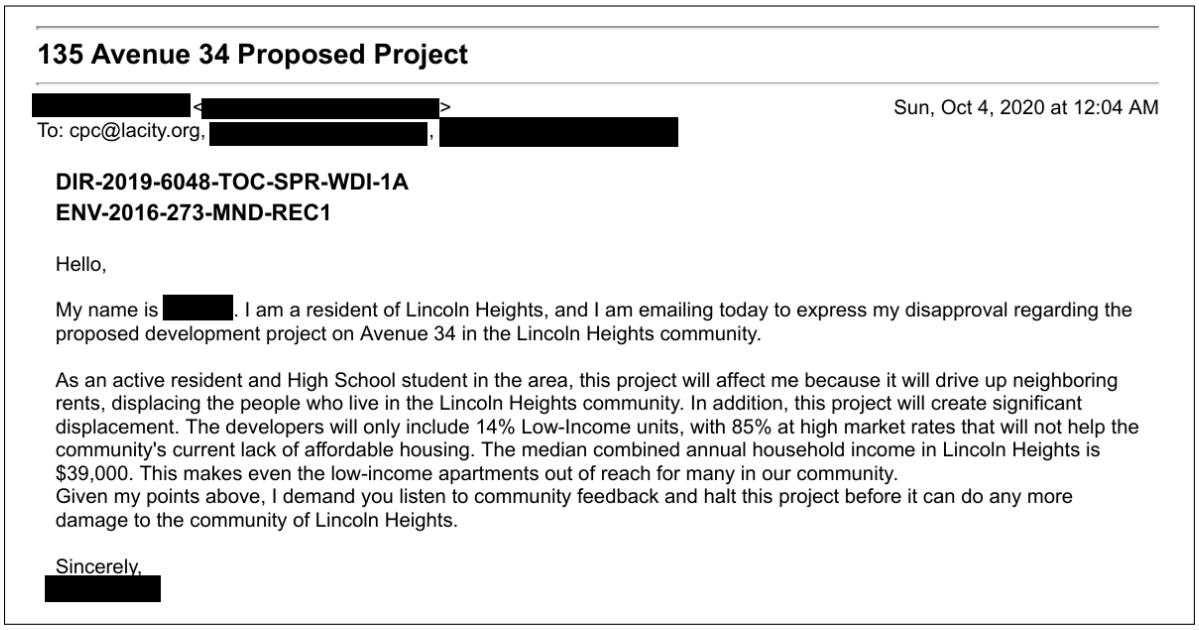
Los Angeles direly needs more housing, and this project demonstrates a solution that helps both low income and moderate income residents. I like how this project includes 66 low income units for families but also provides housing for middle income families since the rest of the units are set at market rate. I also like how close it is to the transit station and how there are fewer parking spots than units. I think we need more housing like this in Los Angeles in order to fight the car culture. Additionally, I love how there is specific bicycle parking for the new building. My only recommendation is that fewer parking spots are allotted so that owning a car would be more difficult - as that is the only way we are going to shift this toxic car culture in the city.

I know many of my neighbors are against this project, for reasons I cannot understand. One of the issues they raise is the pollution on site, but they fail to understand that by promoting a car free culture pollution is actually decreased. I also fail to understand their arguments about being residents being pushed out of the neighborhood. I would hold this project to a much higher standard if it were displacing people on the site but that is simply not the case. Lastly, there is concern about parking since this project will bring in more cars. I am a strong follower of the ideals of Donald Shoup, a professor in the Department of Urban Planning at UCLA. He argues, and I agree, that providing "free parking" is actually extremely expensive for society and ought to be done away with. With less parking available, it will force more people to abandon their cars and use the world class Metro system we have here in Los Angeles.

As a resident of the neighborhood I feel this would be a valuable addition to our community, promote a public transit orientated lifestyle, and help alleviate the housing shortage here in Los Angeles. I hope to see your support of this project on October 8th.

[redacted]

Figure 4: Example of an Oppose Letter



135 Avenue 34 Proposed Project

[redacted] <[redacted]> Sun, Oct 4, 2020 at 12:04 AM
To: cpc@lacity.org, [redacted], [redacted]

DIR-2019-6048-TOC-SPR-WDI-1A
ENV-2016-273-MND-REC1

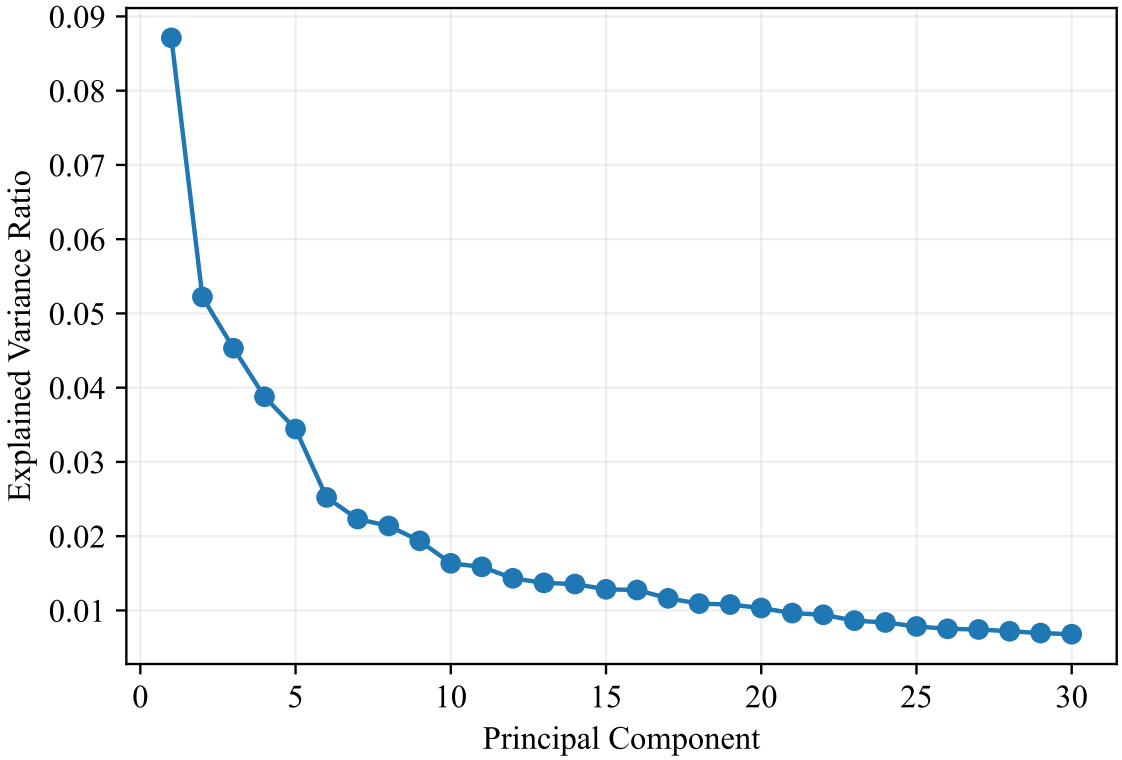
Hello,

My name is [redacted]. I am a resident of Lincoln Heights, and I am emailing today to express my disapproval regarding the proposed development project on Avenue 34 in the Lincoln Heights community.

As an active resident and High School student in the area, this project will affect me because it will drive up neighboring rents, displacing the people who live in the Lincoln Heights community. In addition, this project will create significant displacement. The developers will only include 14% Low-Income units, with 85% at high market rates that will not help the community's current lack of affordable housing. The median combined annual household income in Lincoln Heights is $39,000. This makes even the low-income apartments out of reach for many in our community.
Given my points above, I demand you listen to community feedback and halt this project before it can do any more damage to the community of Lincoln Heights.

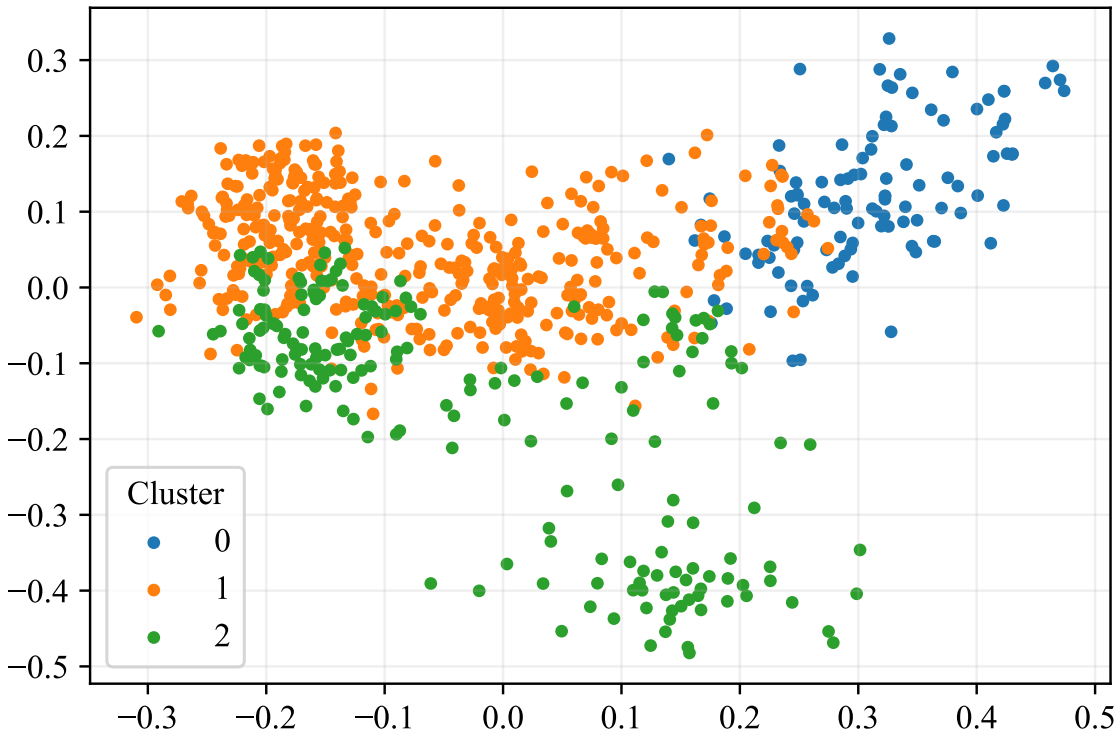
Sincerely,
[redacted]

Figure 5: Scree Plot of PCA Components



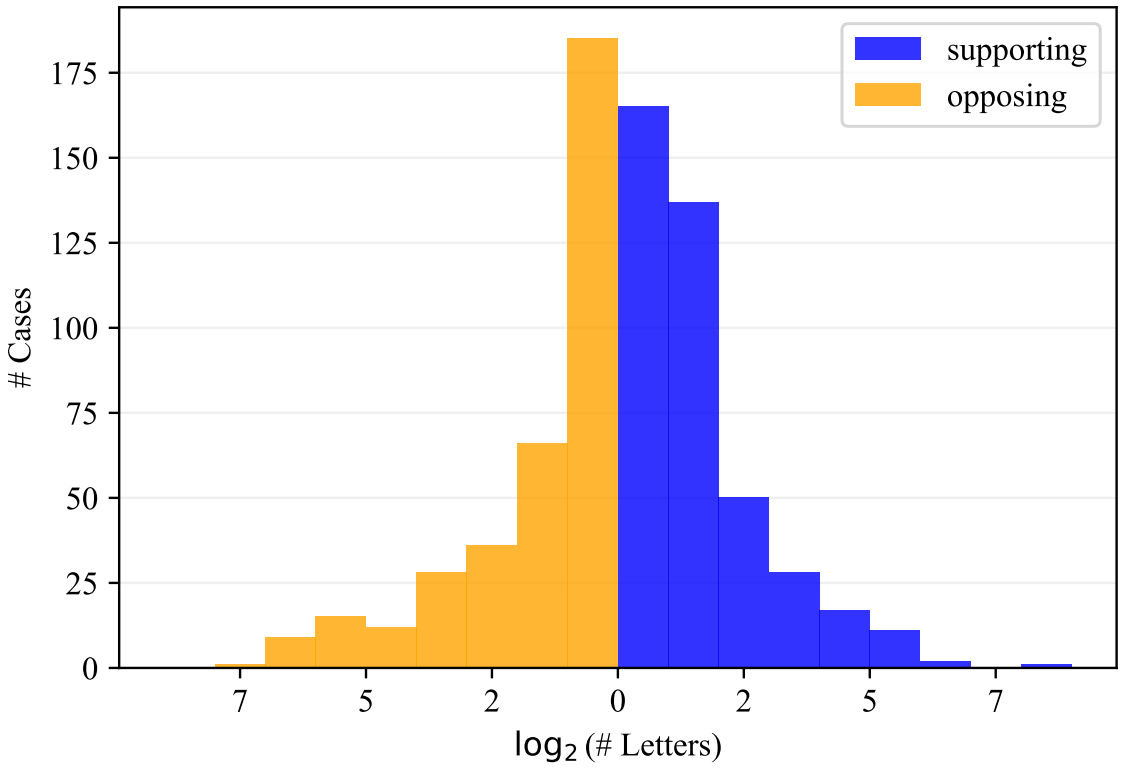
Note: Shows how much total variance in the 1,536 dimensional embedding space of the corpus of agenda items is explained by each principal component (up to the first 30).

Figure 6: PCA Reduced Embeddings with K-Means Clustering



Note: Result of K-means clustering with three clusters on the first 10 principal components of the embedding space. The first two dimensions of the 10-dimensional subspace are shown. Each dot is an agenda item.

Figure 7: Distribution of Number of Support and Opposition Letters



Note: Shows distribution of the number of supporting and opposing letters across cases. Cases with zero support or oppose letters are not included in the figure. Note that one case can have multiple supporting *and* opposing letters.

Table 1: Summary of Motion Outcomes and Vote Results

	Unanimity				
Project Implication	Unanimous	1 Nay	>1 Nays	Total	
Approved	281	15	3	299	(41.1%)
Approved with minor conditions	247	20	12	279	(38.4%)
Approved with major conditions	20	2	5	27	(3.7%)
Deliberations continued to future date	111	3	0	114	(15.7%)
Denied	5	1	2	8	(1.1%)
TOTAL	664	41	22	727	
	(91.3%)	(5.6%)	(3.0%)		

Notes: This table shows the number of cases decided on by the City Planning Commission, organized by the implication of the motion for the project proposal and the unanimity of the vote.

Table 2: Ordered Logit Regression Results

	(1)	(2)	(3)	(4)
Semantic Uniqueness	-0.347***	-0.313***	-0.323***	-0.283**
	(0.095)	(0.097)	(0.102)	(0.112)
Agenda Order		0.090*	0.088*	0.059
		(0.048)	(0.049)	(0.051)
No. Agenda Items		-0.026	-0.017	0.001
		(0.040)	(0.041)	(0.043)
Consent Calendar		1.442***	1.460***	1.477***
		(0.253)	(0.265)	(0.273)
$\log_2$(# Support)		0.054	0.055	0.056
		(0.060)	(0.062)	(0.063)
$\log_2$(# Oppose)		-0.130**	-0.149***	-0.137**
		(0.055)	(0.057)	(0.058)
Semantic Cluster FE	N	Y	Y	Y
Council District FE	N	N	Y	Y
Case Suffix Group FE	N	N	N	Y
μ_0	-2.727***	-2.206***	-2.399***	-1.932***
	(0.318)	(0.519)	(0.562)	(0.636)
μ_1	-0.698**	-0.085	-0.232	0.316
	(0.300)	(0.510)	(0.554)	(0.631)
Observations	727	727	727	727

Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Notes: This table reports coefficient estimates from the ordered logit regression described in Section 4.

Table 3: Ordered Logit Marginal Effects

	(1)	(2)	(3)
	Outcome 0	Outcome 1	Outcome 2
Semantic Uniqueness	0.035**	0.025**	-0.060**
	(0.014)	(0.010)	(0.023)
Agenda Order	-0.007	-0.005	0.012
	(0.006)	(0.004)	(0.011)
No. Agenda Items	-0.000	-0.000	0.000
	(0.005)	(0.004)	(0.009)
Consent Calendar	-0.132***	-0.190***	0.322***
	(0.019)	(0.039)	(0.053)
$\log_2$(# Support)	-0.007	-0.005	0.012
	(0.008)	(0.006)	(0.013)
$\log_2$(# Oppose)	0.017**	0.012**	-0.029**
	(0.007)	(0.005)	(0.012)
Semantic Cluster FE	Y	Y	Y
Council District FE	Y	Y	Y
Case Suffix Group FE	Y	Y	Y
Observations	118	310	299

Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Notes: This table reports estimated marginal effects from the ordered logit regression in column (4) of Table 2.

A Data Appendix

A.1 Downloading the Raw Data

The Los Angeles Planning Department keeps records of agenda, minutes, and supplemental documents for each City Planning Commission meeting. These are downloadable as PDF files. We wrote an automated scraper to crawl the Planning Department website (`https://planning.lacity.gov/about/commissions-boards-hearings#commissions`) and download these PDFs for each meeting. The first meeting date for which we obtained data was May 10th, 2018, and the last date was December 19th, 2024. After the PDFs were downloaded, the textual content was extracted using the `pdfplumber` package in Python. Some pages were stored as images rather than searchable text; we used optical character recognition software (`tesseract`) to extract the text.

A.2 Extraction of Usable Fields

Agendas. We first extracted the unique agenda items out of the agenda text of each meeting. Because the agendas had a consistent format, we were able to do this using traditional pattern matching methods. For each agenda item, we used pattern matching to extract its agenda number (e.g. "1", "2", "3a", "3b", etc.) and the title (e.g. "Director's Report and Commission Business", "CPC-2014-2906-TDR-SPR", etc.) We also used pattern matching to determine whether the agenda item is part of the consent calendar, as a consistent format was used to indicate such.

Once the agenda items were extracted from the agenda, we partitioned the agenda text into the section relevant for each item. We then asked `claude-opus-4-6` to

extract the following information:[5]

- The address or location of the agenda item's proposed project, if applicable;
- The Council District of the proposed item;
- The Council Member in charge of said Council District;
- Whether or not the agenda item is an appeal of a previous decision;
- A short summary of the agenda item.

It should be noted that all this information is contained in the text of the agenda itself; the LLM does not need to rely on external knowledge. The model was instructed to return this data in a JSON.

Minutes. The minutes are much messier and inconsistently formatted than the agendas. This is because items can get moved around in the order in which they are discussed, or sometimes discussion begins on one item, is tabled temporarily, and discussion is resumed after other items were decided on.

To extract usable information from the minutes, we did the following: For each agenda item that was an active Planning Department case needing a decision by the CPC, we gave `claude-opus-4-6` the text of that agenda item and the *full text* of the minutes for that meeting. We then asked the model to provide:

- A one paragraph summary of the deliberations related to the agenda item and the final decision made by the Commission;
- If a motion was made, the name of the Commission Member who made the motion;

[5]The full prompts used are available at `https://github.com/ed-kung/lacpc`.

- The name of the seconder;
- The list of Members who voted yes, voted no, abstained, were absent, or were recused;
- The result of the vote (passed or failed);
- The implication of the vote for the proposed project (approved, approved with minor conditions, approved with major conditions, delayed, or denied).

Sometimes multiple motions are made on the same agenda item. This usually happens if the first motion fails. In such cases, the model was instructed to take only the result of the final motion. An advantage of using a state-of-the-art model like `claude-opus-4-6` is that it was smart enough to properly contextualize the implication of the vote for the proposed project. For example, the model understood that a unanimous vote to reject an appeal implies that the project itself is approved, or that a vote to continue the deliberations to a future date implies that the decision on the project is delayed.

Supplemental Documents. The supplemental documents were challenging to process because for each meeting, all supplemental documents submitted to that meeting were spliced into a single PDF. This resulted in PDFs of many hundreds of pages, containing potentially hundreds of separate documents. In our experimentation, even state-of-the-art LLMs had trouble identifying the document boundaries, especially when there were many pages of documents, or when a document contained many pages of attachments, or a page of signatures. We therefore went through the supplemental PDFs manually to identify the document boundaries. After manually identifying and extracting the individual documents out of the spliced PDF, we did the following: For each supplemental document submitted to each meeting, we gave

`claude-opus-4-6` the text of the supplemental document and the *full agenda text* of that meeting, then asked it to provide:

- A short summary of the supplemental document and its relation to any items on the agenda;
- A list of the agenda items that the supplemental document references, identifying the items by their item number;
- Document type (public comment, supplemental materials, administrative or other);
- Support or oppose: For each of the referenced agenda items, the model was asked the say whether the document definitely support, somewhat supports, is neutral towards, somewhat opposes, or definitely opposes the project being proposed.

As with the minutes, proper contextualization of the document with respect to the referenced agenda items is crucial. For example, a public comment may support the appeal of a decision, which would be an opposition to the underlying project. A pattern-matching approach or a less intelligent model may see words like "support" and think that the letter was written in support of the project, despite the truth being quite the opposite. This again highlights the importance of using highly capable models like `claude-opus-4-6` to handle the extraction of the data.