Highlights

Hospital Allocation and Politicians: Evidence from Malaysia

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- Malaysia allocates hospitals in two stages: funding decisions are made at the district level, followed by location selection within those districts.
- Deputy ministers influence where hospitals are built within funded districts, but not which districts receive funding.
- Ministry of Health bureaucrats prioritize underserved districts through measurable allocation criteria, limiting political distortion of funding decisions.
- Six decades of electoral, biographical, and construction data show how multi-stage allocation processes constrain political influence.
- Establishing measurable allocation guidelines can limit political distortions in healthcare infrastructure provision.

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Abstract

Equitable access to healthcare requires efficient allocation of health infrastructure, yet politics may distort these decisions. This paper studies how politicians distort public hospital allocations in postcolonial Malaysia from 1959 to 2013. Malaysia first allocates hospital funding to districts, then selects specific locations within funded districts for construction. Using six decades of data on hospital construction and elections, I find that constituencies represented by deputy ministers are significantly more likely to receive new hospitals, but only at the location selection stage within districts. District-level funding decisions effectively direct resources to districts far from existing hospitals. I provide suggestive evidence that measurable guidelines for funding decisions exist but not for construction site selection. These results suggest that defining clear guidelines in hospital allocation can limit political distortions.

Keywords: Hospital Allocation; Political Economy; Public Health; Malaysia

1. Introduction

Hospital expenditures account for 39 percent of total health spending across OECD countries [1], constituting the largest proportion of healthcare spending. The existing literature shows that political interests influence the allocation of public goods broadly [2, 3, 4, 5, 6, 7, 8, 9, 10], and such distortions may extend to the spatial allocation of hospital infrastructure [8]. Understanding the extent of political distortions in hospital allocation is important for informing whether governments prioritize healthcare needs or political considerations when making allocation decisions. This evidence would then inform broader policy decisions about the allocation of public healthcare resources.

Public hospitals in Malaysia follow a two-stage process. Bureaucrats from the Ministry of Health lead the hospital planning process and have maintained the same objective of "*building hospitals in areas without them*" since Malaysia's independence in 1957[1]. First, funding for new hospitals are given to districts, and second, the specific location of hospitals are then selected within districts. In the first-stage, bureaucrats from the Ministry of Health maintain a priority ranking of districts driven by physical access to hospitals. During the second-stage, once funding has been allocated, the guidelines in determining the specific hospital location is based on State government land allocation procedures. Across both stages, the Minister of Health (a politician) holds veto power over these decisions. Other politicians from the ruling coalition might pressure the Minister to build new hospitals in their areas, potentially distorting allocations away from allocation objectives. Thus, quantifying the effects of building hospitals in underserved areas relative to political favoritism would reveal the effectiveness of bureaucrats in allocating hospitals relative to political interests.

Underpinning my analysis is a new spatial dataset that spans six decades of Malaysia's post-colonial history ranging from 1959 to 2013. I consolidated this dataset from newly digitized historical election reports across 12 elections, five electoral maps, thousands of politician biographies, demographics from the Malaysian Census, population density maps, and the location and timing of hospital construction. I manually link each hospital to the electoral seat where it was constructed, and then trace the year in which the district received funding through historical planning documents. This allows me to

[1] See excerpts from historical planning documents in Figure Appendix A.7.

study the effects of politicians during both the construction and funding stages of the allocation process.

Politicians have various incentives to build local support and advance to higher positions where they can influence national policies. After winning an electoral seat to become a Member of Parliament, politicians may be appointed by the Prime Minister to serve as ministers or deputy ministers for one electoral cycle. Ministers are typically established politicians with strong local electoral support who focus on national political issues and possess significant decision-making power. Deputy ministers are less nationally influential and tend to focus on local issues to maintain and increase voter support. To analyze how these different roles affect hospital allocations, I examine three categories of politician status: ministers, deputy ministers, and incumbents who contested in previous elections. Ministers, with their veto power on national issues, may influence allocations differently than deputy ministers, who might exert more direct pressure on decisions affecting their local areas. Incumbents from previous elections serve as a baseline for comparison, as their established local support can be contrasted with the strategic behaviors of politicians seeking higher office. Comparing across categories would allow me to identify the mechanisms through which political considerations influence hospital allocations.

I measure the effectiveness of Ministry of Health bureaucrats in adhering to planning objectives by computing a population density-weighted distance measure to existing public hospitals. This measure uses time-varying population density data at a 1km grid resolution from 1970 to 2000. I compute this measure by calculating the distance between a 1km grid and the nearest public hospital at the beginning of an electoral cycle. I then collapse the grids to the electoral seat level, weighting the grids by grid population size to assign greater weight to densely populated grids relative to sparsely populated grids. For instance, two grids that are equidistant from the same public hospital would have different weighted distances if one grid has a higher population density. This allows me to account for uneven population distributions within electoral seat-district pairs.

The challenge in identifying the effects of politicians on hospital construction is that politicians with greater influence may also represent areas that are more likely to receive public hospitals due to factors unrelated to political influence. Regression discontinuity designs, which exploit close electoral margins, are not feasible in this context as Malaysia was dominated by a single ruling coalition during most of the study period, resulting in very few

close elections.

To address this, I leverage a plausibly exogenous variation arising from the differences between district boundaries and electoral seat boundaries. District boundaries are drawn to facilitate the allocation of public goods, while electoral seat boundaries ensure fair voter representation within a geographic area. This leads to multiple electoral seats within a specific district (See Figure Appendix A.16 for district boundaries against electoral seat boundaries over time). I use this institutional feature to compare seats within a district where a hospital is constructed. The identifying assumption is, absent of political influences, electoral seats within the same district would exhibit parallel trends in receiving a new public hospital.

I find that electoral seats (within districts that have been given funding for new hospitals) represented by deputy ministers have a significantly higher probability of receiving a new public hospital. The mean probability of public hospital construction across electoral seats is 0.346, and being in an electoral seat represented by a deputy minister increases this probability by 0.415 to 0.761. In contrast, ministers and incumbents have a small and imprecise effect on hospital construction. The findings on deputy ministers suggest that local political incentives strongly drive hospital construction decisions.

Across all specifications, I find that bureaucratic adherence to planning objectives play a large and significant role in hospital allocation. Electoral seats with a population-weighted distance that is one standard deviation above the mean have a 0.490 higher probability of receiving a new hospital (compared to a mean of 0.346). These findings suggest that despite favoritism towards electoral seats represented by deputy ministers, Ministry of Health bureaucrats effectively prioritize accessibility for underserved areas.

When do deputy ministers exert their influence during the planning process? To understand this, I link each public hospital to the year when funding allocations were given to districts. To identify the effects of deputy ministers on funding decisions, I compare districts with at least one deputy minister to districts with no deputy ministers using a difference-in-differences identification strategy. I find that deputy ministers have a small and statistically insignificant effect on funding decisions, suggesting that political distortions occur during the construction stage but not during the funding stage. The role of allocation priorities remains strong during the funding stage. Districts with a population-weighted distance that is one standard deviation above the mean have a 0.076 higher probability of receiving hospital funding (relative to a mean of 0.052).

A simple two-stage bargaining model rationalizes the observed hospital allocations as bureaucrats having larger bargaining power in the first-stage of selecting districts for funding relative to the second-stage of choosing areas within districts. Anecdotal evidence from the previous Minister of Health and Director General of Health suggests that bureaucrats can limit political influence in the first-stage precisely due to the ranking system. However, political considerations do arise among districts that are highly ranked for a new hospital. For example, suppose there are three districts, and funding is only available for two districts. If the third-ranked district has an influential politician, bureaucrats might choose to bump up the district in place of the second-ranked one. I empirically test the existence of such a ranking rule by re-estimating the difference-in-difference on funding decisions and interacting the deputy minister variable with distance. In contrast to the standalone effects of deputy ministers, the interaction term is large and statistically significant. This suggests that a district has an increased probability of receiving funding when it is represented by a deputy minister and is ranked highly among allocation priorities, lending credence to the anecdotal evidence of a ranking system for districts.

These results show that establishing measurable guidelines in allocating public goods can be an additional tool to limit political influence alongside existing tools such as political competition or meritocratic hiring [11, 12, 13, 14]. This is particularly evident in healthcare, where objective allocation criteria have been shown to reduce politically-motivated resource distribution [14]. Relatedly, the findings also suggest that the vulnerability of a decision-making process to political influence is more a function of the rules and procedures governing each stage than of the degree of centralization or decentralization [15, 16, 17, 18, 19, 20, 21].

This study contributes to five strands of literature. First, my findings contribute to the growing body of research on the role of state capacity in economic development [22, 23, 24, 25, 26, 27, 11, 28, 29, 30]. My findings provide new evidence on how objective criteria for public goods can mitigate political influence on bureaucratic decision-making, and thus enhance state capacity. Second, this paper contributes to the longstanding literature on political economy and the allocation of public goods. Studies have shown how political factors, such as electoral incentives, patronage, and ethnic favoritism, can distort the allocation of public resources [2, 4, 31, 8, 13, 14, 32]. My findings add to this literature by demonstrating that the extent of political influence can vary across different stages of the allocation process.

Third, my study contributes to the literature on decentralization and public goods provision by showing that rules-based allocations are beneficial in mitigating political distortions than the degree of decentralized decisions [33, 15]. Fourth, this paper contributes to the literature on how political institutions and processes affect health, complementing research that has documented political influence on healthcare resource allocation and the role of electoral responsiveness in improving health through redistributive channels [13, 14, 34]. My findings demonstrate that rules-based allocation mechanisms can serve as institutional safeguards against political distortions that compromise both efficiency and equity in health-related public goods provision [35]. Lastly, this paper adds to the literature on misalignment of administrative and political boundaries by showing that differences in administrative district boundaries and electoral seats play a role in mitigating political interests [36, 37, 38, 39, 40].

2. Context

Healthcare System Overview. Malaysia's healthcare system comprises both public and private sectors, though public hospitals have been the dominant provider of inpatient care throughout the study period. At independence in 1957, nearly all hospital infrastructure was publicly owned. The public sector expanded steadily from approximately 55 hospitals and 13,000 beds in 1970 to over 140 hospitals and 37,000 beds by 2013 (see Figure Appendix A.20). Private hospital growth accelerated after economic liberalization in the late 1980s, but even by 2013, private hospitals accounted for roughly one-quarter of total inpatient bed capacity. Public hospitals provide heavily subsidized care (patients pay nominal fees of RM1, approximately USD 0.25, for outpatient visits and RM5, approximately USD 1.25, for specialist consultations), making them the primary source of hospital care for the majority of the population, particularly in rural areas [41]. Malaysia's healthcare system operates on a tiered referral structure, where patients access primary care clinics (*klinik kesihatan*) before being referred to district, specialist, and state hospitals. This referral system means that geographic proximity to hospitals is a key determinant of access to inpatient care, which is precisely the dimension captured by the population-weighted distance measure used in my analysis.

Hospital Allocation Process. The hospital allocation process involves two stages: determining which districts receive funding for a new public hospital, followed by selecting the specific location within each funded district. Funding for new public hospitals is set by five-year economic planning blueprints known as *Rancangan Malaysia* or "Malaysia Plans". These "Malaysia Plans" outline new economic development projects in Malaysia during a five-year period. For new health facilities, bureaucrats from the Ministry of Health work alongside State Economic Planning Units to prioritize districts based on three indicators: population size, distance to existing public hospitals, and the congestion of existing facilities. After districts have been ranked for a new public hospital, bureaucrats submit a list of districts to the Ministry of Finance for budgetary approvals. The Ministry of Finance works alongside the Economic Planning Unit to draft the Malaysia Plans, and the Cabinet of Ministers review the Malaysia Plan before publicly releasing the document.

Once funding has been allocated to districts, Ministry of Health bureaucrats work alongside the State and District Governments to choose which

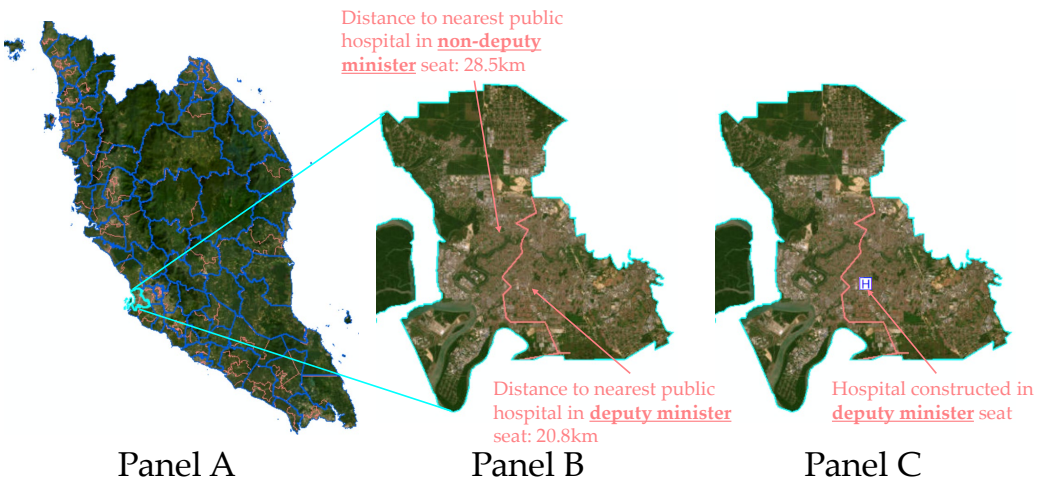
location would be most suitable for a new hospital. Relative to the funding decisions, the actual location within a district are less constrained by planning guidelines. This creates opportunities for political influence in the site selection process, as local officials and elected representatives may advocate for locations that serve their political interests rather than purely technical considerations.

I provide an example of the announcement and construction of a public hospital in the '*Klang*' district in Figure 1. Panel A maps the first-stage choice of selecting districts, while Panel B and C illustrate the second-stage seat choice once funding has been allocated. In this example, the funding allocation for Hospital '*Klang*' was announced in the Second Malaysia Plan in 1971, and the construction was completed in 1982. Panel B and C combined illustrate the second-stage seat choice. Panel B depicts the two electoral seats within the '*Klang*' district. From Panel B, The electoral seat with a deputy minister is nearer to an existing public hospital relative to the non-deputy minister's seat. However, Panel C shows a public hospital built in the deputy minister's seat. These panels show that political influence can occur across-districts at the funding stage (Panel A), but also within-districts at the construction stage (Panels B and C).

Districts and Electoral Seats. District and electoral boundaries in Malaysia serve different purposes and are drawn based on different criteria. District boundaries are established to facilitate the governance and delivery of public services, while electoral boundaries ensure fair voter representation. Newer districts may be split from existing ones but do not subsume existing districts. On the other hand, new electoral seats subsume existing ones. During each electoral cycle, there are more electoral seats than districts–the number of electoral seats in Peninsular Malaysia grew from 104 in 1970 to 165 in 2004, while the number of districts grew from 70 to 82 between 1970 and 2000 (Figure 2). See Figure Appendix A.16 for an overlap of the district boundaries from 2000 and electoral boundaries across different elections. Importantly, for identification, there can be multiple electoral seats within a district.

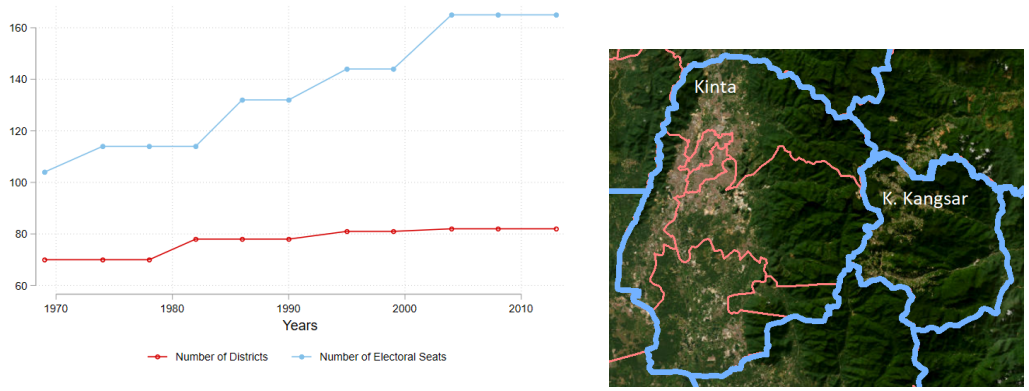
Political Context, Political Career Paths, Ministers and Deputy Ministers. Elections follow a parliamentary system where multiple electoral candidates compete within an electoral seat. Electoral candidates choose which electoral seat to represent. Electoral candidates with the most votes win the seat under a first-past-the-post system and become Members of Parliament (MPs). MPs do not directly compete for ministry positions. Instead,

Figure 1: Hospital Funding and Construction Example



Notes: Panel A maps the district boundaries for Peninsular Malaysia in 2000 against the electoral seat boundaries in 1974. This panel depicts the across-district funding stage, where bureaucrats select which district receives funding for a new public hospital. Panel B zooms into the '*Klang*' district which received funding for a new public hospital during the Second Malaysia Plan (1971-1975). During the 1978 election, one of the electoral candidates became a deputy minister. The area with the deputy minister is nearer to an existing public hospital. Panel C shows the public hospital constructed in the Deputy Minister's seat.

Figure 2: Differences between Districts and Electoral Seats



(a) Districts and Seats over Time

(b) District and Seat Example

Note: Panel A plots the number of districts and electoral seats between 1970 and 2013 for Peninsular Malaysia. Panel B is a map of two districts in 2000–*Kinta* and *Kuala Kangsar* overlaid with electoral boundaries in 2004. *Kinta* has six electoral seats, and *Kuala Kangsar* has one. District boundaries are in blue, and electoral seat boundaries are in red. See Figure Appendix A.16 for electoral boundaries from 1959 to 2008 overlaid against district boundaries in 2000.

the Prime Minister appoints MPs to ministerial and deputy ministerial roles. The Prime Minister selects ministers and deputy ministers from MPs based on competencies in related ministries, but also MPs with strong political influence or political support. Ministers typically represent politically secure constituencies and engage heavily in national-level politics, while deputy ministers concentrate more on local issues to maintain and increase voter support. This is reflected in my empirical data, as politicians who transitioned directly from an MP to a Minister during their political career have the highest winning margins (0.351), indicating their strong political influence and party standing (See Table Appendix A.8). In contrast, politicians who transitioned from MP to deputy minister without further promotion have lower winning margins (0.276), suggesting that they are less influential and have the incentives to focus on local issues to secure electoral support. Politicians who progressed from deputy minister to minister positions show similarly strong electoral performance (0.349) and contest the most elections on average (2.967).

This distinction across political career paths is important for understand-

ing why different politicians might have different incentives to influence public goods allocation. Ministers may be less likely to distort hospital allocations compared to deputy ministers, as ministers have already secured strong political support and focus primarily on national policy objectives. Deputy ministers, with their greater need to strengthen local electoral support, have stronger incentives to direct public goods like hospitals to their constituencies, potentially at the expense of adherence to allocation priorities.

In the following election, electoral candidates can choose to contest in the same electoral seat or a different one. The electoral system does not impose term limits on MPs, and they can serve multiple terms as long as they continue to win elections. The Prime Minister also reshuffles the Cabinet during the next election, which leads to changes in ministerial positions–electoral candidates that were previously ministers or deputy ministers may lose their position the following election.

The Cabinet is the executive body of the government comprised of senior ministers who head various government departments. Led by the Prime Minister, Cabinet members collectively formulate and implement national policies and are accountable to Parliament for government decisions. The Cabinet meets regularly to discuss matters of national importance, with ministers presenting policy proposals from their respective departments for collective approval.

Coalition and Political Parties. The *Barisan Nasional* coalition, comprising parties representing specific ethnic groups, has won every election since its founding in 1973. Prior to 1973, its predecessor–the Alliance party–won every election from 1959 to 1969. The multi-ethnic composition of the *Barisan Nasional* coalition is clearly delineated along party lines, with each party representing a specific ethnic group. The three main constituent parties are the United Malays National Organization (UMNO), the Malaysian Chinese Association (MCA), and the Malaysian Indian Congress (MIC). Notably, since 1969, the Minister of Health, who oversees the development and management of public hospitals, has consistently been a member of the MCA, reflecting the Chinese ethnic representation in this key cabinet position. In contrast, prior to 1969, the position of Minister of Health was held by both Malay and Chinese politicians. The ethnic dimension of Malaysia's healthcare politics, where UMNO has historically delivered health services to its rural Malay electoral base, has been documented in the health policy literature [34, 41].

3. Data

Data Sources. I combine seven sources of electoral, spatial, census, and hospital data to observe how politicians and allocation priorities affect hospital planning.

Electoral Results.–I compiled election results from historical election reports produced by the *Election Commission of Malaysia*. These reports are compiled for every electoral cycle and contain detailed information on electoral candidates, their party affiliation, and voting patterns. The information is compiled at the electoral seat level (See Table Appendix A.9 for summary statistics of electoral seats by electoral cycles). With this electoral data, I manually match the electoral seats to the electoral maps based on their electoral seat names.

Electoral Maps.–I use historical electoral maps from both the National Archives of Malaysia and *Tindak Malaysia*[2]. These electoral boundaries are distinct from district boundaries and designate which electoral seat a registered voter resides in. Electoral boundaries were redistricted in 1974, 1986, 1995 and 2004 (See Figure Appendix A.9).

Politician Biography Data.–I obtained historical data on the members of the executive branch of the government through the National Archives of Malaysia. The members of the executive branch (also known as the Cabinet of Malaysia) is led by the Prime Minister, and consists of Ministers of specific ministries. Formally, the King of Malaysia (*Yang di-Pertuan Agong*) appoints all ministers on the advice of the Prime Minister. Using this historical data of the Malaysian executive branch, I identify the electoral candidates that eventually became Ministers or Deputy Ministers from the electoral seat data by manually matching their names and party affiliation. Incumbents from previous elections are identified by matching the names of the electoral candidates from the previous election to the current election.

Demographics Data and Maps.–The main source of demographics data comes from the Malaysian Population and Housing Census from 1970, 1980, 1991 and 2000. I obtain this data from IPUMS International. District boundaries change over time. To ensure spatial consistency in my analysis, I back-project all data based on the 2000 district boundaries. This approach allows

[2] *Tindak Malaysia* is a Malaysian NGO dedicated towards education, empowerment, and mobilization for electoral reforms. I purchased electoral maps from 1974-2003 from *Tindak Malaysia*.

me to work with geographically constant units throughout the study period. Additionally, the number of districts in Peninsular Malaysia has only increased modestly from 70 in 1970 to 82 in 2000, making the 2000 district boundaries a suitable baseline for the analysis. By using consistent district boundaries, I can control for changes in district boundaries over time and maintain a consistent geographical unit for examining the influence of politics on the allocation of public hospitals.

Population Grids.–A district may contain multiple electoral seats that are unevenly sized. Further, an electoral seat may not be entirely contained within the same district. To account for the unevenness of districts and seats in the analysis, I weight each electoral seat-district pair by the population size which resides within the seat-district pair. Specifically, I use 1km population density maps from the Center for International Earth Science Information Network (CIESIN) to quantify the population size of a unique seat-district pair. I use density maps that are representative of years 1970, 1980, 1990, and 2000. For electoral cycles between 1959 and 1969, I use the 1970 population density map as my base population map.

Hospital Construction Data.–I use data from the National Healthcare Establishment and Workforce Survey (NHEWS) 2010-2013 from the Institute for Clinical Research in Malaysia to map hospital locations and their year of construction. The survey contains information about every public hospital that provides inpatient services as of 2013. The final set of hospitals includes all general and specialized hospitals providing acute curative care from the public sector. This excludes prison hospitals, maternity homes, non-governmental organization hospitals, long-term care hospitals such as rehabilitative, palliative care, nursing homes, leprosy centers and psychiatric institutions. I consider hospitals that were built in the year after an election was held, up to and including the year of the following election. For example, in Table Appendix A.9, the election year 1964 would refer to hospitals that started providing services between 1965 and 1969–the year which the next election was held[3] (See Figure Appendix A.8 for a map of public and private hospital locations). This analysis does not include clinics that discontinued their inpatient services before 2013, as the survey only lists hospitals that

[3]Polling months in Malaysia ranged from March to November between 1959 and 2008. The reasoning used here is that politicians would want to benefit from the visibility of a newly constructed public hospital during their tenure.

were offering inpatient services in 2013[4].

It is important to note that the assignment of hospitals to electoral cycles based on the year services began does not assume that the decision to build and the start of service provision occur within the same electoral cycle. In the data, the average duration from funding announcement to the start of services is 8.8 years. This means that a typical hospital spans approximately two electoral cycles from announcement to completion. My analysis accounts for this by examining the two stages of the allocation process separately: the funding stage identifies when and where district-level funding was allocated through the Malaysia Plans, while the construction stage captures which electoral seats ultimately received hospitals. The electoral-cycle assignment for the construction stage captures which politicians held office during the period when a hospital began providing services, reflecting the political visibility associated with a newly operational hospital, rather than when the initial construction decision was made. While this means the politician in office at hospital opening may differ from the one who influenced site selection, many politicians serve consecutive terms (the average deputy minister in the sample contests 2.1 elections) and the opening-year assignment captures which types of areas systematically receive hospitals during periods of deputy minister representation.

Hospital Funding Announcement Data.–Using the hospital construction data, I link each hospital to the year in which funding was announced through the Five-Year Malaysia Plans (See Table Appendix A.7 for a table of hospital announcements and construction by electoral cycles). I obtain the year in which a hospital is announced by identifying the district of the hospital and matching it to the announcements (see Figure Appendix A.6 for an example from the Second Malaysia Plan). Hospital announcements were identified through the 'Health' sector chapters in the Malaysia Plans. The Malaysia Plans are structured into "Progress" and "Prospects" sections. The "Progress" section allowed identifying hospitals constructed in the previous five years, while the "Prospects" section looked ahead to future plans. The Fourth Malaysia Plan (1981-1985) could not be used as its "Prospects" section did not announce specific districts receiving funding for new hospitals, and the Fifth Malaysia Plan (1986-1990)'s "Progress" section did not summarize

[4] *Klinik Kesihatan Butterworth* in the state of Penang is an example of a clinic that was initially used for inpatient services.

construction from the previous cycle. In total, 61 hospitals were constructed in the sample, and 54 hospitals could be linked to their announcement years[5].

Measuring Politician Status. To examine how politicians influence hospital allocations, I categorize politicians into three types during each electoral cycle: (i) ministers, (ii) deputy ministers, and (iii) incumbents from the previous election cycle. As discussed above, these categories help identify the different incentives and mechanisms through which politicians influence hospital construction. Ministers, who serve in the Cabinet, have direct influence on hospital funding through Malaysia Plans but focus primarily on national politics given their secure electoral positions. Deputy ministers, appointed by the Prime Minister to assist Ministers, have stronger incentives to secure local development projects to build voter support. Incumbents without ministerial positions have comparatively weaker influence and networks. During each electoral cycle, the number of ministers increased from 16 in 1959 to 32 by 2008, while deputy ministers grew from seven to 40 between 1970 and 2013. While the government justifies this expansion through growing bureaucratic needs, critics argue it serves as a mechanism for the Prime Minister to reward political loyalty [42].

Data Construction. I begin by spatially layering district boundaries with electoral seat boundaries. This constructs a dataset where each observation is a unique district-seat pair[6]. I then quantify the population that resides within each seat-district pair using the 1km population grids. To calculate the distance to the nearest public hospital, I calculate the Haversine distance between each 1km grid and the hospital, and collapse these grids weighted by grid population to the electoral seat-district pair level. I then link electoral seats to electoral results and the characteristics of electoral candidates, and repeat this for district characteristics[7]. I then identify which seat-district received a new public hospital. My observations are unique district-seat-electoral cycle pairs. I provide a table of summary statistics of

[5]The seven missing hospitals are smaller non-specialist hospitals, including *Sik, Gua Musang, Raub, Kuala Nerang, Hospital Tengku Ampuan Jemaah, Hospital Temenggung Seri Maharaja Tun Ibrahim*, and *Hospital Muadzam Shah*.

[6]For each electoral cycle, districts and seats can appear multiple times in my data because districts and electoral seats overlap.

[7]Elections that occur before 1978 will be assigned the 1970 census characteristics, 1982-1990 for the 1980 census characteristics, 1995-1999 for 1991 census characteristics and 2004-2008 elections matched to 2000 census characteristics

every electoral seat in Panel A, and those that are within funded districts in Panel B in Table Appendix A.9.

4. Politicians and Hospital Construction

4.1. Empirical Strategy

The ideal experiment involves a comparison between control and treated electoral seats that are equally likely to receive public hospitals. Comparing across all seats would not be ideal, as some seats are more likely than others to receive public hospitals. Instead, I rely on a plausibly exogenous variation induced by the differences between districts and electoral seat boundaries to identify the effects of politics on hospital construction. Specifically, my treatment and control units are electoral seats within the same district, where that district has received funding for a new hospital. This limits my observations to a subset of electoral seats, which amounts to 302 unique electoral seat-district-electoral cycle combinations. I provide a balance table of control and treatment units in Table Appendix A.10, Table Appendix A.11 and Table Appendix A.12 for minister, deputy minister and incumbent seats respectively.

The balance tables indicate that treatment and control electoral seats are comparable in terms of proximity to the nearest public hospital and population size for deputy minister (and non-deputy minister) seats. However, minister and incumbent seats tend to be further from existing public hospitals compared to their respective control seats, suggesting a higher likelihood of receiving public hospitals in these seats. These randomization checks suggest that we should expect the effects of minister and incumbent electoral seats on hospital construction to be biased upwards. Given these threats to identification, I will conduct further robustness checks using matched-districts in an event study design [43] in the following subsection. With this caveat, I estimate the following equation using OLS, where the outcome is a binary variable of whether a hospital is constructed in an electoral seat s during an electoral cycle t:

$$y_{st} = \beta_1 \cdot \text{politics}_{st} + \beta_2 \cdot \text{distance}_{st} + \mathbf{X}'_{st}\Gamma + \nu_{dt} + \varepsilon_{st} \tag{1}$$

politics_{st}, is defined as a binary indicator reflecting politician statuses–it represents whether the seat is held by politicians who are ministers, deputy ministers, or are incumbents from the previous election (electoral candidates

that have been contesting in two or more consecutive elections, but are not ministers or deputy ministers) during an electoral cycle. Specifically, it takes the value of 1 if the politician serving the seat during cycle t is a minister, deputy minister, or incumbent. Conversely, the variable is 0 when the politician does not hold any of these statuses. As political status changes across electoral cycles, this variable switches between 1 and 0 for the same electoral seat, over time. distance_{st} is the population weighted distance to the nearest public hospital at the beginning of the electoral cycle. I weight each observation by the population size of the seat within districts–not the total population size at the seat level. This is to account for the size of the intersection between seats and districts. I cluster the standard errors at the district level using district boundaries from 2000, and control for seat-level covariates. These covariates include distance to existing private hospitals, a binary indicator capturing whether the *Barisan Nasional* candidate was uncontested, the number of opposing candidates within the same seat, whether the candidate won the seat, party dummies of the candidate, voter turnout, total voters and the winning margins of the candidate relative to the runner-up candidate and a squared winning margins term. I also include district $\times$ time fixed effects to control for unobserved heterogeneities across district-time, ν_{dt}. The remaining variation thus arises from within-district changes in seats over time. The identifying assumption is that, conditional on observed covariates and fixed effects, any differences in hospital construction are attributable to political influence. This implies that within the same district, electoral seats in a given cycle exhibit parallel trends in receiving new public hospitals, absent of political influences.

4.2. Results

Main Results. Table 1 presents the results from Equation 1. I estimate Equation 1 using the three different politician variables across Columns 1 to 3. The mean probability of receiving a new public hospital across all electoral cycles is 0.346. From Columns 1 and 3, the point estimate for 'Minister' (0.025) is small and statistically insignificant. In contrast, 'Deputy Minister' effects in Column 2 show that electoral seats with deputy ministers have a 0.415 higher probability of receiving a new hospital relative to seats without deputy ministers. Interestingly, 'Incumbent' effects in Column 3 indicate that electoral seats with incumbents have a 0.230 lower probability of receiving a new hospital compared to seats without incumbents. Across all specifications, electoral seats with winning margins one standard deviation above the mean

have a 0.189 to 0.233 higher probability of receiving a new hospital. Across all columns, allocation priorities have a large effect on determining which electoral seats receive a new public hospital. From Column 2, electoral seats that are a standard deviation above the mean distance to the nearest public hospital have a 0.473 higher probability of receiving a new hospital.

These results show that local political incentives, rather than national-level influence, drive hospital location distortions. Deputy ministers, who focus on building local electoral support and lack direct control over allocation decisions, exert the strongest influence on hospital location. This contrasts with ministers, who despite having authority over hospital allocations through Cabinet decisions, show no significant effect on hospital construction. The negative coefficient for incumbents suggests that established local politicians without ministerial positions may actually be less effective at securing hospitals than newcomers. Overall, this suggests that politicians with intermediate levels of power and strong local incentives are most likely to successfully pressure bureaucrats for favorable allocations, while those with either too much national focus (ministers) or too little influence (incumbents) are less effective at directing hospitals to their constituencies.

Additional Robustness Checks. I now estimate an alternate version of the main identification strategy to ensure that my results are not driven by unobserved confounding factors. The within-district strategy mitigates some district level confounding, but pre-electoral cycle differences persist for minister and incumbent seats. Notably, balance tests for deputy minister seats (see Table Appendix A.11) do not show significant differences in key pre-treatment characteristics. Additionally, limiting to districts that have been given funding for a new hospital results in 306 distinct electoral seat-cycle pairs. This is a small sample size, and might reduce the statistical power of the estimates, thereby limiting the precision of the findings.

As an alternative specification to address the imbalance in pre-treatment covariates and small sample sizes, I first match electoral seats based on their pre-treatment covariates using the coarsened exact matching algorithm [44]. Control units are never-treated electoral seats (electoral seats that have never received a public hospital during my study period). I use the same set of covariates as in Equation 1. After matching electoral seats, I weight electoral seats based on their propensity scores and estimate the staggered event study estimator by [43] to address heterogeneous treatment effects across multiple time periods.

One challenge to this robustness check is that electoral boundaries change

Table 1: Political Influence on Probability of Hospital Construction

	Construction Within-Districts		
	(1)	(2)	(3)
Political Influence			
Minister	0.025		
	(0.218)		
Deputy Minister		0.415	
		(0.170)	
Incumbent			-0.230
			(0.116)
Electoral Competitiveness			
Winning Margins (SD)	0.189	0.191	0.233
	(0.092)	(0.085)	(0.111)
Adherence to Allocation Priorities			
Weighted Dist. Pub. (SD)	0.490	0.473	0.457
	(0.200)	(0.191)	(0.206)
Mean Dep Var.	0.346	0.346	0.346
N Seat-Districts	302	302	302
N Treated Seat-Districts	52	55	88
R^2	0.422	0.461	0.441
Fixed Effects	District x Cycle	District x Cycle	District x Cycle
Seat-Level Covariates	x	x	x

Notes: The regression is limited to electoral seats in districts that have been given funding for a new hospital. Each observation is a unique electoral seat-district-electoral cycle. The outcome variable is a binary variable on whether a public hospital is built in an electoral seat. 'Minister' and 'Deputy Minister' are electoral seats where the politician becomes a Minister or Deputy Minister during an election cycle. 'Incumbent' are electoral seats where the electoral candidate is the same as the candidate in the previous election. 'Winning Margins (SD)' captures the standardized winning margin of the electoral candidate. All regressions control for seat-level covariates. These covariates include distance to existing private hospitals, a binary indicator capturing whether the *Barisan Nasional* candidate was uncontested, the number of opposing candidates within the same seat, whether the candidate won the seat, party dummies of the candidate, voter turnout, total voters and the winning margins of the candidate relative to the runner-up candidate and a squared winning margins term. Standard errors clustered at the district level (based on 2000 boundaries) are reported in parentheses.

over time. To ensure geographic consistency, I reconstruct electoral boundaries using maps from 2004, tracing each current seat back to its original delineation. Though electoral seats redelineation can introduce measurement error–for example, the geographic boundaries of a "Deputy Minister" seat in earlier elections may differ from those defined in 2004–the approach allows for a long-run comparison where treatment units are defined as seats first represented by a particular political status and control units are future treated seats. Specifically, I estimate the following equation:

$$y_{st} = \beta_k \sum_{k=k_{\min}(D)}^{k_{\max}(D)} D_{k,st} + \alpha_s + \delta_t + \varepsilon_{st}, \tag{2}$$

y_{st} represents the number of public hospitals within electoral seat s at time t. $k_{\min}(D)$ and $k_{\max}(D)$ are defined depending on whether D is a minister, deputy minister, or incumbent. I provide a figure showing the event study results for ministers, deputy ministers and incumbent in Figure Appendix A.18, and a table of the same estimates in Table Appendix A.5. Panel A shows there is an increase in the probability of a hospital construction by 0.136, during the same electoral cycle an electoral seat is first represented by a deputy minister. This effect is large, as the mean probability of hospital construction across all electoral seats is 0.041. Panel B and C shows the effects of ministers and incumbents respectively, and the estimates are too noisy to infer an effect on hospital construction.

My main within-district analysis also relies on the assumption that "back-project"-ing district boundaries from the year 2000 would not bias my estimates. This would not be a concern if districts were partitioned into smaller districts. But if districts were redrawn to subsume existing areas of districts, this would effectively remove potential seats from my data. To show that my results are robust to the boundary assumptions, I use a harmonized district boundary map which combines any overlapping smaller districts into the largest polygon between 1970 and 2000 (see Figure Appendix A.10), and re-estimate the regression from Column 2. Table Appendix A.13 shows that the 'Deputy Minister' estimates from using the harmonized district map are more precise though the effect size is smaller. The effects of incumbents is also larger and statistically significant. The effects of population-weighted distance to public hospitals remain statistically significant but are smaller in

magnitude[8]. This consistency suggests that although the precise magnitudes differ due to the boundary assumptions, the core results are robust.

The deputy minister effect is also robust to controlling for the ethnic composition of voters within electoral seats. Ethnic voter data is available from the 1986 electoral cycle onward, which restricts the sample to 216 observations. On this restricted sample without ethnic controls, the deputy minister coefficient is 0.351, which remains statistically significant. Adding Chinese voter share as a control yields a coefficient of 0.337, similar in magnitude though marginally significant, suggesting that the attenuation relative to the full-sample estimate of 0.415 is driven primarily by the sample restriction rather than ethnic confounding (see Table Appendix A.20). Chinese voter share does not independently predict hospital location within funded districts. Similarly, the deputy minister effect is unchanged when controlling for the log population of the seat-district intersection (0.415 with and without the control; see Column 4 of Table Appendix A.20), indicating that the results are not driven by deputy ministers representing more densely populated areas within districts. Finally, the results are robust to alternative estimators for the binary outcome. Logit and poisson pseudo-maximum likelihood (PPML) specifications yield qualitatively similar results to the OLS estimates (Table Appendix A.23).

[8] Aggregating districts increases the number of electoral seats while reducing the number of distinct districts, which smooths electoral seat variation by averaging large differences across seats with additional surrounding electoral seats. Extreme values observed in one small electoral seat are balanced by observations from neighboring seats, leading to a more precise (but smaller) estimate on political influence. However, aggregating districts may include electoral seats that did not receive hospital funding. In such cases, the political influence measured in one part of a larger district could be diluted by the inclusion of neighboring seats that do not qualify for a new hospital.

Channels of Deputy Minister Favoritism. A key difference between ministers and deputy ministers is that deputy ministers do not have direct control over zoning plans which would affect where hospitals are located. These results imply that political distortions do not operate directly through Cabinet allocation decisions. Rather, the results point towards informal channels of influence.

I explore two potential channels in Table Appendix A.21. First, I interact the deputy minister variable with whether the deputy minister shares the same party as the Minister of Health, testing whether co-partisan networks facilitate favoritism. The interaction is positive and statistically significant (0.658). However, because the Ministry of Health has been historically led by an MCA minister and Chinese Malaysians are concentrated in MCA strongholds, this co-party effect is difficult to separate from ethnic geography: when Chinese voter share is added as a control, the interaction weakens to 0.428 and is no longer statistically significant (see Table Appendix A.22). The magnitude remains economically large (0.428 is 1.33 times the dependent variable mean) but becomes imprecise on the restricted sample where ethnic data is available. Second, I interact the deputy minister variable with the winning margin of the deputy minister's electoral seat. The interaction is small and statistically insignificant (-0.083), indicating that electoral popularity does not drive the favoritism effect. Taken together, these results suggest that the channel of deputy minister favoritism operates through political networks rather than electoral strength, though the specific role of co-partisanship with the Minister of Health cannot be precisely estimated once ethnic geography is accounted for.

Is Political Influence Distortionary? Given that deputy minister favoritism is limited to electoral seats with funding for new hospitals, the magnitude of political distortions might be limited. To assess whether deputy minister favoritism distorts hospital construction at the electoral seat level, I predict hospital locations when political influence is removed from the within-seat allocation decision. That is, I set the estimated coefficients for deputy minister and winning margins from Table 1 Column 1 to zero. Specifically, for each electoral seat s in electoral cycle t, I predict the de-politicized probability of hospital construction as follows:

$$\hat{y}^0_{st} = \hat{\beta}_2 \cdot \text{distance}_{st} + \mathbf{X}'_{st}\hat{\Gamma} + \hat{nu}_t, \tag{3}$$

where β_2 and $\hat{\Gamma}$ are the estimated coefficients, and ν_t represents cycle-fixed effects. After obtaining the electoral-cycle specific probabilities $\hat{y}^0_{st}$, I constrain the number of hospitals constructed per cycle based on observed allocations, and select the electoral seats with the highest probabilities for hospital construction[9]. Formally, Let $\mathcal{S}_t$ denote the set of all electoral seats in cycle t, and let

$$H_t = \sum_{s \in \mathcal{S}_t} y_{st} \tag{4}$$

be the total number of hospitals constructed in that cycle (the funding allocation is assumed to be exogenous and is held fixed). I then rank all electoral seats in cycle t by $\hat{y}^0_{st}$ in descending order. The counterfactual allocation assigns a hospital to the top H_t seats. Formally, I define the counterfactual indicator:

$$y^{0*}_{st} = \begin{cases} 1, & \text{if } \hat{y}^0_{st} \text{ ranks among the top } H_t \text{ values in } \{\hat{y}^0_{s't} : s' \in \mathcal{S}_t\}, \\ 0, & \text{otherwise.} \end{cases} \tag{5}$$

Panel A of Figure 3 shows these counterfactual hospital allocations using district boundaries from the year 2000. Each hospital's counterfactual location corresponds to the centroid of the electoral seat in which it was constructed. Panel B compares the population-weighted distances to the nearest

[9]One limitation of selecting a discrete set of electoral seats based solely on highest probabilities is that this approach disregards information from all other electoral seats. As a robustness check, I use an alternate method comparing actual distances to existing hospitals with a probability-weighted version, which yielded similar results.

existing public hospitals for electoral seats receiving hospitals under actual versus counterfactual scenarios, where distances are measured prior to any new hospital construction.

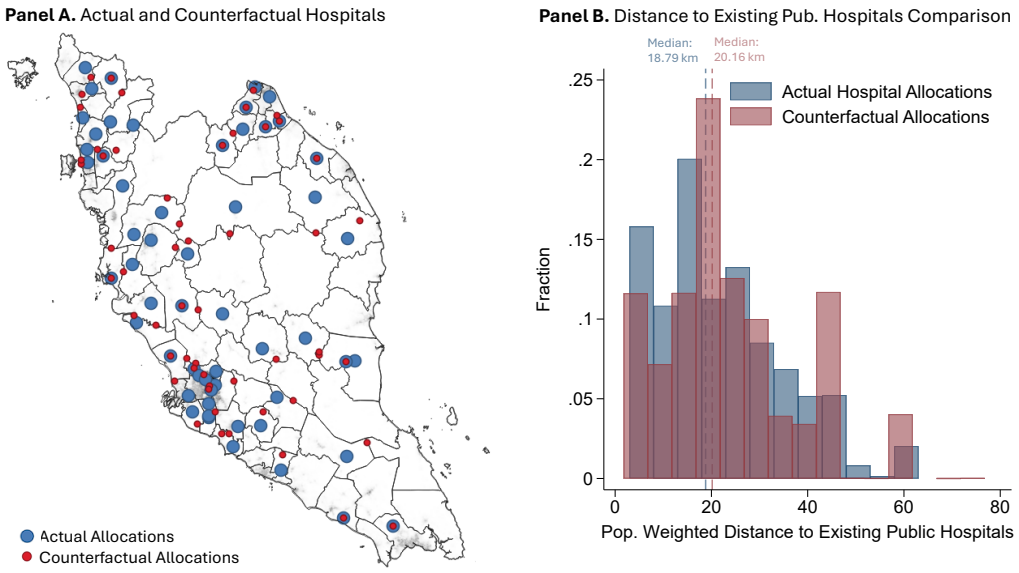
From Panel A, a subset of the counterfactual allocations are the same as the actual allocations. This suggests that there are some hospitals affected by deputy ministers, while some others were unaffected. The median electoral seat that received a hospital under observed political favoritism was 18.79 km away from the nearest existing public hospital (measured before the new hospital was built), compared to 20.16 km for electoral seats that would have received hospitals under the non-political counterfactual allocation. This suggests that the deputy minister favoritism is distortionary, though the magnitude itself is small. This small distortionary effect is likely due to the constrained set of electoral seats available for hospital construction, which limits the potential for larger disparities.

It is important to note that this exercise is based on a static evaluation of hospital construction decisions and does not capture the dynamic evolution of hospital allocations over time. In other words, while the counterfactual analysis predicts the static effects of deputy minister favoritism by holding funding allocations fixed, it does not address whether locations that might have been prioritized in the absence of political favoritism eventually receive hospitals later on, nor does it examine the timing or long-term efficiency of such reallocations.

Effects on Specialist and Non-Specialist Hospitals. Do distortions occur for high-value specialist hospitals compared to non-specialist hospitals? Specialist hospitals represent high-value public investments that deliver multi-disciplinary care, making them more politically salient relative to non-specialist hospitals. To test this, I limit the outcome variable to either public hospitals that are categorized as specialist hospitals or non-specialist hospitals. Table 2 presents my results. Columns 1 and 2 examine heterogeneity across non-specialist and specialist hospitals respectively. The effect of 'Deputy Minister' is larger for specialist hospitals (0.356) than non-specialist hospitals (0.061). This suggests that political distortions are costly as they affects hospitals that provide high value services to the population. The influence of allocation priorities is also stronger for specialist hospitals (0.366) relative to non-specialist hospitals (0.178), suggesting that allocation priorities effectively prioritize high-value specialist hospitals over non-specialist hospitals.

Political Dominance. Does political influence occur during periods

Figure 3: Within-District Hospital Allocations and Counterfactuals



Notes: Panel A counterfactual allocations are predicted from the estimates in Column 1 of Table 1, where the 'Deputy Minister' effect is set to zero. Panel B plots the distribution of the distance to existing public hospitals prior to hospital construction among actual and counterfactual hospital allocations.

of political dominance? Columns 3 and 4 split the sample into periods of political dominance and non-dominance, defined as electoral cycles where the ruling party, *Barisan Nasional*, won more than 80 percent of electoral seats[10]. The results show that the 'Deputy Minister' effect is prominent during periods of political dominance (0.629), while the effect is negative and imprecise in non-dominant political periods (-0.136). The effect size is comparable to distance, which remains large and statistically significant across both periods (0.450 and 0.593 for dominant and non-dominant political cycles respectively). This suggests that electoral competition disciplines political distortions–a similar finding shown within the existing literature [45, 46, 12].

[10]This corresponds to seven out of 12 electoral cycles: 1964-1969, 1974-1978, 1978-1982, 1982-1986, 1986-1990, 1995-1999, 2004-2008

Table 2: Heterogeneity by Hospital Types and Political Competition

	Hospital Types		Political Cycles	
	Non-Specialist	Specialist	Dominant	Non-Dominant
	(1)	(2)	(3)	(4)
Political Influence				
Deputy Minister	0.061	0.356	0.629	-0.136
	(0.067)	(0.169)	(0.189)	(0.123)
Adherence to Allocation Priorities				
Weighted Dist. Pub. (SD)	0.178	0.366	0.450	0.593
	(0.123)	(0.174)	(0.239)	(0.303)
Mean Dep Var.	0.128	0.206	0.311	0.394
N Seat-Districts	302	302	147	155
R^2	0.712	0.466	0.505	0.598
Fixed Effects	District x Cycle	District x Cycle	District x Cycle	District x Cycle
Seat-Level Covariates	x	x	x	x

Notes: The regression is limited to electoral seats in districts that have been given funding for a new hospital. Each observation is a unique electoral seat-district-electoral cycle. Column 1 shows the effects of deputy ministers and distance on non-specialist hospitals while column 2 shows the effects for major specialist hospitals. Column 3 shows the effects during periods of political dominance by *Barisan Nasional*–during which *Barisan Nasional* won more than 80 percent of electoral seats–and Column 4 shows the effects during periods of non-political dominance. All regressions control for seat-level covariates. These covariates include distance to existing private hospitals, a binary indicator capturing whether the *Barisan Nasional* candidate was uncontested, the number of opposing candidates within the same seat, whether the candidate won the seat, party dummies of the candidate, voter turnout, total voters and the winning margins of the candidate relative to the runner-up candidate and a squared winning margins term. Standard errors clustered at the district level (based on 2000 boundaries) are reported in parentheses.

5. Deputy Ministers and Hospital Funding

5.1. Empirical Strategy

At what stage do deputy ministers exert their influence on the hospital planning process? To identify the effects of deputy ministers on funding decisions across districts, I use a difference-in-differences identification strategy. The treatment group consists of districts with at least one electoral seat represented by a deputy minister, while the control group comprises districts without any such electoral seats. The outcome variable is a binary variable on whether a district receives funding for a new public hospital (see Table Appendix A.7 for a table on the number of hospital announcements and construction across electoral cycles). Using hospital announcements as the outcome, I estimate the following equation[11]:

$$y_{dt} = \alpha_1 \cdot \text{politics}_{dt} + \alpha_2 \cdot \text{distance}_{dt} + \mathbf{X}'_{dt}\Gamma + \mu_d + \tau_t + \varepsilon_{dt} \tag{6}$$

Unlike Equation 1, where each observation was a unique district-seat-year pair, the observations in this analysis are district-year pairs[12]. Standard errors are clustered at the district level using boundaries from the year 2000. I control for district level covariates, including the district level population-weighted distance to existing hospitals, the proportion of the population living in rural areas, the proportion with a college degree, and seven age bins.

Robustness checks. The main threat to identification is that deputy minister districts are not randomly assigned. As shown in Table Appendix A.14, districts with at least one deputy minister are larger in population size compared to non-deputy minister districts. Deputy minister districts may also be more likely to receive funding for new public hospitals, and a simple difference-in-differences strategy would lead to biased estimates. To address concerns related to parallel trends, I estimate an alternate version of Equation 1 where I first match districts based on three covariates: population-weighted distance to existing hospitals and population size[13]. As shown in

[11] While I focus specifically on the effects of deputy ministers in the main text, I tabulate the effects of ministers and incumbents in Table Appendix A.16

[12] To obtain this new dataset I simply collapse district-seat-year pairs into district-year pairs. The politician variables now capture whether a district is represented by at least one deputy minister.

[13] I implement the coarsened exact matching algorithm by [44].

Table Appendix A.14, this narrows down treated districts to controls that more closely reflect their pre-treatment covariates.

Related to the recent difference-in-differences literature on heterogeneous treatment effects [47], two-way fixed effects (TWFE) estimators may recover non-convex treatment effects. I show that my average treatment effect largely consists of positive weights (Table Appendix A.17). Finally, given that my variation in deputy minister status comes from 11 elections, this implies that districts can switch in and out of the treatment status—a district represented by at least one minister may not be represented by a minister in the next election. This naturally leads to "forbidden comparisons" where early treated districts may act as a control group for later treated districts. To abate these concerns, I show that my results are similar to the intertemporal treatment effects using the method proposed by [48] (Table Appendix A.18).

To ensure that these funding results are robust to ministers and incumbents, I re-estimate Equation 6 and show ministers and incumbents have a small and statistically insignificant effect on funding decisions (Table Appendix A.16). Again, the effects of distance to the nearest public hospital remain large and statistically significant across all specifications.

5.2. Results

Hospital Funding Results. Table 3 presents the results from Equation 6. The dependent variable is a binary variable indicating whether a district has been allocated funding for a new public hospital during an electoral cycle. The base probability of receiving funding across all districts is 0.052. I estimate Equation 6 and present the deputy minister effects without covariates in Column 1, with covariates in Column 2 and then match districts based on pre-treatment covariates in Column 3. From Column 1, the point estimate for the 'Deputy Minister' variable is negative and statistically insignificant (-0.014), suggesting that districts with at least one deputy minister are not more likely to receive funding for a new public hospital than districts without deputy ministers. After matching districts, I find a similar statistically insignificant effect of 'Deputy Minister', though the point estimate is now positive (0.039). The effects of distance to the nearest public hospital remain large and statistically significant across all specifications (between 0.059 and 0.076). This highlights the role of allocation priorities in determining the funding allocation of hospitals across districts, and a simple bargaining model rationalizes the observed allocation as bureaucrats having higher bargaining power to allocate funding to appropriate districts (see

subsection Appendix A.1).

Table 3: The Effects of Deputy Ministers on Across-District Funding Decisions

	Public Hospital Funding Across-Districts		
	(1)	(2)	(3)
Political Influence			
Deputy Minister	-0.014	-0.016	0.039
	(0.025)	(0.023)	(0.029)
Adherence to Allocation Priorities			
Weighted Dist. Pub. (SD)	0.060	0.059	0.076
	(0.022)	(0.026)	(0.021)
Mean Dep Var.	0.052	0.052	0.052
N Districts	984	984	662
R2	0.203	0.218	0.197
Fixed Effects	District + Cycle	District + Cycle	District + Cycle
District-Level Covariates		x	x
Matching			x

Notes: The outcome variable is a binary variable indicating whether a district has been allocated funding for a new public hospital. Each observation is a district-year pair. Coefficients are population-weighted OLS estimates. Column 1 presents estimates without covariates, Column 2 includes covariates, and Column 3 matches districts based on pre-treatment population size and the proportion of the population living in rural areas. Standard errors clustered at the district level (based on 2000 boundaries) are reported in parentheses.

Suggestive Evidence on a System of Ranking Districts. Why do bureaucrats have larger bargaining power in choosing districts compared to within-district allocations? Anecdotal evidence from the previous Minister and Secretary General of Health suggests that this is due to the Ministry of Health's process of selecting districts for funding. The Ministry maintains a ranking of districts for new public hospitals based on three measurable criteria: distance to existing hospitals, population size, and congestion of existing facilities. This ranking system results in a clear hierarchy of districts. This implies that politicians seeking new hospitals must justify their needs based on this objective ranking. However, if a prominent politician resides within a district that is on the margins of receiving funding, the Ministry of Health is more amenable to allocating hospitals to these marginal districts over the inframarginal districts that qualify for a new hospital.

To show that such a ranking system exists, I re-estimate the empirical results from the first-stage, introducing an interaction term between deputy minister status and distance to existing hospitals to test if deputy minister favoritism tend to occur in areas that are far away from existing public hospitals. The hypothesis is that districts less constrained by the allocation priorities (i.e., those already far from existing hospitals) are more likely to be influenced by deputy ministers.

Columns 1 and 3 replicate the findings from Columns 2 and 3 from Table 3 on funding decisions using district level covariates and matching separately. Columns 2 and 4 introduce the interaction term between deputy minister status and distance to existing hospitals. From Column 2, the interaction term of deputy minister is positive (0.046), in contrast to the negative and statistically insignificant result in Column 1 on the deputy minister variable (-0.016). This pattern holds for Column 4, where districts are matched based on pre-treatment characteristics. These interaction effects suggest that deputy minister influence is stronger in districts farther from existing hospitals, which lends credence to the anecdotal evidence from the Minister and Director General on the existence of such a ranking system.

Table 4: Evidence on Ranking System For District Funding

	Public Hospital Funding Across-Districts			
	(1)	(2)	(3)	(4)
Interaction Effects				
Deputy Minister x Distance (SD)		0.046		0.058
		(0.021)		(0.024)
Base Effects				
Deputy Minister	-0.016	0.003	0.039	0.034
	(0.023)	(0.023)	(0.029)	(0.026)
Adherence to Allocation Priorities				
Dist. Pub. (SD)	0.059	0.042	0.076	0.053
	(0.026)	(0.026)	(0.021)	(0.023)
Mean Dep Var.	0.052	0.052	0.052	0.052
N Districts	984	984	662	662
R2	0.218	0.222	0.197	0.227
Fixed Effects	District	District	District	District
	+	+	+	+
	Cycle	Cycle	Cycle	Cycle
District-Level Covariates	x	x	x	x
Matching			x	x

Notes: The outcome is a binary variable indicating whether a district has been allocated funding for a new public hospital. Each observation is a district-year pair. Coefficients are population-weighted OLS estimates. Column 1 replicates the main findings on hospital founding (See Column 2 of Table 3). Column 2 uses the same equation as Column 1, but interacts the deputy minister variable with distance to existing public hospitals. Columns 3 and 4 matches districts based on pre-treatment population size and the proportion of the population living in rural areas. Column 3 replicates Column 3 of Table 3, Column 4 interacts the deputy minister variable with distance. Standard errors clustered at the district level (based on 2000 boundaries) are reported in parentheses.

6. Conclusion

This paper shows how allocation rules can mitigate political distortions in healthcare infrastructure provision, using hospital allocation in Peninsular Malaysia between 1959 and 2013 as a case study. I find that deputy ministers influence where hospitals are built, but do not influence the initial stage of choosing which districts receive hospital funding allocation. Allocation priorities play a significant role throughout both stages, as hospitals are built and funded in areas far from existing public hospitals to improve geographic access to care. I provide suggestive evidence that the presence of objective allocation rules in the first-stage district funding decisions guards against political distortions that could compromise hospital allocation, while the second-stage within-district allocation, which involves fewer codified allocation rules, allows for more discretion that can be influenced by political interests.

This paper advances multiple literatures relevant to health policy and political economy. It contributes to the growing body of research on how political institutions affect health outcomes by showing that institutional design features can serve as safeguards against the systematic political manipulation of healthcare resources documented in other contexts [13, 14]. The findings also add to the literature on state capacity by providing new evidence that measurable allocation rules for healthcare infrastructure can mitigate political influence on bureaucratic decision-making and enhance state capacity to deliver equitable health services. Additionally, this research adds nuance to existing work by demonstrating that the extent of political influence can vary across different stages of healthcare resource allocation processes.

The implications extend well beyond Malaysia, as district-based hospital planning represents a common approach to healthcare infrastructure development across many countries with public health systems, including India's district hospital network, China's county-level hospital system, and similar approaches in other health systems with public and private actors. Understanding when and how allocation rules can protect healthcare infrastructure decisions from political distortions has important implications for health equity and population health outcomes globally.

The mechanisms documented here, where measurable allocation guidelines constrain political influence at one stage but not another, may extend to other public goods with similar multi-stage allocation processes. In Malaysia, school construction and road development are also planned through

the Malaysia Plans, and the degree of codified allocation rules varies across sectors. More broadly, school construction, road infrastructure, and water systems in many developing countries follow analogous processes where central authorities allocate funding to regions based on need criteria, followed by local decisions about specific sites. Examining whether codified guidelines similarly discipline political influence across these sectors would be a valuable extension.

Future research should explore what other specific rules and allocation mechanisms can strengthen bureaucratic capacity against political distortions in healthcare provision, and examine the long-term health outcomes associated with politically versus bureaucratically allocated healthcare infrastructure. Another promising avenue is to understand when and why healthcare bureaucrats adhere to allocation rules, particularly under political pressure, and how different institutional arrangements affect the effectiveness of rules-based healthcare planning over time.

Appendix A. Appendix

Appendix A.1. Bureaucrat-Politician Bargaining Model

Overview. Why do distortions occur during hospital construction, but not when choosing which districts get funding for new hospitals? The reduced form results omit the interdependency across the two stages, which obfuscates the specific mechanisms that drive the distortions. To understand the mechanisms, I estimate a two-stage bargaining model between politicians and bureaucrats. Using the reduced form estimates, I identify the bargaining weights of politicians and bureaucrats separately from the preferences of bureaucrats and politicians. This allows me to speak to whether the results are driven by bargaining power inherent in bureaucratic procedures or by the preferences of politicians and bureaucrats to allocate hospitals to politically strategic areas or underserved areas, respectively.

Setup. Let $\mathcal{D}$ be the set of districts and $\mathcal{S}$ be the set of seats. Some seats and districts overlap, i.e., there exist districts d and seats s such that $d \cap s \neq \emptyset$. Denote the set of seats within a district d as $\mathcal{S}_d \subseteq \mathcal{S}$. Consider a two-stage game with two players: bureaucrats and politicians $i \in \{B, P\}$. Bureaucrats and politicians bargain over which districts to allocate hospital funding to and which specific seats within those districts a hospital will be built. In the first-stage, the decision of which districts to allocate hospitals is represented by $\delta(d) : \mathcal{D} \to \{0, 1\}$, where $\delta(d) = 1$ indicates a hospital is allocated to district d. In the second-stage, the decision of which seats within the chosen districts is represented by $\sigma(d, s) : \mathcal{D} \times \mathcal{S} \to \{0, 1\}$, where $\sigma(d, s) = 1$ implies a hospital is allocated to seat s within district d. A hospital is allocated at $s \in \mathcal{S}$ if and only if $\delta(d) = 1$ and $\sigma(d, s) = 1$ for all $s \in \mathcal{S}_d$. The total number of hospitals built cannot exceed a budget constraint N, i.e., $\sum_{d \in \mathcal{D}} \delta(d) \leq N$. Let $u_i(d, s)$ denote the utility for player i when a hospital is built in seat s in district d. Normalize the disagreement utilities to zero for simplicity. Denote the bargaining weights of player i in the first and second-stage as $w_i^{(1)}$ and $w_i^{(2)}$. Bargaining weights in each stage sum to one ($w_B^{(1)} + w_P^{(1)} = 1$ and $w_B^{(2)} + w_P^{(2)} = 1$). I solve for the subgame perfect Nash equilibrium by backward induction starting from the second-stage.

Second-stage: Hospital Location. Given a district d where $\delta(d) = 1$, each seat s within district d is considered for hospital placement. The decision $\sigma(d, s)$ reflects the bargaining outcome between bureaucrats and politicians on the location of hospitals. For all $s \in \mathcal{S}_d$, the allocation of hospitals is the solution to

$$\max_{\sigma(d,s)} \left(w_B^{(2)} \cdot u_B(d,s) + w_P^{(2)} \cdot u_p(d,s) \right) \tag{A.1}$$

For all $s \in \mathcal{S}_d$, the optimal decision is simply:

$$\sigma^*(d,s) = \begin{cases} 1 & \text{if } w_B^{(2)} \cdot u_B(d,s) + w_P^{(2)} \cdot u_p(d,s) > \theta_s \\ 0 & \text{otherwise.} \end{cases} \tag{A.2}$$

Hospitals are allocated to a specific seat within a district if the combined utilities of both bureaucrats and politicians, weighted by their respective bargaining weights, exceed a certain threshold denoted as θ_s. The threshold θ_s varies across seats within a district.

First-stage: Hospital Funding. In the first-stage, bureaucrats and politicians bargain over which districts to allocate funding for new hospitals, given perfect foresight on the second-stage. Bureaucrats and politicians choose which districts, based on the expectation of the joint utility of allocating hospitals to seats within districts. Define $\bar{u}_i(d)$ as the mean utility of the player from allocating a hospital to seats within district d, and define the proportion of seats within districts that meet the second-stage joint bureaucrat-politician utility conditions for a hospital construction as $\bar{\sigma^*}(d) \equiv \frac{\sum_{s \in \mathcal{S}_d} \sigma^*(d,s)}{|\mathcal{S}_d|}$, the decision to allocate hospitals to districts is given by:

$$\max_{\{\delta(d)\}} \sum_{d \in \mathcal{D}} \left(\delta(d) \cdot \underbrace{\bar{\sigma^*}(d) \cdot (w_B^{(1)} \cdot \bar{u}_B(d,s) + w_P^{(1)} \cdot \bar{u}_P(d,s))}_{U(d)} \right) \tag{A.3}$$

Hospitals are allocated to the district if the utility of allocating funding for a district exceeds a certain threshold $U(d) > \theta_d$. Total utility consists of the joint utilities of the bureaucrat and politician, weighted by a term capturing the proportion of seats within districts that meet the condition for hospital construction, $\bar{\sigma^*}(d)$[14]. The solution $\delta^*(d)$ is defined as:

[14]Normalizing by the number of seats ensures that the utility values are comparable across districts, regardless of their size (i.e., the number of seats they contain). Without normalization, districts with more seats would inherently have a higher utility simply due to having more opportunities for hospital allocations, which could skew the results.

$$\delta^*(d) = \begin{cases} 1 & \text{if } \bar{\sigma^*}(d) \cdot \left(w_B^{(1)} \cdot \bar{u}_B(d) + w_P^{(1)} \cdot \bar{u}_P(d) \right) > \theta_d \\ 0 & \text{otherwise.} \end{cases} \tag{A.4}$$

The solution for $\delta^*(d)$ is the set of districts d where the utility derived from building a hospital in district d after taking into account the decisions at the second-stage $\sigma^*(d, s)$ is greater than some threshold θ_d.

Linking to Reduced Form Effects. To connect the theoretical model with the reduced-form results, I assume that bureaucrats' and politicians' utilities are linear functions of distance to existing hospitals and deputy minister favoritism. The utilities can be expressed as $u_B(d, s) = \phi_B \cdot \text{distance}_{st}$ and $u_P(d, s) = \phi_P \cdot \text{politics}_{st}$ respectively. ϕ_B and ϕ_P represent the preferences of bureaucrats and politicians, and remain fixed across both stages. The variables distance_{st} and politics_{st} capture the distance from existing hospitals and the political favorability of seat s in district d during an electoral cycle t.

In the second-stage, the decision to allocate a hospital to seat s within district d is based on the combined weighted utilities:

$$\sigma^*(d, s) = \begin{cases} 1 & \text{if } w_B^{(2)} \phi_B \cdot \text{distance}_{st} + w_P^{(2)} \phi_P \cdot \text{politics}_{st} > \theta_{st}, \\ 0 & \text{otherwise,} \end{cases} \tag{A.5}$$

Where θ_{st} is a threshold utility level required for hospital allocation in an electoral seat s during electoral cycle t. Notice that my reduced form estimates from the second-stage regression can be interpreted as the coefficients on the distance and politics variables $\hat{\beta}_1 \approx w_B^{(2)} \phi_B$ and $\hat{\beta}_2 \approx w_P^{(2)} \phi_P$.

Moving on to the first-stage, the decision to allocate funding to district d depends on the expected utility from the second-stage. The total expected utility $U(d)$ for district d is:

$$\delta^*(d) = \begin{cases} 1 & \text{if } \bar{\sigma^*}(d) \cdot \left(w_B^{(1)} \phi_B \cdot \text{distance}_{dt} + w_P^{(1)} \phi_P \cdot \text{politics}_{dt} \right) > \theta_d \\ 0 & \text{otherwise.} \end{cases} \tag{A.6}$$

Where $\bar{\sigma}^*(d)$ is the expected proportion of seats within district d that satisfy the utility condition for hospital allocation. My reduced form estimates

from the first-stage regression $\alpha_1 \approx \bar{\sigma}^*(d) \cdot w_B^{(1)} \phi_B$ and $\alpha_2 \approx \bar{\sigma}^*(d) \cdot w_P^{(1)} \phi_P$ capture the combined effects of first-stage bargaining weights $w_i^{(1)}$, preferences ϕ_i, and the expected second-stage outcomes $\bar{\sigma}^*(d)$. It is important to note that without directly separating $\bar{\sigma}^*(d)$ from the preferences and bargaining weights of bureaucrats and politicians, the reduced form estimates would not be able to identify if the results are driven by bargaining power, preferences or strategic interaction between bureaucrats and politicians.

Estimating $\bar{\sigma}^*(d)$. The term $\bar{\sigma}^*(d)$ represents the expected proportion of seats within district d where both bureaucrats and politicians agree to build a hospital, regardless of whether the district received funding. To estimate $\bar{\sigma}^*(d)$, I predict the probability that each seat s in district d satisfies the allocation condition using the estimated coefficients from the second-stage regression:

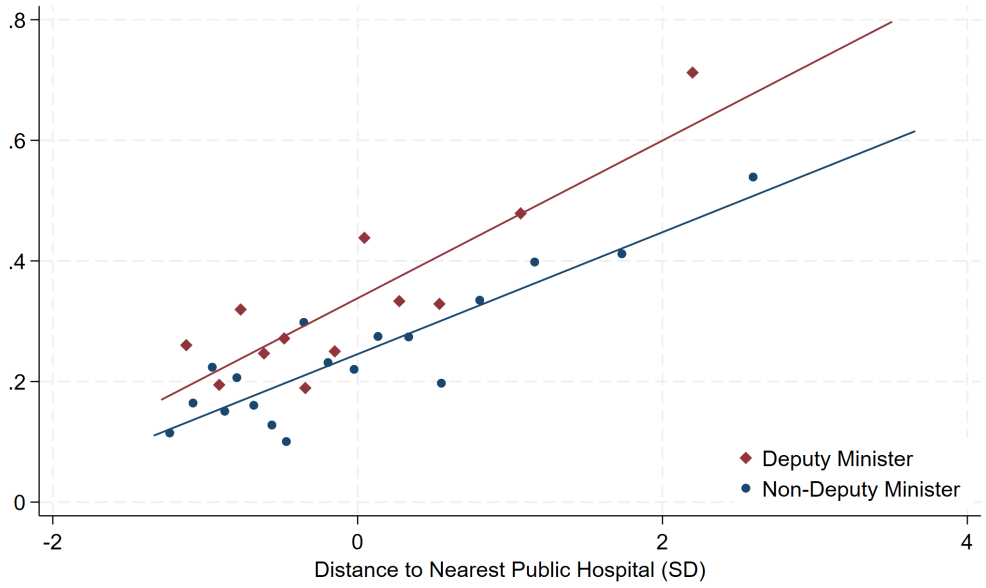
$$\hat{\sigma}^*(d,s) = \Pr\left(\hat{\beta}_1 \cdot \text{distance}_{st} + \hat{\beta}_2 \cdot \text{politics}_{st} + \mathbf{X}'_{st}\hat{\Gamma} + \hat{\nu}_{dt} > \theta_{st}\right) \quad \text{(A.7)}$$

Here, $\mathbf{X}_{ds}$ includes control variables, $\hat{\Gamma}$ are the estimated coefficients on these controls, and $\hat{\nu}_d$ captures district level unobserved factors. The threshold θ_{ds} can be inferred from the distribution of the estimated utilities. For each electoral cycle t, summing over all seats within district d, I compute $\bar{\sigma}^*(d)$:

$$\bar{\sigma}^*(d) = \frac{1}{|\mathcal{S}_d|} \sum_{s \in \mathcal{S}_d} \hat{\sigma}^*(d,s) \quad \text{(A.8)}$$

I plot the binned scatter values of the estimated $\sigma^*(d,s)$ against distance by deputy minister and non-deputy minister electoral seats in Figure Appendix A.4. The plot shows that deputy minister seats have a uniformly higher proportion of meeting the joint utility conditions across distances to the nearest public hospital. As distance increases, seats are also more likely to meet the joint utility conditions. I provide a table that tabulates $\bar{\sigma}^*(d,s)$ by year in Table Appendix A.19. Across all electoral cycles, 23.5 percent of electoral seats would have met the joint utility conditions–this estimate is large given that approximately 4 percent of electoral seats end up receiving a new public hospital in each electoral cycle.

Figure Appendix A.4: Proportion of Seats that meet Deputy Minister-Bureaucrat Joint Utility Conditions



Note: This figure plots the binscatter plot of $\bar{\sigma}^*(d,s)$ by deputy minister and non-deputy minister seats. The number of bins in the scatter plot is calculated using the procedure described in [49].

Estimating Bargaining Weights. I estimate the bargaining weights using a generalized method of moments estimator. The objective is to find the values of $w_B^{(1)}, w_P^{(1)}, w_B^{(2)}, w_P^{(2)}$ that minimize the difference between the predicted and observed reduced-form estimates while satisfying the constraints on bargaining weights $w_B^{(1)} + w_P^{(1)} = 1$ and $w_B^{(2)} + w_P^{(2)} = 1$. Denote the vector of observed moments obtained from the reduced-form estimates as $\hat{g}_{\text{obs}} = (\hat{\alpha}_1, \hat{\alpha}_2, \hat{\beta}_1, \hat{\beta}_2)$, where the moments match the reduced-form estimates from Column 2 of Table 3 and Column 2 of Table 1. The GMM estimator seeks to minimize the distance between the model-predicted moments and the observed moments. Define the moment conditions as $m(\theta) = \hat{g}_{\text{obs}} - g(\theta)$, where $g(\theta) = (g_1(\theta), g_2(\theta), g_3(\theta), g_4(\theta))$ is the vector of model-predicted moments. The model-predicted moments are given by the following equations:

$$
\begin{aligned}
g_1(\theta) &= w_B^{(1)} \cdot \phi_B \cdot \bar{\sigma}^*, \\
g_2(\theta) &= w_P^{(1)} \cdot \phi_P \cdot \bar{\sigma}^*, \\
g_3(\theta) &= w_B^{(2)} \cdot \phi_B, \\
g_4(\theta) &= w_P^{(2)} \cdot \phi_P,
\end{aligned}
\tag{A.9}
$$

where $\theta = (w_B^{(1)}, w_P^{(1)}, w_B^{(2)}, w_P^{(2)})$ is the parameter vector of bargaining weights. I allow the preference parameter for bureaucrats ϕ_B to vary between 0.5 and 3 while normalizing the preference parameter for politicians ϕ_P to 1. This allows me to estimate bargaining weights without assuming a particular value for the preferences of bureaucrats and politicians. $\bar{\sigma}^* =$ represents the estimated proportion of seats that meet the utility condition for hospital allocation, and is estimated to be 0.235. The GMM criterion function to be minimized is:

$$
J(\theta) = m(\theta)^\top W m(\theta), \tag{A.10}
$$

where W is the weighting matrix, which is the inverse of the variance-covariance matrix of the observed moments $\hat{\Omega}$, i.e., $W = \hat{\Omega}^{-1}$. The variance-covariance matrix of the observed moments $\hat{\Omega}$ is derived from the estimated standard errors of the reduced-form coefficients. The diagonal elements of $\hat{\Omega}$ are the variances of the observed moments:

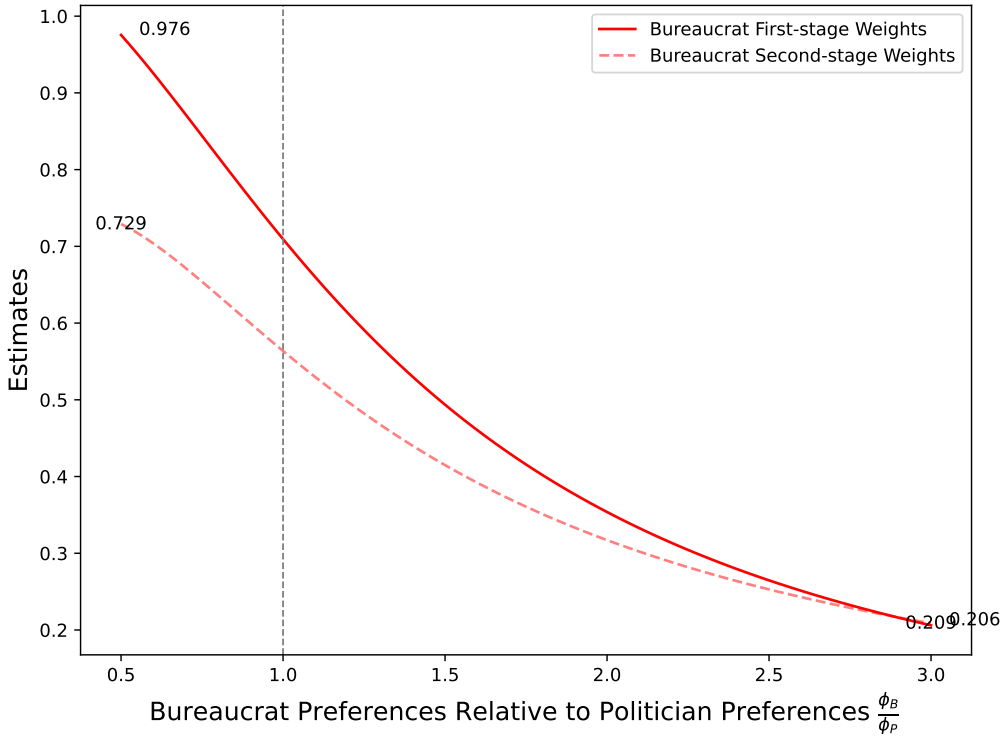
$$
\hat{\Omega} = \text{diag}\left(\text{Var}(\hat{\alpha}_1),\ \text{Var}(\hat{\alpha}_2),\ \text{Var}(\hat{\beta}_1),\ \text{Var}(\hat{\beta}_2)\right). \tag{A.11}
$$

The GMM estimation is subject to the constraints that the bargaining weights sum to one in each stage: $w_B^{(1)} + w_P^{(1)} = 1$ and $w_B^{(2)} + w_P^{(2)} = 1$. I solve the GMM problem by minimizing the criterion function $J(\theta)$ subject to the constraints on the bargaining weights, using a nonlinear constrained optimization algorithm.

Results on Bargaining Weights. I plot the estimated bargaining weights for bureaucrats while varying $\frac{\phi_B}{\phi_P} \in [0.5, 3.0]$ in Figure Appendix A.5. Politician weights can be derived using the constraints $w_B^{(1)} + w_P^{(1)} = 1$ and $w_B^{(2)} + w_P^{(2)} = 1$. Moving from left to right on the x-axis plots the bargaining weights for bureaucrats when bureaucrats have a higher preference for hospital allocation relative to politicians to build hospitals towards politically favorable areas. For example, at $\frac{\phi_B}{\phi_P} = 0.5$, bureaucrats care half as much

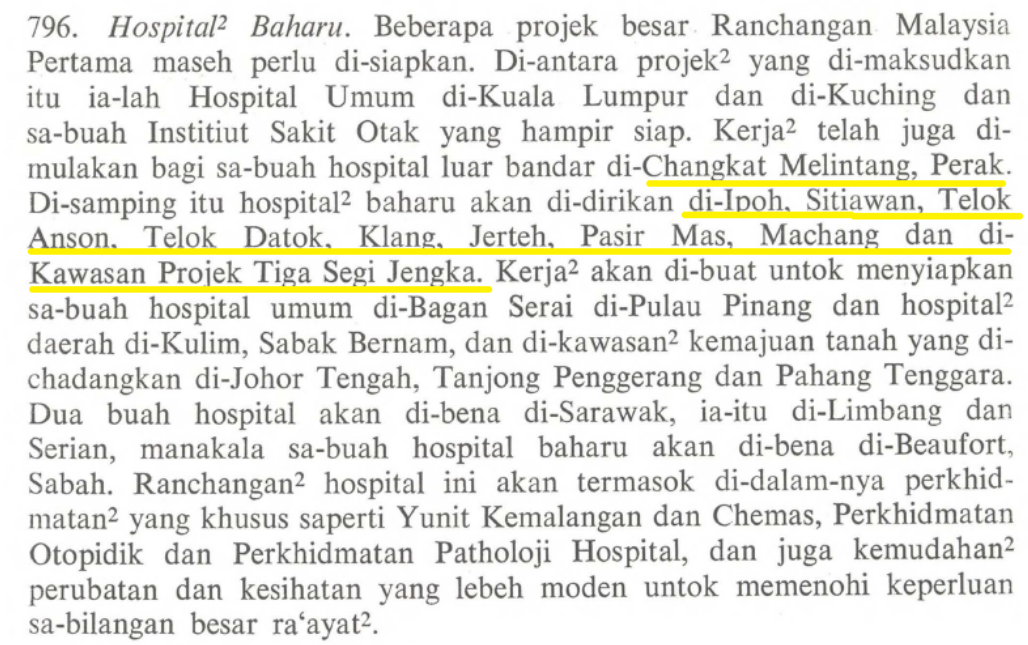
as politicians in exerting their preferences on hospital allocations. The estimates show that bureaucrats have a larger bargaining weight in the first-stage relative to the second-stage when $\frac{\phi_B}{\phi_P} < 3.0$. These results suggest that the observed allocation of hospitals is more likely driven by the bargaining power of bureaucrats in the first-stage rather than the preferences of bureaucrats and politicians–for the observed allocation of hospitals to be explained by bureaucrats having a greater preference for building hospitals in underserved areas, bureaucrat preferences would have to be at least three times larger than politicians' preferences.

Figure Appendix A.5: GMM Estimates on Bureaucratic Bargaining Weights



Appendix A.2. Appendix Figures & Tables

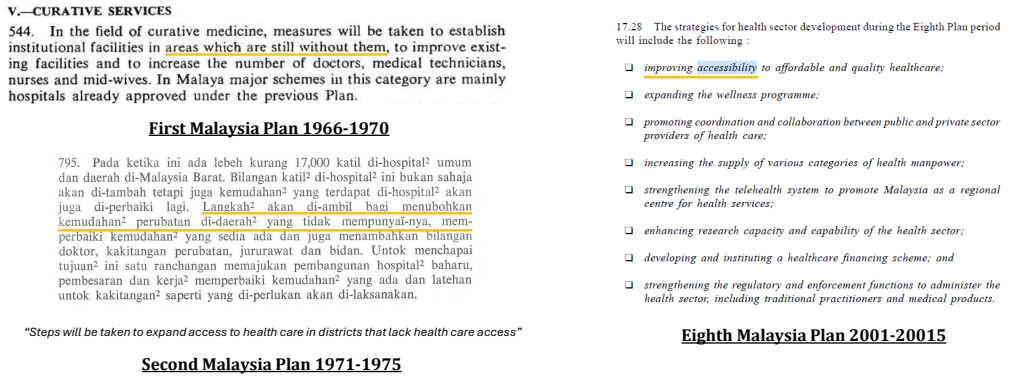
Figure Appendix A.6: Districts from the Second Malaysia Plan (1971-1975)



796. *Hospital*[2] *Baharu*. Beberapa projek besar Ranchangan Malaysia Pertama maseh perlu di-siapkan. Di-antara projek[2] yang di-maksudkan itu ia-lah Hospital Umum di-Kuala Lumpur dan di-Kuching dan sa-buah Institiut Sakit Otak yang hampir siap. Kerja[2] telah juga di-mulakan bagi sa-buah hospital luar bandar di-Changkat Melintang, Perak. Di-samping itu hospital[2] baharu akan di-dirikan di-Ipoh, Sitiawan, Telok Anson, Telok Datok, Klang, Jerteh, Pasir Mas, Machang dan di-Kawasan Projek Tiga Segi Jengka. Kerja[2] akan di-buat untok menyiapkan sa-buah hospital umum di-Bagan Serai di-Pulau Pinang dan hospital[2] daerah di-Kulim, Sabak Bernam, dan di-kawasan[2] kemajuan tanah yang di-chadangkan di-Johor Tengah, Tanjong Penggerang dan Pahang Tenggara. Dua buah hospital akan di-bena di-Sarawak, ia-itu di-Limbang dan Serian, manakala sa-buah hospital baharu akan di-bena di-Beaufort, Sabah. Ranchangan[2] hospital ini akan termasok di-dalam-nya perkhid-matan[2] yang khusus saperti Yunit Kemalangan dan Chemas, Perkhidmatan Otopidik dan Perkhidmatan Patholoji Hospital, dan juga kemudahan[2] perubatan dan kesihatan yang lebeh moden untok memenohi keperluan sa-bilangan besar ra'ayat[2].

Notes: This shows an excerpt from the Second Malaysia Plan on which districts will be allocated funding for new hospitals: *Changkat Melintang, Ipoh, Sitiawan, Telok Anson, Telok Datok, Klang, Jerteh, Pasir Mas, Machang.*

Figure Appendix A.7: Government Objectives in Access: Excerpts from the First, Second and Eighth Malaysia Plan



V.—CURATIVE SERVICES

544. In the field of curative medicine, measures will be taken to establish institutional facilities in areas which are still without them, to improve existing facilities and to increase the number of doctors, medical technicians, nurses and mid-wives. In Malaya major schemes in this category are mainly hospitals already approved under the previous Plan.

First Malaysia Plan 1966-1970

795. Pada ketika ini ada lebeh kurang 17,000 katil di-hospital² umum dan daerah di-Malaysia Barat. Bilangan katil² di-hospital² ini bukan sahaja akan di-tambah tetapi juga kemudahan² yang terdapat di-hospital² akan juga di-perbaiki lagi. Langkah² akan di-ambil bagi menubohkan kemudahan² perubatan di-daerah² yang tidak mempunyai-nya, memperbaiki kemudahan² yang sedia ada dan juga menambahkan bilangan doktor, kakitangan perubatan, jururawat dan bidan. Untok menchapai tujuan² ini satu ranchangan memajukan pembangunan hospital² baharu, pembesaran dan kerja² memperbaiki kemudahan² yang ada dan latehan untok kakitangan² saperti yang di-perlukan akan di-laksanakan.

"Steps will be taken to expand access to health care in districts that lack health care access"

Second Malaysia Plan 1971-1975

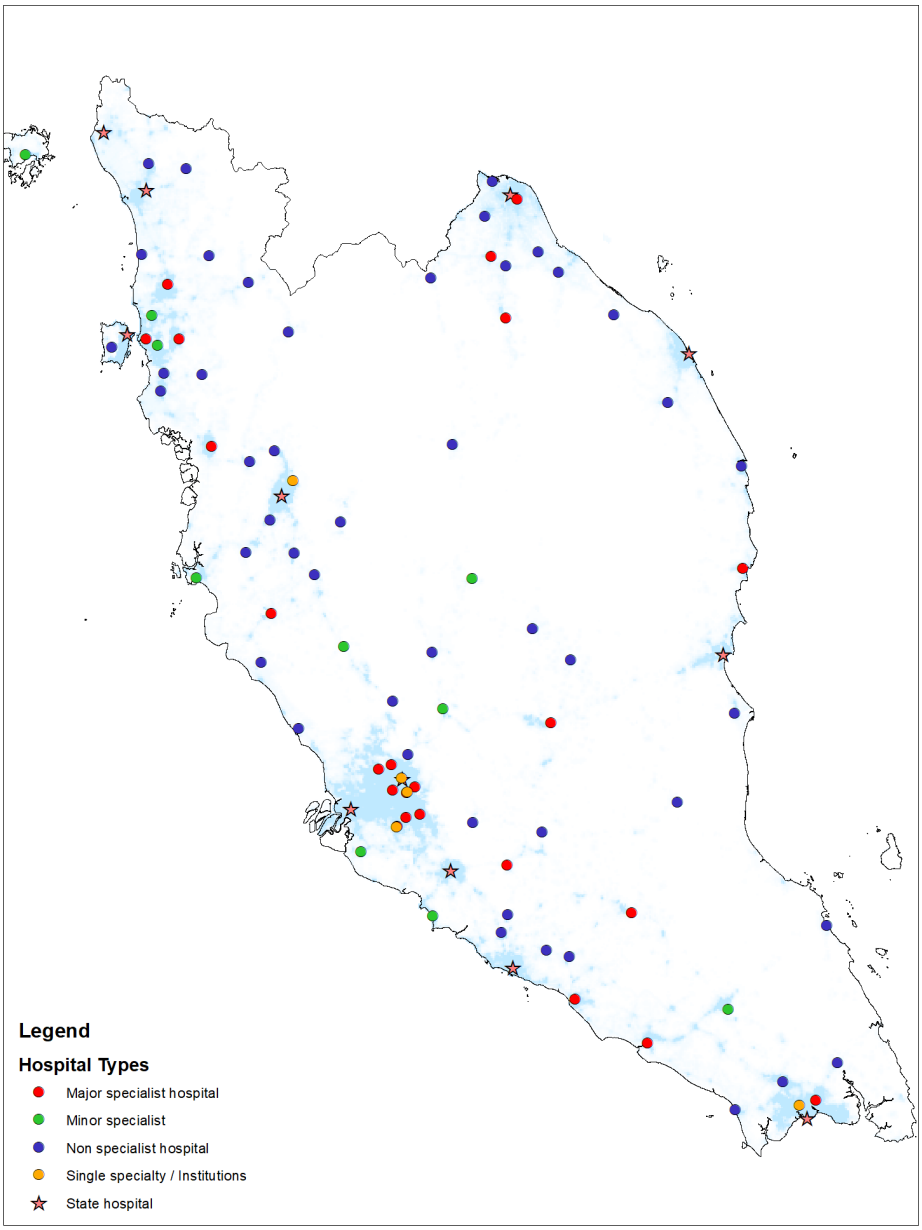
17.28 The strategies for health sector development during the Eighth Plan period will include the following :

- *improving accessibility to affordable and quality healthcare;*
- *expanding the wellness programme;*
- *promoting coordination and collaboration between public and private sector providers of health care;*
- *increasing the supply of various categories of health manpower;*
- *strengthening the telehealth system to promote Malaysia as a regional centre for health services;*
- *enhancing research capacity and capability of the health sector;*
- *developing and instituting a healthcare financing scheme; and*
- *strengthening the regulatory and enforcement functions to administer the health sector, including traditional practitioners and medical products.*

Eighth Malaysia Plan 2001-20015

Notes: Access to health care the government's main objective when allocating public hospitals. This objective persists today.

Figure Appendix A.8: Public Hospital Locations (2013)



Notes: This map shows where public hospitals are located in the year 2013 overlaid against population density in 2010. Blue-shaded areas indicate highly dense areas.

Figure Appendix A.9: Electoral Boundaries

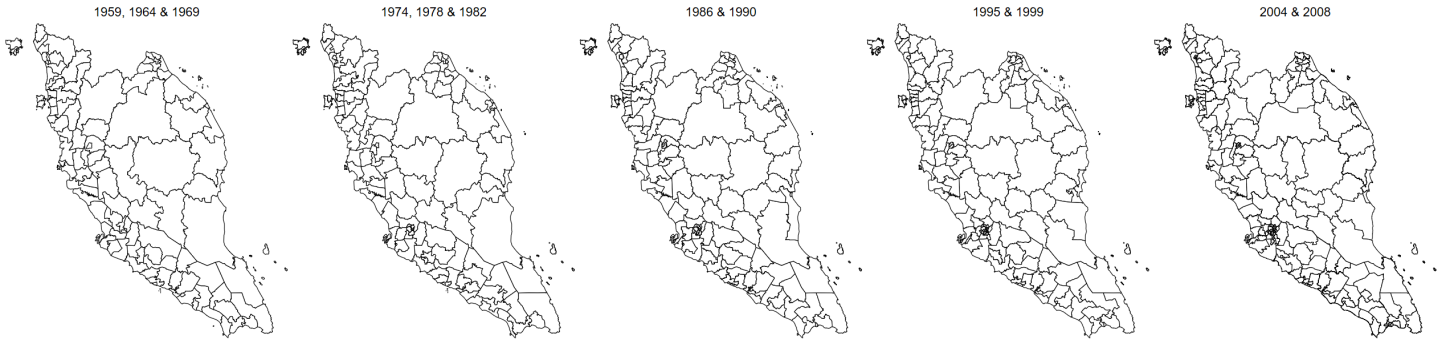
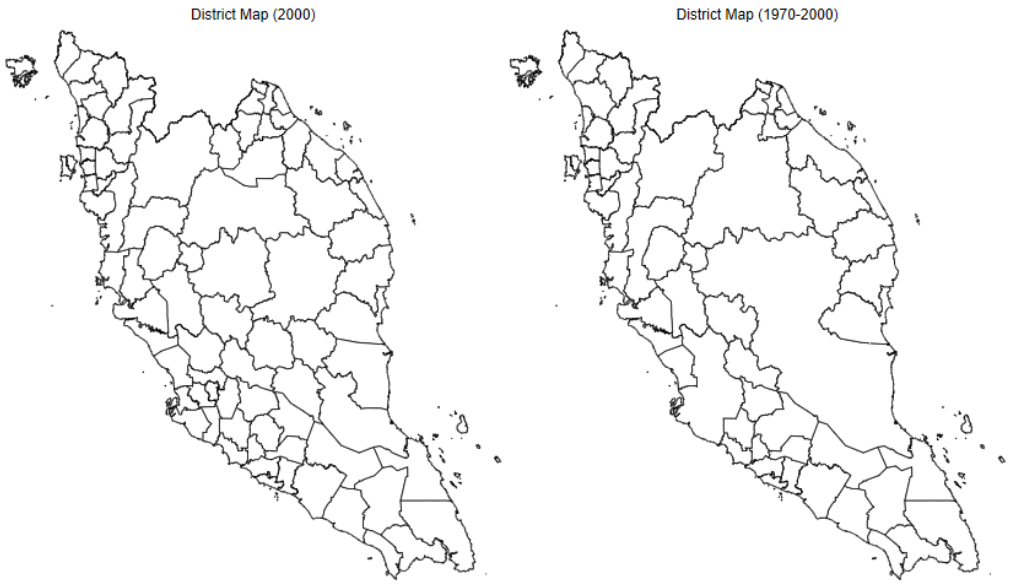


Figure Appendix A.10: District Boundaries



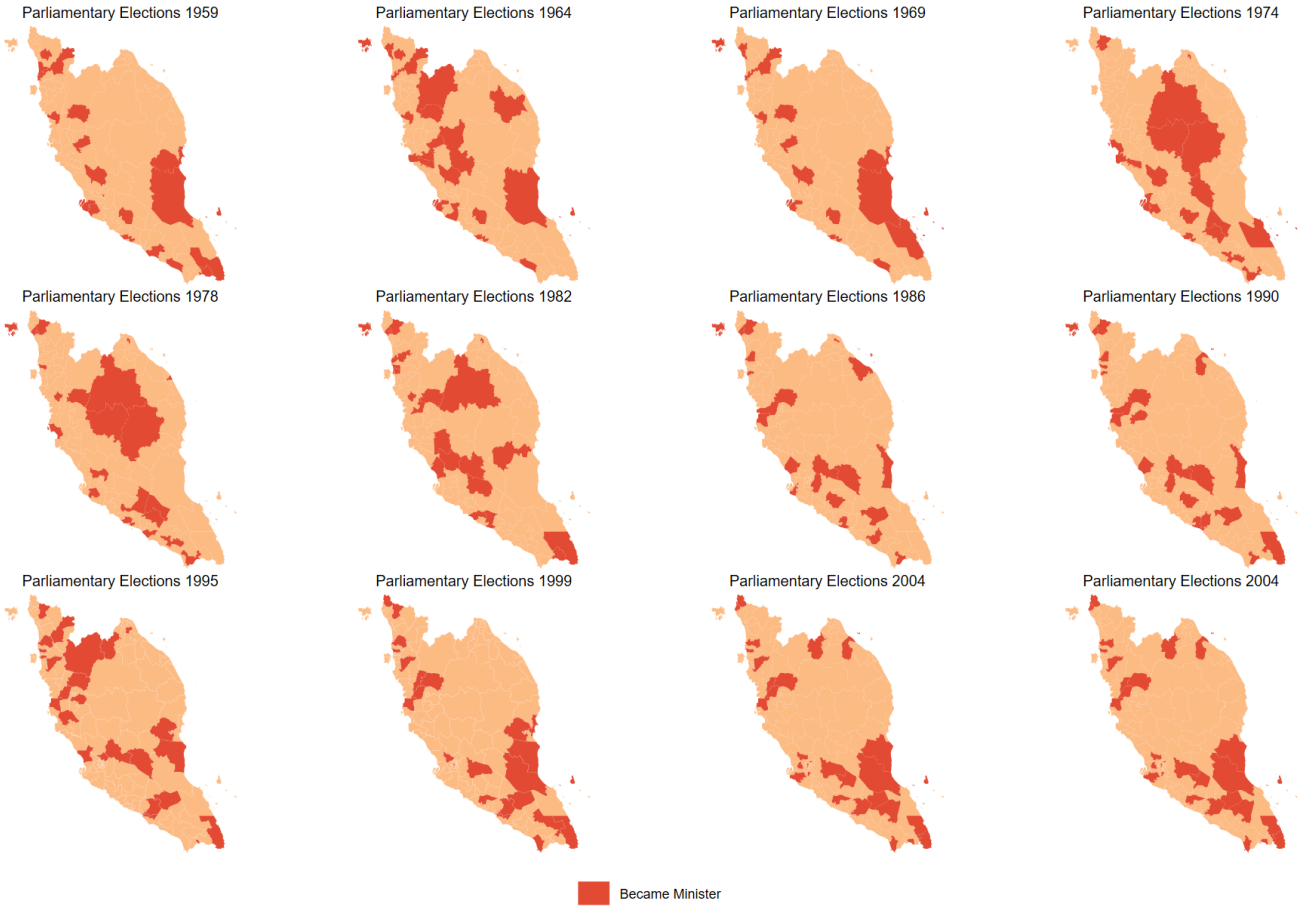
Notes: District boundaries were obtained from IPUMS International [50]. I acknowledge the Department of Statistics Malaysia in originally producing these district boundaries. District Map (1970) corresponds to district boundaries between 1970 and 1979. Similarly for years 1980, 1991, 2000. The 'District Map (1970-2000)' combines any overlapping district and merges them into one larger district. The combined map has 61 unique districts, while there were 82 districts in 2000. I use the 2000 district boundaries, and 'back-project' them into the past for the main analysis. I used the 'District Map (1970-2000)' as a robustness check.

Figure Appendix A.11: Political Variation: Winning Margins for *Barisan Nasional*



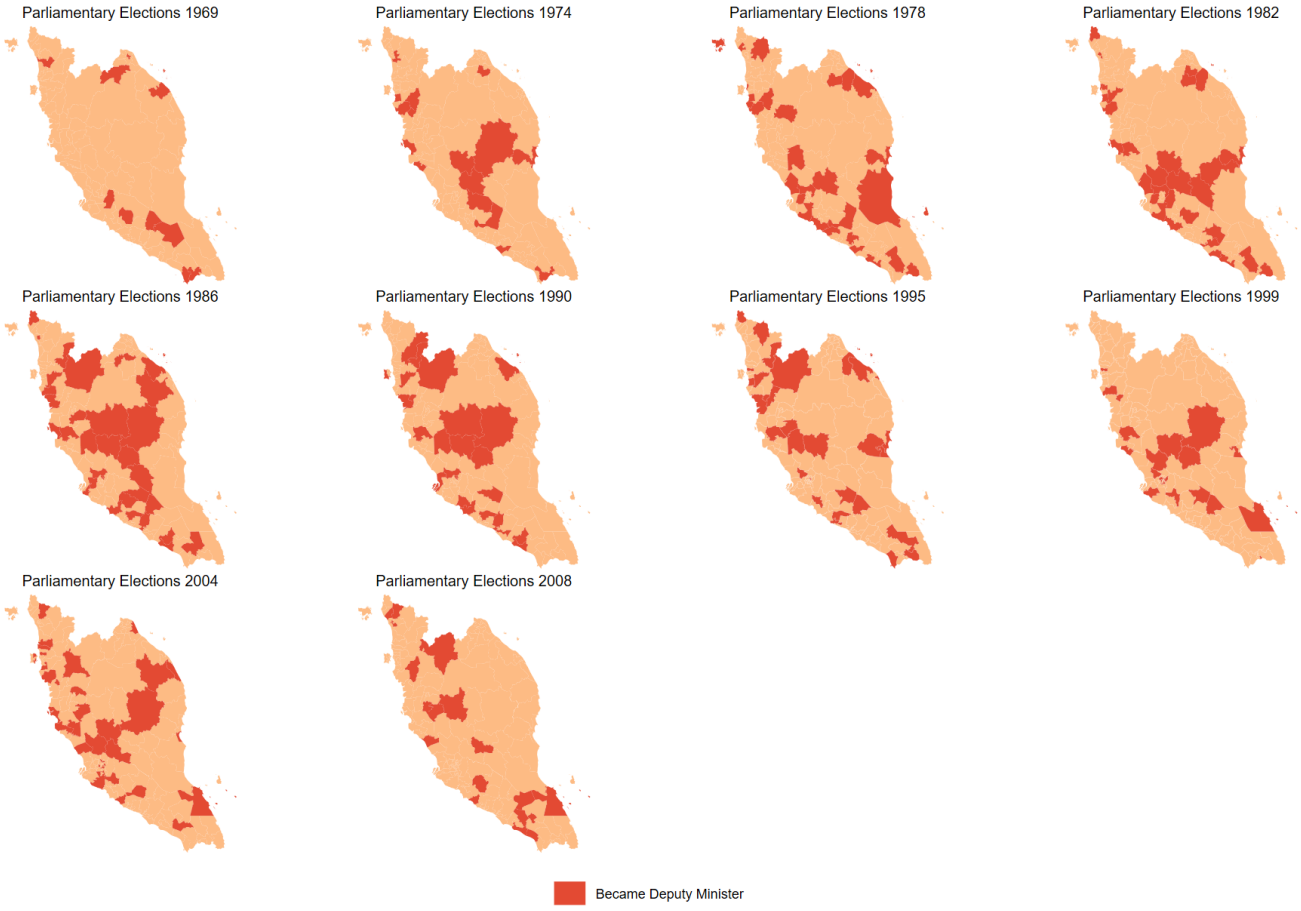
Notes: Winning margins are defined as the number of votes won by *Barisan Nasional* deducted by the runner-up candidate.

Figure Appendix A.12: Political Variation: Electoral Seats with Candidates that became Ministers



Notes: Cabinet Members consist of the Prime Minister and Ministers of various Ministries

Figure Appendix A.13: Political Variation: Electoral Seats with Candidates that became Deputy Ministers



Notes: Deputy Ministers are appointed by the Prime Minister to add Ministers with governing Ministries.

Figure Appendix A.14: Political Variation: Electoral Seats with Candidates that are Incumbents from the Previous Election

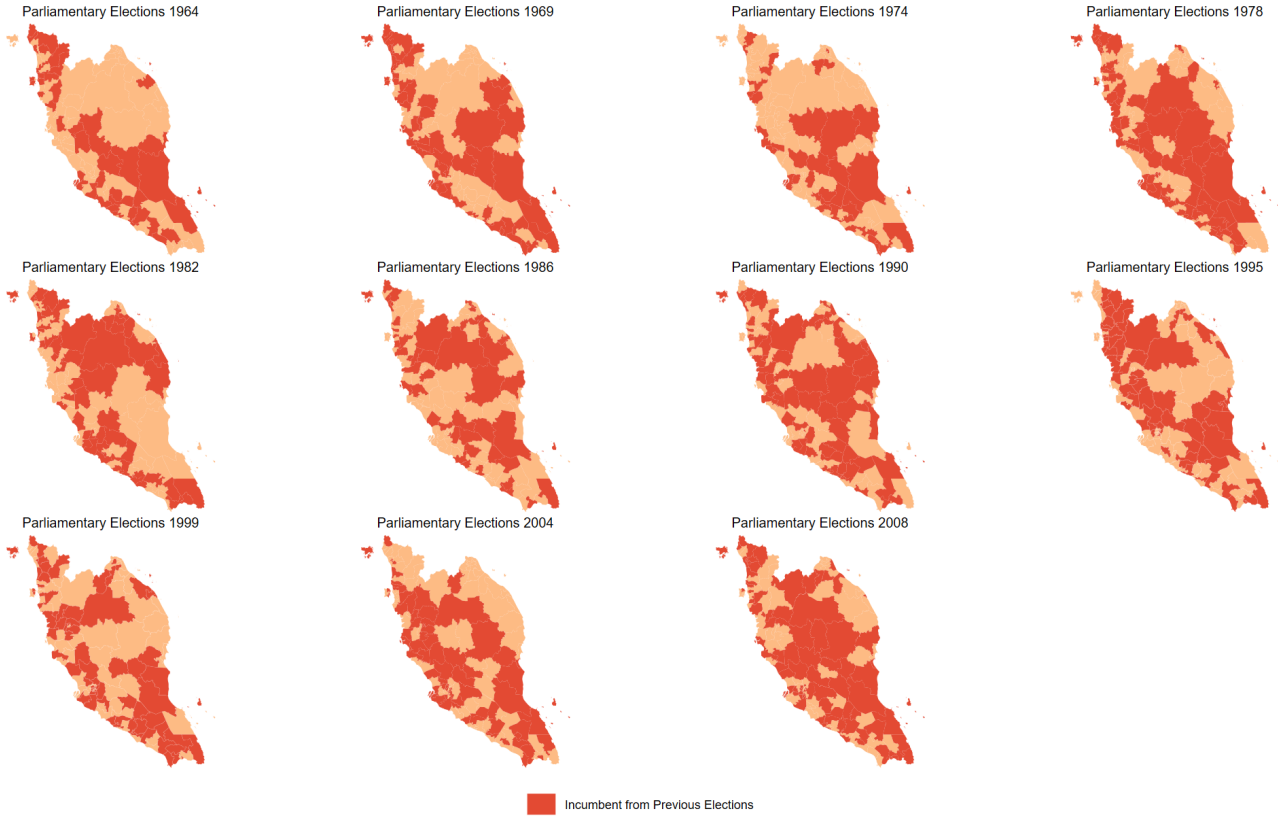
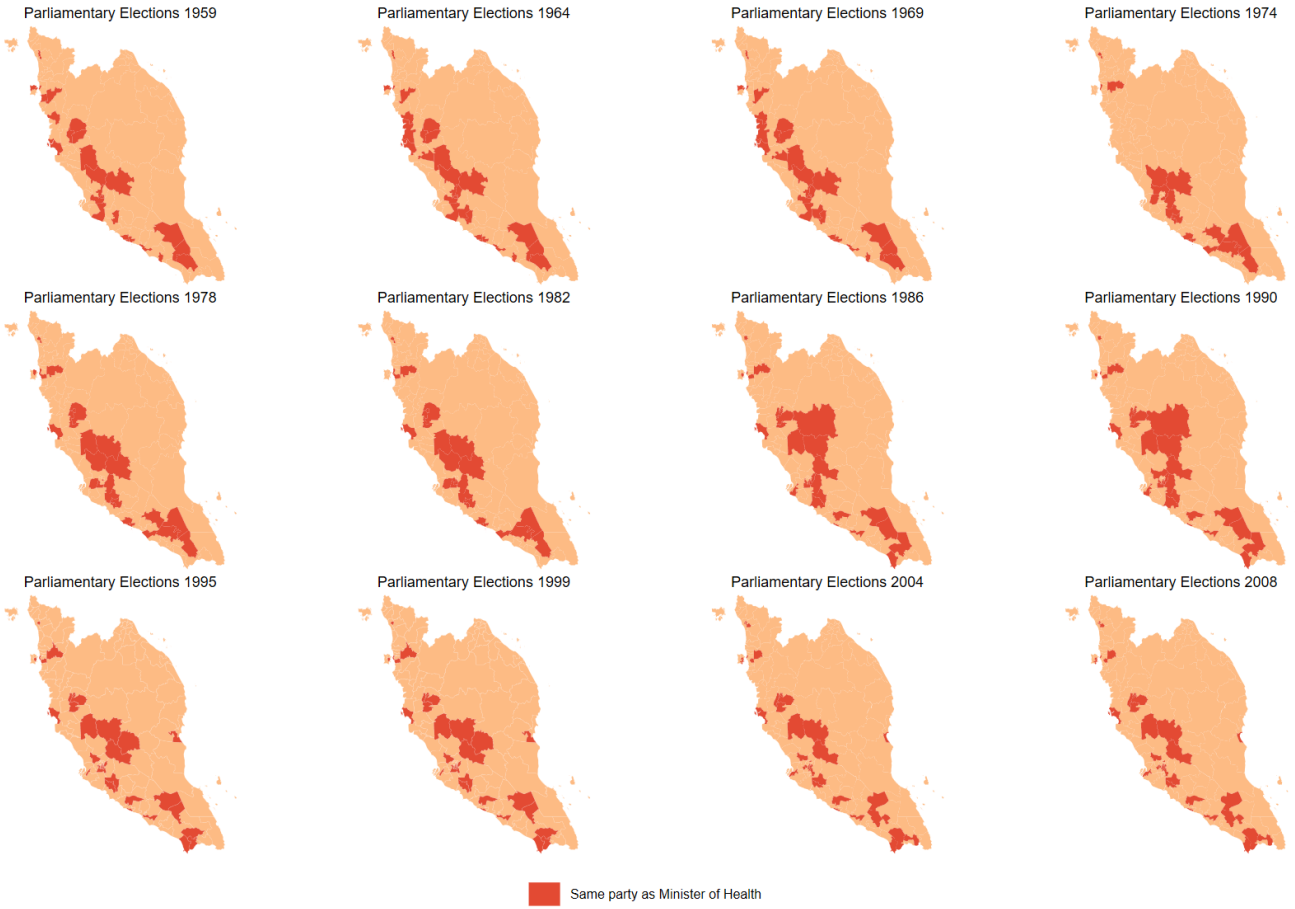


Figure Appendix A.15: Political Variation: Electoral Seats with Candidates that share the same party as the Minister of Health



Notes: Between 1959 and 1964, there were three Minister of Health. Two of which were from UMNO and one from MCA. Given that UMNO Ministers served the longest during this period, I chose to use UMNO as the co-party measure. From 1974 to 2008,

Figure Appendix A.16: District Boundaries Against Electoral Boundaries

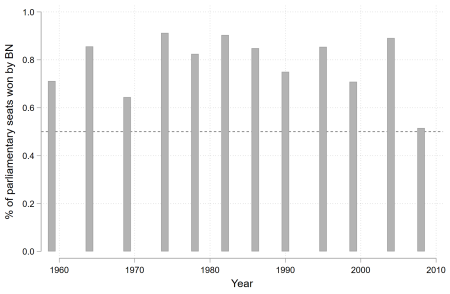


Notes: The blue line demarcates the district boundaries in 2000, while the light red lines shows the electoral boundaries.

Figure Appendix A.17: Electoral Seats and Political Dominance



(a) Number of Electoral Seats Across Periods



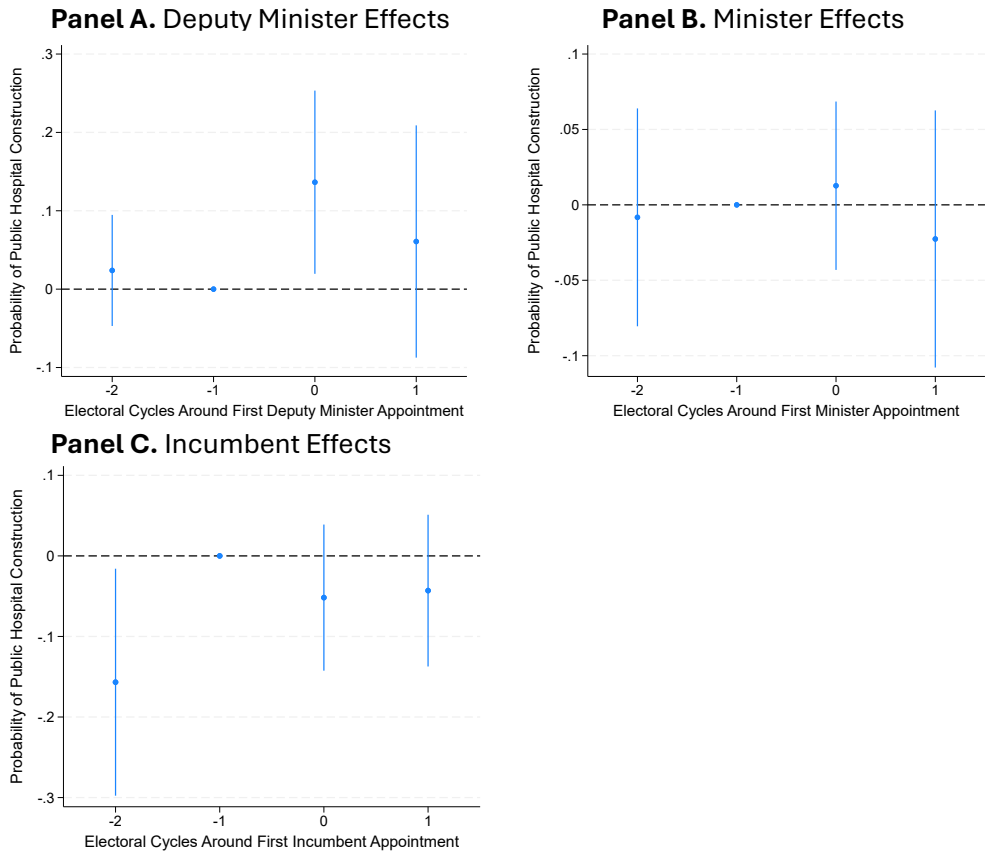
(b) Percentage of Electoral Seats won by *BN*

Table Appendix A.5: Dynamic Effects of Political Positions on Hospital Construction [43]

	Construction Within-Districts		
	(1) Deputy Minister	(2) Minister	(3) Incumbent
Pre-Treatment Effects			
t = -2	0.024	-0.008	-0.157
	(0.036)	(0.036)	(0.072)
t = -1	0.000	0.000	0.000
	(.)	(.)	(.)
Treatment Effects			
t = 0	0.136	0.013	-0.052
	(0.060)	(0.029)	(0.047)
t = +1	0.061	-0.024	-0.043
	(0.076)	(0.044)	(0.048)
Mean Dep Var.	0.041	0.048	0.041
N Electoral Seat-Cycles	825	1,049	1,201
R^2	0.475	0.444	0.418
Fixed Effects	Seat + Year		
Control Group	Matched Never-Treated		

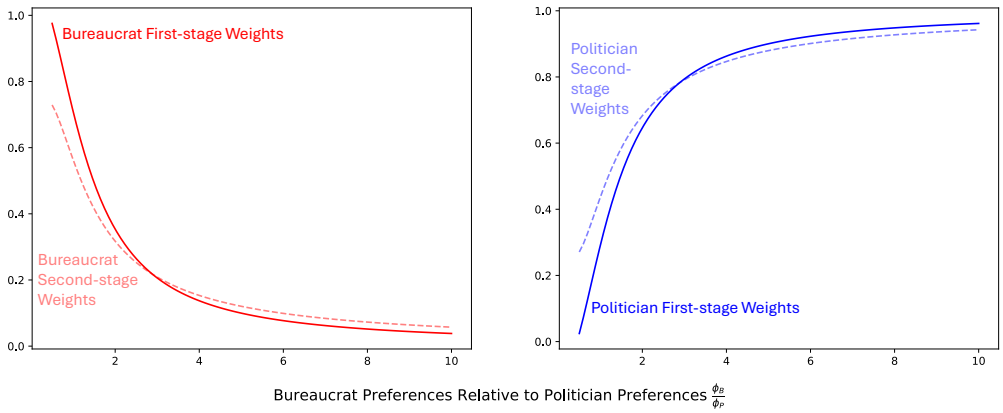
Notes: Results from event study regressions examining the dynamic effects of political positions on hospital construction. Each observation is a unique electoral seat-electoral cycle, population-weighted. The outcome variable is a binary indicator for whether a public hospital is built in an electoral seat. t = -1 is the omitted reference period. Control units are matched never-treated electoral seats. Standard errors are clustered at the electoral seat level and reported in parentheses. Deputy Minister, Minister, and Incumbent refer to electoral seats where politicians hold these positions during the electoral cycle.

Figure Appendix A.18: Matched-Event Study Estimates on Construction of New Public Hospitals Across Electoral Cycles (Sun and Abraham (2021))



Note: This figure shows the event study estimates on hospital construction. The x-axis is the number of electoral cycles before and after the construction of a new public hospital. The y-axis is the estimated effect on the number of hospitals built in a district. These event studies uses electoral boundaries from 2004 and projecting these boundaries to previous elections. Treatment units are electoral seats that are first represented by a minister, deputy minister or an electoral candidate that contests in more than one electoral cycle (incumbent). Treatment units are matched to control units that are electoral seats that are never represented by a minister, deputy minister or an incumbent. The event study uses the estimator from [43]. Standard errors are clustered at the district level and 95 percent confidence intervals are shown.

Figure Appendix A.19: Bureaucrat and Politician Bargaining Weights $\frac{\phi_B}{\phi_P} \in [0.5, 10.0]$



Note: This plot extends Figure Appendix A.5 from $[0.5, 1.5]$ to $[0.5, 10.0]$. The left panel plots bureaucrat's first-stage and second stage bargaining weights when varying bureaucrat preferences relative to politician preferences $\frac{\phi_B}{\phi_P} \in [0.5, 10.0]$. The right panel plots politician's first-stage and second stage bargaining weights. These plots show that the observed allocation of hospitals can be interpreted as bureaucrats having a larger bargaining power in the first-stage choice of choosing districts for funding–bureaucrats would have to have preferences that are at least three times larger than politicians to have a larger bargaining weight in the second-stage.

Table Appendix A.6: Election Years and the Cabinet Appointed

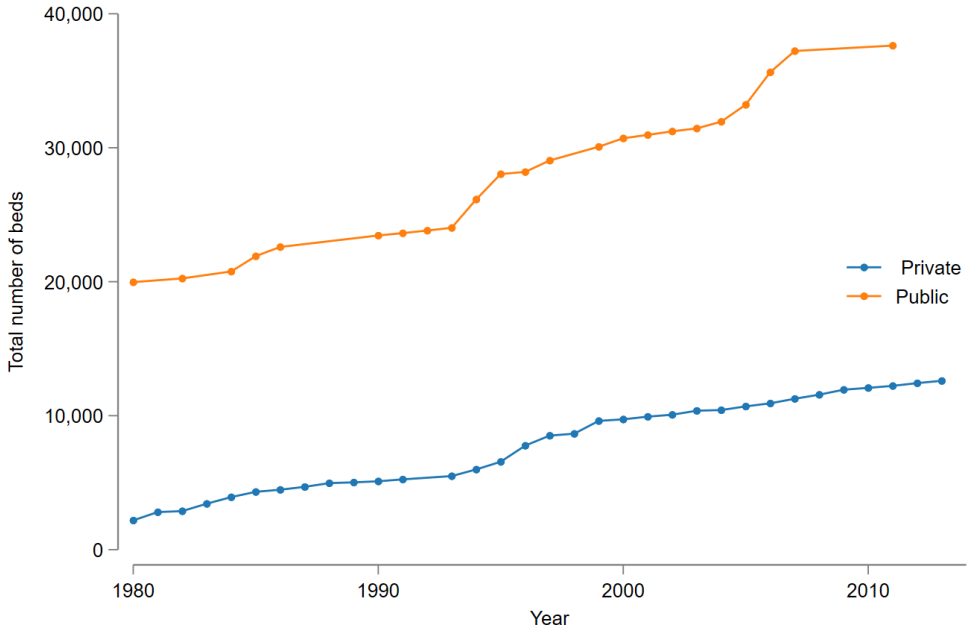
Election Year	**Name of Cabinet Appointed**	**Head of Cabinet (Prime Minister)**
1959	Rahman II	Tunku Abdul Rahman
1964	Rahman III	Tunku Abdul Rahman
1969	Razak I	Tun Abdul Razak
1974	Hussein I	Tun Hussein Onn
1978	Hussein II + Mahathir I	Tun Hussein Onn + Tun Mahathir
1982	Mahathir II	Tun Mahathir
1986	Mahathir III	Tun Mahathir
1990	Mahathir IV	Tun Mahathir
1995	Mahathir V	Tun Mahathir
1999	Mahathir VI	Tun Mahathir
2004	Abdullah II	Tan Abdullah Badawi
2008	Najib I	Dato Sri Najib Razak

Table Appendix A.7: Electoral Cycles, Malaysia Plans, Hospital Announcements and Construction.

Electoral Cycle	Malaysia Plans	Hospital Announcements	Hospital Construction
n.a.	First Malaya Plan (1956-1960)	n.a.	2
1959-1964	Second Malaya Plan (1961-1965)	2	3
1964-1969	First Malaysia Plan (1966-1970)	3	2
1969-1974	Second Malaysia Plan (1971-1975)	12	3
1974-1978	Third Malaysia Plan (1976-1980)	6	1
1978-1982	Fourth Malaysia Plan (1981-1985)	n.a.	7
1982-1986	Fifth Malaysia Plan (1986-1990)	7	2
1986-1990	n.a.	n.a.	20
1990-1995	Sixth Malaysia Plan (1991-1995)	5	3
1995-1999	Seventh Malaysia Plan (1996-2000)	18	5
1999-2004	Ninth Malaysia Plan (2000-2005)	n.a.	11
2004-2008	Tenth Malaysia Plan (2006-2010)	1	2
2008-2013	Eleventh Malaysia Plan (2011-2015)	n.a.	n.a.

Notes: This table shows the quinquennial (5-year) plan corresponding to each electoral cycle, the number of hospitals announced, and the number of hospitals constructed across the sample. For each electoral cycle, the relevant Malaysia Plan is the one released during that cycle. For example, the 1986 elections occurred on August 2, 1986, while the Fifth Malaysia Plan was announced in 1985. Hospital announcements were identified through the 'Health' sector chapters in the Malaysia Plans. The Malaysia Plans are structured into "Progress" and "Prospects" sections. The "Progress" section allowed identifying hospitals constructed in the previous five years, while the "Prospects" section looked ahead to future plans. The Fourth Malaysia Plan could not be used as its "Prospects" section did not announce specific districts receiving funding for new hospitals, and the Fifth Malaysia Plan's "Progress" section did not summarize construction from the previous cycle. In total, 61 hospitals were constructed in the sample, and 54 hospitals could be linked to their announcement years. The seven missing hospitals are non-specialist hospitals, including Sik, Gua Musang, Raub, Kuala Nerang, Hospital Tengku Ampuan Jemaah, Hospital Temenggung Seri Maharaja Tun Ibrahim, and Hospital Muadzam Shah.

Figure Appendix A.20: Public and Private Hospital Bed Capacity (1978–2013)



Notes: This figure plots the cumulative number of inpatient beds in public and private hospitals in Peninsular Malaysia from 1978 to 2013. Public hospitals have been the dominant provider of inpatient care throughout the study period. By 2013, public hospitals accounted for approximately three-quarters of total inpatient bed capacity. Private hospital bed capacity grew substantially after the economic liberalization of the late 1980s. Data source: National Healthcare Establishment and Workforce Survey (NHEWS) 2013.

Table Appendix A.8: Electoral Performance Across Political Careers Paths

	Never DM/M (1)		DM only (2)		DM-M (3)		M only (4)		ANOVA
N Elections Contested	1.310	(0.624)	2.058	(1.121)	2.967	(1.426)	2.092	(1.273)	<0.001
Winning Margins	0.103	(0.335)	0.276	(0.185)	0.349	(0.187)	0.351	(0.246)	<0.001
Voter Turnout	0.764	(0.062)	0.761	(0.060)	0.748	(0.053)	0.766	(0.061)	0.242
Uncontested Election	0.034	(0.174)	0.021	(0.099)	0.046	(0.155)	0.045	(0.164)	0.639
N Politicians	768		139		61		109		

Notes: Each observation represents a unique politician and are categorized into columns 1-4 based on their political career. 768 politicians never held any deputy minister or minister positions during their political career. 139 politicians held deputy minister positions but never became ministers. 61 politicians held both deputy minister and minister positions during their political career. 109 politicians were promoted to ministers directly from being a Member of Parliament. The first column, 'Never DM/M' represents politicians who never became a deputy minister or minister during their political career. The second column, 'DM only' represents politicians who became a deputy minister but did not become a minister. The third column, 'DM-M' represents those who became a deputy minister and eventually a minister during their political career. The fourth column, 'M only' represents those who never became deputy ministers but were promoted to ministers directly from being a Member of Parliament. This table tabulates the average electoral performance indicator across a politician's career path. For instance, in Column 4, those who became Ministers directly from being a Member of Parliament have average winning margins that are 0.351.

Table Appendix A.9: Summary Statistics of Electoral Seats

	Pooled years		Elections				
	Mean	SD	1959, 1964, 1969	1974, 1978 1982	1986, 1990	1995, 1999	2004, 2008
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A. All Electoral Seats							
Minister (=1)	0.179	(0.383)	0.147	0.205	0.199	0.185	0.172
Deputy Minister (=1)	0.178	(0.383)	0.037	0.208	0.302	0.205	0.180
Incumbent (=1)	0.425	(0.494)	0.323	0.465	0.478	0.535	0.351
BN Winning Margins	0.244	(0.300)	0.225	0.451	0.307	0.206	0.139
Co-Party (=1)	0.306	(0.461)	0.730	0.183	0.204	0.209	0.180
Uncontested (=1)	0.043	(0.203)	0.048	0.195	0.020	0.004	0.002
Opposing Candidates	1.247	(0.630)	1.389	1.262	1.343	1.127	1.180
Distance (Public, km)	23.2	(16.3)	28.8	26.6	24.7	20.1	16.7
Distance (Private, km)	66.8	(63.2)	92.8	95.8	71.0	48.9	31.7
Population (1,000s)	24.8	(41.3)	20.1	19.2	20.9	26.0	33.1
N Electoral Seats	-		104	114	132	144	165
Panel A. Seats Within Funded Districts							
Minister (=1)	0.172	(0.378)	0.022	0.060	0.092	0.262	0.157
Deputy Minister (=1)	0.129	(0.335)	0.000	0.103	0.179	0.166	0.119
Incumbent (=1)	0.475	(0.500)	0.134	0.132	0.406	0.654	0.454
BN Winning Margins	0.251	(0.286)	0.046	0.163	0.178	0.294	0.280
Co-Party (=1)	0.331	(0.471)	0.373	0.760	0.066	0.287	0.354
Uncontested (=1)	0.008	(0.089)	0.000	0.150	0.000	0.000	0.000
Opposing Candidates	1.173	(0.444)	1.979	1.424	1.196	1.115	1.023
Distance (Public, km)	15.1	(12.3)	19.1	16.4	23.4	17.5	10.7
Distance (Private, km)	23.6	(43.6)	27.3	47.4	87.9	23.8	8.2
Population (1,000s)	115.6	(85.7)	63.4	185.2	54.8	91.7	147.9
N Seats per District	4.9	(2.2)	4.5	4.7	4.8	5.1	5.5
N Seat-District Pair	302		35	28	42	135	87

	Pooled years	Electoral Cycles				
	N	1959, 1964, 1969 (4)	1974, 1978 1982 (5)	1986, 1990 (6)	1995, 1999 (7)	2004, 2008 (8)
Panel C. Public Hospitals						
Hospital Announcements	54	17	13	5	18	1
Hospital Construction	61	8	4	9	27	13
Major Specialist	18	1	0	3	8	6
Minor Specialist	6	1	0	0	5	0
Non-Specialist	31	5	3	5	14	4
State Hospital	2	0	0	0	0	2
Single Specialty	4	1	1	1	0	1

Notes: The 'Election' column refers to the years in which federal elections were held in Malaysia. The years are grouped based on elections that use the same electoral boundaries. Panel A shows the characteristics of electoral seats conditional on districts that have funding allocation for a new public hospital. Panel B reports the characteristics of all districts. 'Minister' and 'Deputy Minister' are electoral seats represented by a Minister or Deputy Minister during an election cycle. 'Core Voters' are electoral seats with *Barisan Nasional* (BN) winning margins that are greater than 30 percent. 'Swing Voters' are BN seats where winning margins are between -0.05 and 0.05. 'MCA Candidate' are electoral seats where the electoral candidate is from the Malaysia Chinese Association party. For Panel A, a seat that meets these conditions is given a value of 1 while in Panel B, a district with at least one seat that meets these conditions is given a value of 1. 'N District-Seat Pair' is the number of unique district-seat pair, while 'N Seats per District' is the average number of electoral seats per district. Panel C summarizes the number of hospital announcements and construction across different elections (See Table Appendix A.7 shows a granular version of this linked to specific Malaysia Plans and Electoral Cycles). In the heterogeneity analysis by hospital types Table 2, Major Specialist, Minor Specialist, Single Specialty and State Hospitals are grouped into Specialist Hospitals.

Table Appendix A.10: Balance Table: Comparison of Electoral Seats Limited to Districts with Hospital Funding (Minister Effects)

Variable	Control	Treat	Diff.
Need-based indicators			
Weighted Distance to Pub. Hosp (km)	14.241	19.329	5.087**
	(12.028)	(13.495)	(1.898)
Weighted Distance to Pri. Hosp (km)	23.214	25.310	2.096
	(45.359)	(29.107)	(6.664)
Population (1000s)	30.832	29.559	-1.273
	(49.594)	(51.586)	(7.611)
Political indicators			
Voter Turnout	0.736	0.744	0.007
	(0.046)	(0.040)	(0.007)
Total Voters (1000s)	57.165	53.743	-3.423
	(18.559)	(13.203)	(2.750)
Uncontested Seats	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Opposing Candidates	1.240	1.004	-0.236***
	(0.483)	(0.064)	(0.068)
Winning Margins	0.165	0.415	0.250***
	(0.253)	(0.186)	(0.038)
Winning Margins-squared	0.091	0.206	0.115***
	(0.110)	(0.144)	(0.018)
Seat Won by Politician	0.747	1.000	0.253***
	(0.435)	(0.000)	(0.062)
Party=MCA	0.364	0.158	-0.206**
	(0.482)	(0.368)	(0.072)
Party=MIC	0.041	0.050	0.009
	(0.198)	(0.220)	(0.031)
Party=Others	0.090	0.040	-0.050
	(0.287)	(0.199)	(0.042)
Party=UMNO	0.505	0.752	0.247**
	(0.501)	(0.436)	(0.076)
N	250	52	302

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. 'Seat Won by Politician' indicates whether a politician gained the highest number of votes for a seat during an electoral cycle. The table reports balance tests across different political variables using data from the pre-electoral cycle period. For instance, if an election occurred in 1978, these variables would be from 1977. The sample is the same sample used for the results in Table 3.

Table Appendix A.11: Balance Table: Comparison of Electoral Seats Limited to Districts with Hospital Funding (Deputy Minister)

Variable	Control	Treat	Diff.
Need-based indicators			
Weighted Distance to Pub. Hosp (km)	14.808	16.812	2.003
	(12.753)	(9.937)	(2.063)
Weighted Distance to Pri. Hosp (km)	24.620	17.025	-7.595
	(44.940)	(28.230)	(7.155)
Population (1000s)	32.219	23.398	-8.821
	(51.559)	(41.001)	(7.429)
Political indicators			
Voter Turnout	0.739	0.730	-0.008
	(0.045)	(0.047)	(0.008)
Total Voters (1000s)	56.418	57.698	1.280
	(18.121)	(15.855)	(2.964)
Uncontested Seats	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Opposing Candidates	1.233	1.002	-0.231**
	(0.478)	(0.041)	(0.074)
Winning Margins	0.179	0.379	0.200***
	(0.262)	(0.171)	(0.042)
Winning Margins-squared	0.100	0.172	0.072***
	(0.115)	(0.153)	(0.020)
Won Seat	0.755	1.000	0.245***
	(0.431)	(0.000)	(0.067)
Party=MCA	0.332	0.313	-0.019
	(0.472)	(0.468)	(0.078)
Party=MIC	0.045	0.025	-0.020
	(0.207)	(0.158)	(0.033)
Party=Others	0.092	0.023	-0.068
	(0.289)	(0.153)	(0.046)
Party=UMNO	0.531	0.638	0.107
	(0.500)	(0.485)	(0.083)
N	247	55	302

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. 'Seat Won by Politician' indicates whether a politician gained the highest number of votes for a seat during an electoral cycle. The table reports balance tests across different political variables using data from the pre-electoral cycle period. For instance, if an election occurred in 1978, these variables would be from 1977. The sample is the same sample used for the results in Table 3.

Table Appendix A.12: Balance Table: Comparison of Electoral Seats Limited to Districts with Hospital Funding (Incumbent)

Variable	Control	Treat	Diff.
Need-based indicators			
Weighted Distance to Pub. Hosp (km)	14.456	16.969	2.513
	(11.635)	(14.381)	(1.643)
Weighted Distance to Pri. Hosp (km)	24.286	21.403	-2.882
	(46.135)	(32.302)	(5.721)
Population (1000s)	32.358	26.368	-5.990
	(51.126)	(46.639)	(6.315)
Political indicators			
Voter Turnout	0.736	0.743	0.007
	(0.047)	(0.041)	(0.006)
Total Voters (1000s)	54.913	61.617	6.704**
	(17.765)	(17.075)	(2.335)
Uncontested Seats	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Opposing Candidates	1.262	1.017	-0.245***
	(0.500)	(0.141)	(0.058)
Winning Margins	0.197	0.236	0.039
	(0.282)	(0.179)	(0.035)
Winning Margins-squared	0.118	0.087	-0.031
	(0.131)	(0.093)	(0.016)
Won Seat	0.769	0.849	0.080
	(0.422)	(0.360)	(0.054)
Party=MCA	0.310	0.389	0.079
	(0.463)	(0.490)	(0.062)
Party=MIC	0.045	0.033	-0.012
	(0.208)	(0.180)	(0.027)
Party=Others	0.109	0.001	-0.108**
	(0.312)	(0.039)	(0.036)
Party=UMNO	0.536	0.576	0.040
	(0.500)	(0.497)	(0.066)
N	214	88	302

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. 'Seat Won by Politician' indicates whether a politician gained the highest number of votes for a seat during an electoral cycle. The table reports balance tests across different political variables using data from the pre-electoral cycle period. For instance, if an election occurred in 1978, these variables would be from 1977. The sample is the same sample used for the results in Table 3.

Table Appendix A.13: Robustness Check: Aggregated District Boundaries (1970–2000)

	Public Hospital Construction Within-Districts		
	(1)	(2)	(3)
Politician Influence			
Minister	-0.056		
	(0.086)		
Deputy Minister		0.124	
		(0.059)	
Incumbent			0.103
			(0.045)
Adherence to Allocation Rules			
Weighted Dist. Pub. (SD)	0.173	0.182	0.167
	(0.049)	(0.052)	(0.056)
Mean Dep Var.	0.305	0.312	0.317
N	507	507	507
R^2	0.305	0.312	0.317
Fixed Effects	District × Cycle	District × Cycle	District × Cycle
Seat-level Covariates	x	x	x

Notes: The table reports OLS coefficient estimates from Equation 1 using district boundaries that aggregate smaller districts into larger ones between 1970 and 2000 (see Figure Appendix A.10 for a comparison between 2000 and aggregated boundaries). Standard errors are clustered at the district level.

Table Appendix A.14: Balance Table: Across-District Funding for Deputy Ministers (Raw and Matched)

	Deputy Minister (Raw)			Deputy Minister (Matched)		
Variable	Control	Treat	Diff.	Control	Treat	Diff.
Dist. to Pub (km)	15.924	15.038	-0.886	20.842	21.738	0.897
	(13.342)	(10.862)	(0.772)	(15.810)	(14.014)	(1.170)
Population (1000s)	56.564	41.662	-14.9***	95.210	88.949	-6.261
	(70.215)	(56.248)	(4.032)	(97.572)	(85.872)	(7.193)
Rural	0.498	0.447	-0.052***	0.683	0.691	0.009
	(0.291)	(0.291)	(0.019)	(0.207)	(0.201)	(0.016)
Age <1	0.027	0.024	-0.002***	0.028	0.026	-0.002***
	(0.006)	(0.005)	(0.000)	(0.007)	(0.007)	(0.001)
Age 1-5	0.140	0.131	-0.009***	0.146	0.144	-0.002
	(0.023)	(0.022)	(0.001)	(0.021)	(0.025)	(0.002)
Age 6-18	0.321	0.307	-0.014***	0.331	0.331	0.000
	(0.044)	(0.044)	(0.003)	(0.035)	(0.032)	(0.003)
Age 19-45	0.361	0.385	0.025***	0.339	0.342	0.003
	(0.060)	(0.066)	(0.004)	(0.043)	(0.043)	(0.003)
Age 46-65	0.119	0.119	-0.000	0.121	0.121	0.000
	(0.021)	(0.028)	(0.002)	(0.023)	(0.028)	(0.002)
Age 65-85	0.031	0.031	0.000	0.033	0.034	0.001
	(0.010)	(0.011)	(0.001)	(0.011)	(0.012)	(0.001)
Age 85+	0.002	0.002	-0.000	0.002	0.002	-0.000
	(0.001)	(0.001)	(0.000)	(0.002)	(0.001)	(0.000)
College Degree	0.023	0.030	0.007***	0.013	0.011	-0.002
	(0.037)	(0.038)	(0.002)	(0.019)	(0.015)	(0.001)
N	474	510	984	266	396	662

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. The table reports balance tests across districts with at least one deputy minister (treatment) and those with no deputy minister seats (control) using data from the pre-electoral cycle period. For instance, if an election occurred in 1978, these variables would be from 1977. The sample is the same sample used for the results in Table 3. The 'Matched' columns refer to matched districts based on pre-treatment population size and proportion of people living in rural areas.

Table Appendix A.15: Balance table: Across-District Funding for Minister and Incumbents

	Minister			Incumbent		
Variable	Control	Treat	Diff.	Control	Treat	Diff.
Dist. to Pub. Hosp (km)	16.409	18.198	1.789	18.178	17.633	-0.544
	(12.932)	(13.291)	(1.440)	(13.214)	(13.208)	(2.371)
Population (1,000s)	92.619	135.272	42.653***	80.787	47.484	-33.303***
	(90.985)	(147.209)	(13.238)	(83.402)	(63.291)	(11.697)
Rural	0.545	0.463	-0.082***	0.668	0.470	-0.198***
	(0.280)	(0.287)	(0.031)	(0.268)	(0.283)	(0.051)
Age <1	0.028	0.026	-0.002***	0.028	0.026	-0.002**
	(0.006)	(0.005)	(0.001)	(0.006)	(0.006)	(0.001)
Age 1-5	0.141	0.138	-0.004	0.142	0.138	-0.003
	(0.022)	(0.022)	(0.002)	(0.022)	(0.022)	(0.004)
Age 6-18	0.325	0.318	-0.007	0.325	0.320	-0.005
	(0.037)	(0.043)	(0.005)	(0.035)	(0.042)	(0.007)
Age 19-45	0.356	0.371	0.014**	0.342	0.369	0.027**
	(0.059)	(0.062)	(0.007)	(0.060)	(0.061)	(0.011)
Age 46-65	0.117	0.116	-0.001	0.127	0.115	-0.012***
	(0.024)	(0.023)	(0.003)	(0.024)	(0.023)	(0.004)
Age 65-85	0.031	0.030	-0.001	0.033	0.030	-0.003*
	(0.009)	(0.009)	(0.001)	(0.009)	(0.009)	(0.002)
Age 85+	0.002	0.002	-0.000	0.003	0.002	-0.001***
	(0.001)	(0.001)	(0.000)	(0.002)	(0.001)	(0.000)
College Degree	0.017	0.023	0.006*	0.017	0.021	0.005
	(0.022)	(0.032)	(0.003)	(0.018)	(0.030)	(0.005)
N	396	588	984	171	813	984

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. The table reports balance tests across districts with at least one minister (treatment) and those with no minister seats (control). The 'Incumbent' columns refer to incumbent districts based on three pre-treatment covariates: distance to existing public hospitals, population size, and proportion of people living in rural areas.

Table Appendix A.16: Effects of Ministers, Deputy Ministers and Incumbents Across-Districts

	Public Hospital Funding Across-Districts		
	(1)	(2)	(3)
Political Influence			
Minister	-0.039		
	(0.025)		
Deputy Minister		-0.016	
		(0.023)	
Incumbent			-0.023
			(0.033)
Adherence to Allocation Rules			
Dist. Pub. (SD)	0.062	0.059	0.059
	(0.025)	(0.026)	(0.026)
Mean Dep Var.	0.052	0.052	0.052
N	984	984	984
R2	0.221	0.218	0.218
Fixed Effects	x	x	x
District-Level Covariates	x	x	x
Matching			

Notes: The table reports difference-in-differences estimates for hospital funding across districts with at least one minister, deputy minister, or incumbent. Column 2 is the same as Column 2 in Table 3. Standard errors clustered at the district level are reported in parentheses. All regressions include district and year fixed effects and control for district level covariates.

Table Appendix A.17: TWFE Weights for Difference-in-Differences Across District Funding [51]

Variable	Total ATTs	Positive ATTs	Negative ATTs	$\sum$ Positive Weights	$\sum$ Negative Weights	SD (Avg = 0)	SD (Opposite Sign to Coefficients)
Deputy Minister	227	209	18	1.029	-0.029	0.029	0.203

Notes: These estimates are estimated using the 'twowayfeweights' Stata package. The estimates are population weighted, and follow the same estimation strategy produced in Columns 1 through 5 in Table 3.

Table Appendix A.18: Robustness Check for Difference-in-Differences Across District Funding: [48]

Variable	Effects	Placebo	Mean Dep Var.	Unique Districts (Switchers)	Switchers x Period
Deputy Minister	0.000 (0.075)	0.187 (0.102)	0.074	81	182

Notes: The coefficients represent the average treatment effect of political variables on hospital funding announcements at the district level. Each observation is a district-electoral cycle. The estimates is obtained by comparing districts "switching-in" to political seats during an electoral cycle with districts that will "switch-in" in subsequent electoral cycles. Standard errors are in parentheses and clustered at the district level. Estimates are population weighted at the district level. The effects column shows that the effects of deputy ministers on hospital funding is small and statistically insignificant.

Table Appendix A.19: Proportion of Seats that meet Bureaucrat-Politician Joint Utility Conditions $\bar{\sigma^*}(d)$ by Election Years

Election Years	Mean (SD)	N
1959	0.255 (0.436)	365
1964	0.356 (0.480)	365
1969	0.199 (0.400)	365
1974	0.288 (0.454)	383
1978	0.273 (0.446)	383
1982	0.333 (0.472)	383
1986	0.249 (0.433)	406
1990	0.209 (0.407)	406
1995	0.334 (0.472)	423
1999	0.164 (0.371)	423
2004	0.220 (0.415)	449
2008	0.092 (0.290)	449
Total	0.235 (0.424)	4,800

Notes: This table summarizes the $\bar{\sigma^*}(d)$ values by year, showing mean values with standard deviations in parentheses and total observations per election year.

Table Appendix A.20: Robustness to Ethnic Composition and Urbanization Controls

	Construction Within-Districts			
	(1)	(2)	(3)	(4)
Political Influence				
Deputy Minister	0.415	0.351	0.337	0.415
	(0.170)	(0.173)	(0.166)	(0.173)
Ethnic Composition				
Chinese Voter Share			−0.667	
			(0.622)	
Urbanization				
Log Population				0.087
				(0.051)
Adherence to Allocation Priorities				
Weighted Dist. Pub. (SD)	0.473	0.683	0.774	0.450
	(0.191)	(0.221)	(0.238)	(0.195)
Mean Dep Var.	0.346	0.322	0.322	0.346
N Seat-Districts	302	216	216	302
R^2	0.461	0.553	0.565	0.473
Fixed Effects	District × Cycle	District × Cycle	District × Cycle	District × Cycle
Seat-Level Covariates	x	x	x	x

Notes: The regression is limited to electoral seats in districts that have been given funding for a new hospital. Each observation is a unique electoral seat-district-electoral cycle. The outcome variable is a binary variable on whether a public hospital is built in an electoral seat. Column 1 replicates the baseline specification from Column 2 of Table 1. Column 2 runs the same baseline specification on the restricted sample (1986 onward) without ethnic controls. Column 3 adds Chinese voter share at the electoral seat level. Column 4 adds the log population of the seat-district intersection (full sample). The sample in Columns 2–3 is smaller (N=216) because ethnic voter data is available from the 1986 electoral cycle onward. All regressions control for seat-level covariates. These covariates include distance to existing private hospitals, a binary indicator capturing whether the *Barisan Nasional* candidate was uncontested, the number of opposing candidates within the same seat, whether the candidate won the seat, party dummies of the candidate, voter turnout, total voters and the winning margins of the candidate relative to the runner-up candidate and a squared winning margins term. Standard errors clustered at the district level (based on 2000 boundaries) are reported in parentheses.

Table Appendix A.21: Channels of Deputy Minister Favoritism

	Construction	Within-Districts
	(1)	(2)
Interaction Effects		
Deputy Minister × Co-Party	0.658	
	(0.284)	
Deputy Minister × Winning Margins (SD)		−0.083
		(0.247)
Base Effects		
Co-Party	0.122	
	(0.168)	
Winning Margins (SD)		0.243
		(0.107)
Deputy Minister	0.178	0.504
	(0.162)	(0.215)
Adherence to Allocation Priorities		
Weighted Dist. Pub. (SD)	0.446	0.452
	(0.197)	(0.196)
Mean Dep Var.	0.346	0.346
N Seat-Districts	302	302
R^2	0.511	0.488
Fixed Effects	District × Cycle	District × Cycle
Seat-Level Covariates	x	x

Notes: The regression is limited to electoral seats in districts that have been given funding for a new hospital. Each observation is a unique electoral seat-district-electoral cycle. Coefficient estimates are population-weighted. Column 1 interacts the deputy minister variable with whether the politician shares the same party as the Minister of Health. Column 2 interacts the deputy minister variable with the winning margins of the electoral candidate. All regressions control for seat-level covariates and include minister and incumbent as controls. These covariates include distance to existing private hospitals, a binary indicator capturing whether the *Barisan Nasional* candidate was uncontested, the number of opposing candidates within the same seat, whether the candidate won the seat, party dummies of the candidate, voter turnout, total voters and the winning margins of the candidate relative to the runner-up candidate and a squared winning margins term. Standard errors clustered at the district level (based on 2000 boundaries) are reported in parentheses.

Table Appendix A.22: Co-Party Channel with Ethnic Composition Controls

	Construction Within-Districts	
	(1)	(2)
Interaction Effects		
Deputy Minister × Co-Party	0.658	0.428
	(0.284)	(0.329)
Ethnic Composition		
Chinese Voter Share		−0.692
		(0.499)
Base Effects		
Deputy Minister	0.178	0.232
	(0.162)	(0.177)
Co-Party	0.122	0.155
	(0.168)	(0.182)
Minister	0.163	0.214
	(0.159)	(0.162)
Incumbent	−0.170	−0.219
	(0.126)	(0.126)
Adherence to Allocation Priorities		
Weighted Dist. Pub. (SD)	0.446	0.702
	(0.197)	(0.221)
Mean Dep Var.	0.346	0.322
N Seat-Districts	302	216
R^2	0.511	0.617
Fixed Effects	District × Cycle	District × Cycle
Seat-Level Covariates	x	x

Notes: The regression is limited to electoral seats in districts that have been given funding for a new hospital. Each observation is a unique electoral seat-district-electoral cycle. Column 1 replicates the co-party interaction from Column 1 of Table Appendix A.21, including minister and incumbent as controls. Column 2 adds Chinese voter share at the electoral seat level as a control; the sample drops to N=216 because ethnic voter data is available from the 1986 electoral cycle onward. 'Co-Party' is a binary indicator for whether the electoral candidate belongs to the same party as the Minister of Health. All regressions control for seat-level covariates. Standard errors clustered at the district level (based on 2000 boundaries) are reported in parentheses.

Table Appendix A.23: Alternative Estimators: Logit and Poisson Pseudo-Maximum Likelihood

	Construction Within-Districts		
	(1) OLS	(2) Logit	(3) PPML
Political Influence			
Deputy Minister	0.415	3.335	1.685
	(0.170)	(1.062)	(0.463)
Adherence to Allocation Priorities			
Weighted Dist. Pub. (SD)	0.473	3.248	1.366
	(0.191)	(1.646)	(0.663)
Mean Dep Var.	0.346	0.346	0.346
N Seat-Districts	302	302	302
Fixed Effects	District × Cycle	District + Cycle	District × Cycle
Seat-Level Covariates	x	x	x

Notes: The regression is limited to electoral seats in districts that have been given funding for a new hospital. Each observation is a unique electoral seat-district-electoral cycle. Column 1 replicates the OLS baseline from Column 2 of Table 1. Column 2 reports logit coefficients with district and cycle fixed effects separately; the fully interacted district × cycle fixed effects are not feasible due to complete separation with the small sample. Column 3 reports Poisson pseudo-maximum likelihood (PPML) coefficients with district × cycle fixed effects. All specifications control for seat-level covariates. Standard errors clustered at the district level (based on 2000 boundaries) are reported in parentheses.

During the preparation of this work the author(s) used Claude in order to debug Python and Stata code, generate tables and figures, and considered alternate possibilities of phrasing certain paragraphs. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

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