

Journal of Urban Affairs

ISSN: 0735-2166 (Print) 1467-9906 (Online) Journal homepage: http://www.tandfonline.com/loi/ujua20

Patterns of urban governance: A sequence analysis of long-term institutional change in six **Canadian cities**

Jack Lucas

To cite this article: Jack Lucas (2017) Patterns of urban governance: A sequence analysis of longterm institutional change in six Canadian cities, Journal of Urban Affairs, 39:1, 68-90

To link to this article: <u>http://dx.doi.org/10.1111/juaf.12291</u>

4	1	0	

Published online: 04 Jan 2017.



Submit your article to this journal 🗹

Article views: 15



View related articles 🗹



View Crossmark data 🖸

Full Terms & Conditions of access and use can be found at http://www.tandfonline.com/action/journalInformation?journalCode=ujua20

Patterns of urban governance: A sequence analysis of long-term institutional change in six Canadian cities

Jack Lucas

University of Calgary

ABSTRACT

How do the institutional structures of urban policymaking develop over time? To answer this question, scholars have often focused on one of three contexts: the city in which a set of policy institutions exists, the higher-order government with legislative authority over those institutions, or the policy domain in which a policy task is administered. Few studies have compared the relative importance of these contexts for understanding the long-term development of urban policy institutions. In this article, I compare longterm sequences of urban policy institutions, understood as the historical development of the formal institutional structures in which urban policies are developed and administered, across six Canadian cities, three provinces, and five policy domains. I use optimal matching methods to compare the sequences, and I find that patterns of resemblance among the sequences are most clearly sorted by policy domain, with shared province playing an important secondary role. These findings point toward a new research agenda for urban governance scholars, one less focused on individual cities and more attuned to the ways that cities operate as actors and sites within broader policy fields that operate not only across the boundaries of individual cities, but across the boundaries of higher-order governments as well.

On either side of the "event horizon" that separates urban politics research from public policy studies (Sapotichne, Jones, & Wolfe, 2007), scholars have long pursued a separate but similar debate. The questions at issue are simple: How have urban policy institutions evolved over time? Does this evolution vary across cities? Is it determined by the higher-order governments in which cities must operate? Or is it shaped instead by policy problems and tasks themselves? In short, what really matters for the long-term development of urban policy institutions: policy domains, cities, or higher-order governments (John & Cole, 2000)?

The answer, of course, is that *everything* matters. Urban politics scholars have shown repeatedly that political and economic conditions in a particular *place* can bend local institutions toward a common shape. Political scientists have emphasized the importance of *higher-order governments*, like Canadian provinces or U.S. states, for understanding the evolution of urban policy institutions. And public policy scholars, for their part, have focused on the evolution of institutional structures within particular *policy domains*, such as schools or public transit or utilities, while tracking these domains across both cities and higher-order governments. The challenge, therefore, is not to search for instances in which one or another of these three contexts "matters," but instead to understand their relative importance in different places and times. Unfortunately, however, this is not a task to which most studies of urban policy institutions are well equipped to contribute, given that they often begin by selecting a single context—one city, policy domain, or higher-order government—for analysis (Pierre, 2005). To understand the development of urban policy institutions instead requires

CONTACT Jack Lucas 😡 jack.lucas@ucalgary.ca 🗈 Department of Political Science, University of Calgary, 2500 University Drive Northwest, Calgary, Alberta T2N 1N4.

that we compare among cities, policy domains, and higher-order governments without prioritizing one option from the outset.

To this end, this article compares long-term sequences of urban policy institutions—understood as the historical development of the institutional structures in which urban policy tasks are developed and administered—across cities, policy domains, and higher-order governments. I draw on a new data set on the structure of policy institutions in six Canadian cities, three provinces, and five policy domains to describe patterns of resemblance among these long-term sequences. The data set contains year-by-year information on the structure of policy institutions in each policy domain and city from the nineteenth century to the present, allowing us to compare thirty long-term institutional sequences, one for each domain in each city. Using these long-term sequences as my object of analysis, I use a technique known as *optimal matching* to capture patterns of resemblance among the sequences. This is, to my knowledge, the first long-term comparative data set on urban policy institutions ever assembled. It allows us to explore which of the three basic contexts—the policy domain, the city, or the higher-order government—best captures patterns of similarity in the longterm development of policy institutions in Canadian cities.

My results suggest that patterns of resemblance among these long-term sequences are most clearly sorted by policy domain. Sequences of institutional development in particular domains, such as policing or public health, tend to resemble one another across cities and even provincial boundaries much more than they resemble different domains within the same cities. The strength of these shared- domain resemblances, however, varies from domain to domain, and in some cases, shared-province resemblances are equally important. I find few instances of resemblance among sequences *within* particular cities, suggesting that the influence of individual cities on the development of urban policy institutions may be more indirect than direct. These findings are descriptive, rather than causal, and are intended to supply a credible comparative account of long-term urban institutional patterns that has thus far been absent from the urban governance literature. They point toward a new research agenda for students of urban governance and urban political history, one that is focused on how cities operate both as actors and as sites within broader policy fields—fields that operate not only across the boundaries of individual cities, but often across the boundaries of higher-order governments as well.

Three contexts: Domains, cities, and higher-order governments

Before we can hope to explain the causal processes that produce patterns of resemblance among long-term sequences of urban policy institutions, we first need to accurately describe the patterns themselves. Following the work of Peter John and Alistair Cole (2000), I distinguish here among three broad tendencies in accounting for such patterns: those focused on policy domains, those focused on cities, and those focused on higher-order governments.¹ While this typology may initially appear unfamiliar to some urban politics scholars, each of the three approaches has in fact been clearly articulated within the urban politics and policy literatures, and each has also been widely applied in historical and political science studies of Canadian urban governance.

Domain-based approaches hypothesize that patterns of policy and governance are sorted by policy domain, and are produced either by the nature of the policy itself or by the cluster of institutions and ideas that grow up around a policy over time. Within public policy studies, domain-based approaches include Paul Sabatier's advocacy coalition framework (Sabatier, 1988; Sabatier & Weible, 2007) and Frank Baumgartner and Bryan Jones's punctuated equilibrium approach (Baumgartner & Jones, 2009), both of which examine policy change in the context of delimited policy subdomains.² Within urban studies, the well known work of Paul Peterson (1981) also takes a domain-centered view. Each of these approaches is built on very different assumptions about what it is that makes the subdomain important, ranging from the functionalist *policy makes politics* assumptions of Peterson's *City Limits* to an emphasis on mutually reinforcing ideas and institutions in the work of Baumgartner and Jones (Sapotichne & Jones, 2012, pp. 446–448). In each case,

70 😉 J. LUCAS

however, these scholars place the policy domain, rather than the state or the city, at the center of their accounts.

In Canada, the popularity of domain-based approaches is evident in recent political science research that focuses on urban policy and governance within domains like immigration (Good, 2009), regional planning (Taylor & Burchfield, 2010), and water distribution (Bakker & Cook, 2011). The approach is equally common, at least implicitly, among Canadian urban historians, who have taken a similarly domain-centric approach in historical studies of planning (Artibise & Stelter, 1979), public parks (Wright, 1983), and urban utilities (Armstrong & Nelles, 1988). From the standpoint of understanding the development of urban policy institutions—which is our focus here—a domain-based approach would lead us to expect to find resemblances in the long-term shape of institutional sequences on the basis of their membership in particular policy domains.

For city-based approaches, in contrast, what is most important about patterns of policy and governance is that they occur in a particular place. It is therefore the individual city, or perhaps the metropolitan region, which offers the most useful boundary in which to understand urban policy development (Pierre, 2005). Once again, the causal processes by which these place-based resemblances are produced vary considerably among urban politics scholars. Some argue that a bundle of political-economic variables create bargaining contexts which vary from city to city, thereby producing city-based variation (Savitch & Kantor, 2002). Others point to the ways that economic, political, ideational, and natural contexts lash up differently across cities, producing diverse urban characters and traditions (Molotch, Freudenburg, & Paulsen, 2000). In perhaps the best known city- based approach, Clarence Stone's Regime Politics, is built on the claim, first, that the key problem of urban governance is insufficient capacity, and second, that local public and private actors solve this problem by building long-term coalitions with sufficient power to act within their cities (Stone, 1989). While Stone himself is quite clear that the cause of the underlying problem goes well beyond the local scale (Stone, 1989, p. 219), most applications of the regime approach have focused on urban regimes themselves, rather than the wider structural challenges to which they are a response. Inspired by Stone's own richly historical approach to urban power in Atlanta, these studies often focus on particular cities or compare small numbers of cities to one another (Mossberger, 2009; Sapotichne & Jones, 2012).

While the particular applicability of Stone's regime approach in Canada has been a matter of some dispute (Cobban, 2003; Leo, 2003), a broader city-based approach is nevertheless quite common in Canadian urban history and political science. Warren Magnusson and Andrew Sancton's (1983) *City Politics in Canada* takes a straightforward city-by-city approach to urban political development. Many urban histories in Canada have followed similar city-based assumptions; indeed, observers of Canadian urban historiography have remarked on the commonness of city-centered approaches despite the prevalence of a broader "metropolitan thesis" within the Canadian historical discipline (Davis, 1985, pp. 98–101; Voisey, 1994). All of these city-based approaches are built on the as- sumption, which is often left unstated, that the dynamics of a particular city will shape policy and governance processes within that city across policy domains. The enormous numerical predominance of single-case studies within urban politics scholarship is a testament to the widespread importance of this assumption.³

Those who advocate *state-based* approaches agree with city-centered arguments about the importance of studying policy and governance *across* rather than *within* policy domains, but they argue that the resulting patterns are best described not in individual cities but instead at the level of the higher-order governments with legislative authority over local institutions. While the shape and level of this higher-order government varies across advanced democracies—it might be a province, a "state" in the U.S. sense, or a central government—the basic claim in state-based approaches is that the relevant higher-order government has a crucial impact on the shape of urban governance patterns within its geographic territory.

While the variation in U.S. state constitutions and home-rule provisions has complicated a statebased approach in the United States, empirical studies of U.S. local governance do occasionally adopt a state-based orientation (e.g., Saltzstein, Copus, Sonenshein, & Skelcher, 2008; Tolbert & Zucker, 1983). Outside of the United States, however, state-based approaches are common. In the United Kingdom, for example, Jonathan Davies has emphasized the importance of central state actors for urban redevelopment policy (Davies, 2003); in Canada, many recent studies proceed from the assumption that the provincial context is decisive for understanding policy and governance at the local scale, organizing their treatments of Canadian local government on a province-by-province basis (Garcea & LeSage, 2005; Sancton & Young, 2009). Because Canadian provinces have typically been much more willing than their U.S. counterparts to be actively involved in shaping and restructuring urban institutions, the state-based approach is more prominent and more explicitly theorized in Canada than in the United States, with provincial governments playing decisive roles in studies of metropolitan governance (Sancton, 2008), urban planning (Moore, 2013), and urban political autonomy (Magnusson, 2005).

This brief review suggests two conclusions. First, each of the three approaches we have described is coherent and plausible, and each has clearly been useful for addressing particular aspects of urban policy and governance. Selecting a single domain, city, or state can help a researcher limit the impact of factors that may be unrelated to her research interest. This is perfectly defensible. What such studies cannot supply, however, is a more systematic and comparative look at the *relative* importance of each of the three contexts for understanding long-term patterns of urban policy institutions. Before we adopt one or another of these approaches, in other words, we first need to test their opening assumptions, asking how well they organize and summarize the patterns of change that we wish to explain. The comparative analysis below is designed to provide just such a test in the case of long-term sequences of urban policy institutions.

The second conclusion is that each of the three *descriptive* approaches is compatible with a range of possible *causal* accounts. If we discovered, for example, that institutional patterns are clearly sorted by policy domain, this descriptive finding would tell us nothing about the merit of punctuated equilibrium theory versus "city limits" theory as an account of the causes of domain- based resemblance. Similarly, a discovery of state-based resemblance might be explained by an institutionalist account of statutory constraints on urban institutions, but it might also be explained by pointing to differences in political culture or political-economic contexts. Thus, our descriptive inferences in this study, while vitally important for improving our understanding of long-term patterns of urban policy institutions, do not have direct implications about the causes of institutional stability and change, except in the negative sense that they may make some causal theories less plausible than others as an analytical starting point.

Comparative data set

To explore the development of urban policy institutions in Canadian cities, I have assembled a data set containing year-by-year data on formal institutional structures in five policy domains: policing (urban and regional police forces), public health (contagious disease control and health promotion), public schools (nondenominational, public elementary schooling), public transit (publicly accessible local or regional passenger transportation), and water (supply and distribution of potable water). I have selected these policy domains on the basis of four main criteria: substantive importance, policy scope, duration, and access to sources.⁴ I first made a list of the policy domains whose substantive importance for Canadian urban politics was widely recognized.⁵ I then excluded policy domains that significantly overlapped in policy scope and type—such as water and electricity, police and fire, schools and libraries, hospitals and public health—in order to maximize the range of policy domains that I could cover while maintaining a feasible research program.⁶ Third, given my focus in this study on long-term sequences of policy institutions, I then selected policy domains with histories reaching back to the early twentieth century at the latest.⁷ Lastly, based on a preliminary study of the available sources, I selected the five policy domains for which reliable, comparable, and accessible data were most likely to be available.⁸ The resulting data set includes policy domains which not only

range across the kinds of policy tasks in which Canadian cities are involved, but also across traditional levels of provincial involvement⁹ and levels of public spending.¹⁰

I have also selected six cities in which to track the development of institutions in each policy domain: Calgary and Edmonton (in the province of Alberta), Hamilton and Toronto (in the province of Ontario), and Vancouver and Victoria (in the province of British Columbia), and I have studied policy institutions in each city from the time of its incorporation as a city up to the present.¹¹ The data set contains two cities within each province to allow for within-province comparison while also permitting city-by-city comparisons across provinces. Once again, my selection of these cities was guided by size and historical importance (cities that have been considered major urban centers since the time of their incorporation), geographic scope (cities from more than one province and geographic region), duration (cities whose histories go back to the early twentieth century at the latest), and access to sources.¹² Once again, it would be possible in future research to expand the data set cover more than a sixth of Canada's total population, five of the country's ten largest metropolitan areas, and more than eight hundred combined years of urban political history.

For each of these policy domains and cities, I have used statutes and regulations, government reports, published histories, local bylaws, newspapers, and archival documents to record year-by-year information on the structure of the institutions that are operative in each policy domain. I operationalize this structure along three key dimensions. The first and most obvious is *institutional type*, which is the formal institutional type in which the policy task is administered. I coded this institutional type in one of three categories: general-purpose bodies (such as municipal or regional councils), special-purpose bodies (such as boards of health or water commissions), and private bodies (such as a private corporation operating under a municipal franchise). This first variable allows us to capture two crucially important aspects of local institutional structure: the distinction between special-purpose and general-purpose governance, and the distinction between public governance and semi-private contracting-out or franchising arrangements (Foster, 1997; Isin, 1998; Siegel, 1994).

The second dimension is the *geographic scale* at which a policy task is governed. This scale can be submunicipal (smaller than existing municipal boundaries), municipal, regional, mega-regional (that is, larger than the metropolitan area but smaller than the province), or provincial. In some cases, a policy task can be administered at two geographic scales using a two-tier structure. I have therefore coded every policy domain in the data set at both the local and the regional scales, allowing us to accurately capture, say, a policy domain that is jointly administered by a municipal council as well as a regional special purpose body.¹³

The final dimension of formal institutional structure is what might be called *governing personnel*: the political actors who are authorized to make policy decisions in each domain. The purpose of this dimension is to capture relevant variation *within* the institutional types discussed above, and especially within special-purpose bodies, which can range from separately elected institutions all the way to institutions composed entirely of municipal councillors. Thus, the data set contains variables that capture three aspects of governing personnel: whether they are directly elected or appointed by another body; the role of the municipal council, if any, in making the appointments; and the number of municipal councillors, if any, who are allowed to serve on the board. The purpose of this dimension is to capture the source of governing personnel for a particular institution and the formal relationship between that institution and others such as a municipal council.

Taken together, these three dimensions capture the formal structures of policy institutions in Canadian cities, allowing us to distinguish among institutional types, geographic scales, and the actors who are formally empowered to govern in an urban policy domain. While there are other aspects of urban governance that are equally worthy of study—changes to fiscal arrangements in each policy domain, changes in policy discourse, changes in the specific policy tasks that are assigned to each domain, and so on—three considerations make formal institutional structure the best place to begin our comparative analysis of long-term urban policymaking. First, a focus on formal institutions enables us to use widely available documents, such as statutes and government reports, to reliably track long-term changes in a replicable and analytically tractable fashion. Second, by excluding other aspects of urban governance and focusing specifically on institutional structures, we can consider those other aspects as potential explanatory variables once we turn from descriptive to causal inference; that is, we can then consider the relationships among formal institutions, policy discourses, fiscal arrangements, and other factors. Third, and most importantly, formal institutional structures are a vital aspect of urban governance, not only shaping the policymaking process itself (Mullin, 2009) but also capturing within their histories the long-term development of urban political authority (Rast 2015, Lucas forthcoming). Formal institutions are only one part of the story of urban policy and governance, of course, but they offer us a point of entry into that story that is empirically tractable, theoretically valuable, and enables concrete comparison across cities, provinces, and domains.

All told, then, the data set in this study contains 4,355 observations: one for each year, in each domain, in each city. For each observation, we can concatenate the codes for each of the three dimensions above into a single type of policy institution. There are 31 such types in the data set, each of which is summarized in Table 1. The table captures the wide range of institutional alternatives that have been attempted in Canadian cities, ranging from well known options like elected special-

Туре	Years	Scale	Institution	Council Appts.	Council Pres.
1	614	Municipal	Mandatory elected SPB	None	None
2	25	Municipal	Mandatory elected SPB	None	Minority
3	93	Municipal	Mandatory elected SPB	Minority	Minority
4	20	Municipal	Municipally owned corporation	Majority	None
5	374	Municipal	Mandatory appointed SPB	None	Minority
6	140	Municipal	Mandatory appointed SPB	Minority	Minority
7	10	Municipal	Mandatory appointed SPB	Minority	Majority
8	70	Municipal	Mandatory appointed SPB	Majority	None
9	171	Municipal	Mandatory appointed SPB	Majority	Minority
10	392	Municipal	Mandatory appointed SPB	Majority	Majority
11	97	Municipal	Optional appointed SPB	Majority	Majority
12	202	Municipal	Franchise	None	None
13	978	Municipal	General-purpose council	Majority	Majority
14	44	Municipal	Mandatory elected SPB	None	None
		Regional	Mandatory appointed SPB	None	None
15	7	Municipal	Optional appointed SPB	Majority	Majority
		Regional	Mandatory appointed SPB	None	None
16	3	Municipal	Optional appointed SPB	Majority	Majority
		Regional	Mandatory appointed SPB	Majority	Majority
17	164	Municipal	General-purpose council	Majority	Majority
		Regional	Mandatory appointed SPB	Majority	Majority
18	44	Municipal	General-purpose council	Majority	Majority
		Regional	General-purpose council	Majority	Majority
19	78	Regional	Mandatory elected SPB	None	None
20	50	Regional	Mandatory appointed SPB	None	None
21	14	Regional	Mandatory appointed SPB	None	Minority
22	89	Regional	Mandatory appointed SPB	Minority	Minority
23	18	Regional	Mandatory appointed SPB	Majority	None
24	4	Regional	Mandatory appointed SPB	Majority	Minority
25	182	Regional	Mandatory appointed SPB	Majority	Majority
26	2	Regional	Optional appointed SPB	Majority	Majority
27	139	Regional	Franchise	None	None
28	87	Regional	General-purpose council	Majority	Majority
29	52	Provincial	Provincial	None	None
30	29	None	Private provision, no public involve	ment	
31	158	None	No public policy provision at any so	cale	

Table 1. Governance types.

Note: Summary of policy institutions in the data set. Types containing both municipal and regional scales are two-tier. *Council Appts.* refers to council's role in appointing members to the governing institution; *Council Pres.* refers to the presence of actual councillors within the governing institution.

purpose bodies (type 1) and general-purpose council governance (type 13) to more exotic alternatives like two-tier governance structures with optional special-purpose bodies (type 16).

Although it would be possible to explore each of these individual types in more detail, our object of analysis here is each city-domain combination as an overall history, a sequence of institutional types. From this perspective, the data set contains 30 units of analysis, each of which is a single domain in one of the six cities, and each of which captures the history of formal policy institutions in that domain. I provide a summary of these sequences in Table 2. Each sequence is represented in the table as a chronological series of types, together with the number of years for each type; 3:20, for instance, should be read as "type three, for twenty years."

Each of the sequences in the table has a rich and interesting history. Consider, for example, the first sequence in the table: police institutions in Calgary. Calgary's police force was created in 1885, and was first governed directly by municipal council. It was then handed to a Board of Police Commissioners in 1934. The police board was mandatory under provincial law until 1951, when it became optional, but Calgary's municipal council opted to retain its police board even after it was no longer required to do so. The police board became mandatory again in 1971, and provincial appointees were added to the police commission, only to be removed 2 years later. Since 1973, Calgary's police force has been governed by a special-purpose body composed entirely of municipal employees. This entire history is encapsulated in the first line of Table 2: forty years of general purpose institutions (13:40), seventeen years of mandatory arm's-length special-purpose institutions (5:17), twenty years of optional special-purpose institutions (11:20), two years of special-purpose

Name	Sequence	
Ca-P	13:40 5:17 11:20 6:2 9:43	
Ca-H	13:15 10:12 9 10:51 9:22 20:6 19:2 20:5 29:8	
Ca-S	1:122	
Ca-T	31:15 13:107	
Ca-W	12:5 13:117	
Ed-P	13:62 11:5 6:2 9:43	
Ed-H	11:3 5 9:22 6:47 9:18 20:6 19:2 20:5 19:2 20:5 29:8	
Ed-S	1:112	
Ed-T	31:4 13:101 17:7	
Ed-W	13:92 4:20	
Ha-P	13:13 5:115 22:23 24:4 9:15	
На-Н	31:27 11:11 10:84 22:6 25:10 28:17 13:15	
Ha-S	1:1 9:3 1:6 3:93 1:48 19:4 1:15	
Ha-T	31:27 12:87 8:17 25:3 28:21 13:15	
Ha-W	30:10 1:5 13:113 28:21 27:6 12:3 13:12	
To-P	13:25 5:97 22:41 9:19	
То-Н	11:50 10:132	
To-S	31:10 1:3 9:3 1:104 14:44 1:18	
To-T	31:27 12:59 8:34 23:9 25:33 26:2 11:8 16:3 15:7	
To-W	30:7 12:31 2:6 13:76 18:44 13:18	
Va-P	5:4 10:10 13:4 5:70 6:42	
Va-H	13:7 10:4 5:2 10:37 25:66 20:14	
Va-S	1:42 7:10 1:115	
Va-T	31:3 12:6 27:67 29:18 28:3 25:24 23:9	
Va-W	12:4 13:26 25:70	
Vi-P	13:31 5:24 2:15 5:42 6:29 22:13	
Vi-H	31:7 13:24 10:4 5:2 10:48 21:14 25:13 28:22 22:6 20:14	
Vi-S	31:10 1:16 2:3 10:10 1:45 19:70	
Vi-T	31:28 12:6 27:66 29:18 28:3 25:33	
Vi-W	8:13 13:40 25:47	

Table 2. Sequences by city and domain.

Note: Summary of sequences. First two letters refer to city (Calgary, Edmonton, Hamilton, Toronto, Vancouver, Victoria); final letter refers to domain (police, health, schools, transit, water). First number is type, followed by number of years; for instance, 13:40 should be read as "type 13, for 40 years."

institutions with provincial appointees as well as municipal appointees (6:2), and then forty-three years of mandatory special-purpose institutions (9:43).¹⁴

In this article, I cannot hope to provide even a capsule summary of all of the sequences in Table 2.

However, those who wish to know more about any of the thirty sequences, or about the sources that I have used to construct the data set, can download historical overviews and reference lists for each sequence from my personal website.¹⁵

Methods

Before I describe the technical details of my method for comparing institutional sequences, I want to begin by trying to capture the desiderata of such a comparison in a more general and intuitive way. Suppose that someone gave us a handful of sequences and asked us to compare them to one another. What factors would we consider relevant when carrying out the comparison?

One important element, I think, would be the order in which the items in the sequence appear. Consider the sample sequences in Table 3, which I have invented for the purposes of illustration. The two sequences in Table 3 share the same overall structures, but in exactly the opposite order. This difference suggests that the history of sequence 1 is probably rather different from the history of sequence 2. Thus, even if the types themselves are the same, we need a comparative technique that will capture distinctions in the *order* of the policy institutions within each sequence.

A second important consideration would be type duration. Consider, for example, the sample sequences in Table 4. Each of these sequences contains the same types in the same order, but sequence 3 makes the switch to elected special purpose bodies much earlier in its history. Sequences 1 and 2 are therefore "closer" to one another than to sequence 3. Even when sequences contain the same types in the same order, therefore, we would want our comparative method to take the *duration* of each type into account as well.

The final and most obvious consideration, of course, is the policy institution itself. Consider the final set of sample sequences in Table 5. In this case, each sequence consists of just one institutional type, so order and duration are irrelevant. But we can still compare the sequences by looking directly at the overall policy institutions. In sequences 1 and 2, the structures are similar in one respect—both involve direct council governance—but differ in their geographic scales. Sequences 2 and 3 are similar in scale but differ in institutional type. Sequences 1 and 3 are different in both dimensions:

Decade	Sequence 1	Sequence 2
1	Private corporation under municipal franchise	Direct administration by municipal council
2	Private corporation under municipal franchise	Direct administration by municipal council
3	Direct administration by municipal council	Private corporation under municipal franchise
4	Direct administration by municipal council	Private corporation under municipal franchise
5	Direct administration by municipal council	Private corporation under municipal franchise

Table 3. Sample sequences: Sequence order.

Table 4. Sample sequences: Type duration.

Decade	Sequence 1	Sequence 2	Sequence 3
1	Direct administration by municipal council	Direct administration by municipal council	Direct administration by municipal council
2	Direct administration by municipal council	Direct administration by municipal council	Separately elected special-purpose body
3	Direct administration by municipal council	Direct administration by municipal council	Separately elected special-purpose body
4	Direct administration by municipal council	Separately elected special- purpose body	Separately elected special-purpose body
5	Separately elected special- purpose body	Separately elected special- purpose body	Separately elected special-purpose body

Decade	Sequence 1	Sequence 2	Sequence 3
1	Direct administration by	Direct administration by	Appointed regional
	municipal council	regional council	special-purpose body
2	Direct administration by	Direct administration by	Appointed regional
	municipal council	regional council	special-purpose body
3	Direct administration by	Direct administration by	Appointed regional
	municipal council	regional council	special-purpose body
4	Direct administration by	Direct administration by	Appointed regional
	municipal council	regional council	special-purpose body
5	Direct administration by	Direct administration by	Appointed regional
	municipal council	regional council	special-purpose body
	inancipal council	regional council	special parpose body

Table 5. Sample sequences: Governance type.

both geographic scale and institutional type. We might therefore say that sequences 1 and 3 are most "distant" from one another, since they differ along two dimensions, while sequence 2 is equally distant from both.

To compare long-term institutional sequences, then, we need to be sensitive to the policy institutions in each sequence, the length of time that each type occurs, and the order in which the types occur. For short sequences containing just a few policy institutions, it is possible to carry out such a comparison manually, as in the examples above. In our case, however, the data set consists of thirty institutional sequences, each of them more than a century long, containing more than two dozen kinds of policy institutions. To carry out such a comparison by hand, in a systematic, unbiased, and replicable fashion is effectively impossible. This means that we must choose either to discard some of the sequences, thus limiting our ability to compare patterns across cities, provinces, and policy domains, or we must find a computational tool with which to compare the sequences.

Optimal matching (OM) provides just such a tool. Originally developed in biology as a technique for comparing distances between DNA sequences, optimal matching was introduced into the social sciences by sociologist Andrew Abbott in the 1980s (Abbott & Forrest, 1986) and has since been used in a wide range of studies (for reviews, see Abbott & Tsay, 2000; Aisenbrey & Fasang, 2010; MacIndoe & Abbott, 2004). Although OM is better known in sociology than in political science, its popularity for the study of politics is growing, with recent studies making use of optimal matching to explore sequences of electoral turnout (Buton, Lemercier, & Mariot, 2014) and democratization (Wilson, 2014).

OM analysis proceeds by calculating the distances between sequences, where distance is understood as the minimum number of insertions, deletions, and substitutions required to transform one sequence, such as the sequence of letters that comprise the word JOBS, into another, such as the word JOY (Abbott & Tsay, 2000, pp. 5-6). In this example, provided that all costs were set to 1, the distance measure would be 2: one substitution operation to replace (B) with (Y), and one deletion operation to eliminate the letter (S). However, our actual investigation differs from this simple example in two ways. First, as we have noted above, each sequence is a long span of gover- nance types, making the optimization process impenetrable to manual computation. I have therefore relied on OM as implemented in Stata (Brzinsky-Fay, Kohler, & Luniak, 2006) to carry out the analysis. Second, and more importantly, our optimization algorithm cannot be agnostic about the "cost" involved in changing one type of policy institution into another. In the JOY/JOBS example, all costs were set to 1 because the difference between individual letters is theoretically unimportant; the distance between the two words would be the same if the first word were JOT or JON rather than JOY. But if these strings of letters were not words, but rather sequences of institutions—in which each letter represented a particular form of policy institution-it would be quite inappropriate to simply set all substitution costs to the same value. As we saw in our discussion of Table 5 above, some governance types are more similar than others, which means that substitution costs ought to vary depending on the specific governance types that are contained within a particular pair of sequences.

Fortunately, OM analysis allows researchers to specify a substitution cost matrix to allow for this sort of variation, ensuring that policy institutions that differ along just one dimension are substituted at a lower cost than those that differ on multiple dimensions. To capture these differences, I have built a substitution matrix that applies substitution costs along all of the dimensions that I described above: institutional type (the distinction between general-purpose and special-purpose as well as the distinction between public and private institutional types), geographic scale, and the role of municipal councils in selecting governance personnel for the policy domain. Using this substitution matrix, the OM analysis is able to assign higher distance scores to policy institutions that differ on multiple dimensions than to those that differ on just one dimension. Practically speaking, this means that two long-term sequences containing policy institutions that are similar to one another will have lower pairwise distance scores than two sequences containing very different institutions. I explain these cost settings in more detail, and discuss the robustness of my findings under alternative cost settings, in Appendix 1.¹⁶

To summarize: my goal in this article is to identify patterns of similarity among 30 long-term institutional sequences and to determine if those patterns cluster into coherent groups on the basis of shared province, shared city, or shared policy domain. While we cannot carry out this comparison manually, optimal matching analysis enables us to search for patterns in the data by calculating the minimum number of insertion, deletion, and substitution operations required to transform one sequence into another—using a substitution cost matrix that is built on concrete and theoretically important differences among the policy institutions in each sequence. The optimal matching approach is therefore a computational means by which to carry out the intuitively plausible comparative approach that we discussed at the beginning of this section.

Results

The output of an optimal matching analysis is a 30×30 matrix of distances between sequences. I have analyzed this distance matrix in two ways. First, as is common in the OM literature, I use cluster analysis to search for internal clustering among sequences in the distance matrix.¹⁷ I then use regression analysis to estimate the association between sequence distances and the three contextual variables that are our focus: shared city, shared province, and shared policy domain.

Cluster analysis

Figure 1 provides a visual analysis of the OM distance matrix in the form of a cluster-analytic dendrogram. Each of the endpoints at the bottom of the figure represent one of the thirty institutional sequences; the first two letters name the relevant city (Calgary, Edmonton, Hamilton, Toronto, Vancouver, and Victoria), and the final letter names the policy domain (police, health, schools, transit, and water). The letters on the second line mark the relevant province (British Columbia, Alberta, or Ontario). The vertical axis summarizes the distances among the sequences; because the distance figure decreases as we move down the vertical axis, sequences connected by lower branching points should be understood as more similar to one another than sequences connected by higher branching points.

To interpret the cluster analysis, it is useful to proceed in a top-down fashion, exploring cluster membership at different branching points in the tree. For example, imagine that we drew a horizontal line across the entire figure somewhere around the number 8 on the *y*-axis. Our horizontal line would intersect with two thin vertical lines on its way across the figure. Now imagine snapping off the vertical "branches" of the tree at those two points of intersection. Each of the resulting branches would represent a cluster: one would be small, containing the six school sequences on the left of the figure, and the other would be large, containing all of the other sequences. To find n clusters in the figure, therefore, we simply draw a horizontal line across the figure such that it intersects with n vertical lines, break off each of the



Figure 1. Cluster analysis (Ward's linkage).

Each of the endpoints at the bottom of the dendrogram represents one of the 30 institutional sequences, with the first two letters naming the city (Calgary, Edmonton, Hamilton, Toronto, Vancouver, Victoria) and the final letter naming the policy domain (police, health, schools, transit, water). The letters below these labels name the relevant province (Alberta, British Columbia, and Ontario). The vertical axis summarizes the distances among the sequences; sequences connected by lower branching points should be interpreted as more similar than sequences connected by higher branching points.

intersecting branches at that horizontal line, and report the sequences that are attached to the end of each branch. Table 6 reports such cluster membership for three-, four-, five-, and ninecluster solutions.¹⁸ For each of the cluster solutions—three-cluster, four-cluster, and so on—the table reports the cluster to which each sequence would belong. Victoria's transit sequence, for example, at the bottom of the table, would belong to cluster three in a three- cluster solution (with 17 other cluster members), cluster four in a four-cluster solution (with three other cluster members), cluster five in a five-cluster solution (with three other cluster members), and cluster nine in a nine-cluster solution (with just one other cluster member). As we move from lower to higher cluster solutions, clusters get smaller, as do average distance scores between the sequences in each cluster.

The three-cluster solution (see the first column in Table 6, together with Figure 1) divides the sequences into three groups: the six school sequences on the far left of Figure 1; a cluster of transit and water sequences in Calgary, Edmonton, Hamilton, and Toronto; and then all of the remaining se-quences on the right half of the figure. The basis of this initial clustering is the dominant institutional type that is used in each sequence: elected special-purpose bodies (type 1 in Table 1) in the case of cluster one, general-purpose municipal governance (type 13 in Table 1) in the case of cluster two, and appointed special-purpose bodies (the many appointed special-purpose body types in Table 1) in the case of cluster three. The first of these three clusters is clearly sorted by policy domain, containing all six of the school board sequences and no others. The second group is partially sorted by domain, con- taining only water and transit sequences, but it also appears to be sorted by province, since no British Columbia cities are present in the cluster. The third cluster contains sequences that are dominated by appointed special-purpose bodies, but beyond this shared feature, it is difficult to interpret.

As we move downward in the figure to four-cluster and five-cluster solutions, cluster three splits off into subsequent clusters, largely on the basis of resemblances that are sorted by policy domain

City	Prov.	Domain	3	4	5	9
Calgary	AB	Schools	1	1	1	1
Edmonton	AB	Schools	1	1	1	1
Vancouver	BC	Schools	1	1	1	1
Toronto	ON	Schools	1	1	1	1
Hamilton	ON	Schools	1	1	1	1
Victoria	BC	Schools	1	1	1	1
Hamilton	ON	Water	2	2	2	2
Edmonton	AB	Water	2	2	2	2
Calgary	AB	Water	2	2	2	2
Calgary	AB	Transit	2	2	2	2
Edmonton	AB	Transit	2	2	2	2
Toronto	ON	Water	2	2	2	2
Vancouver	BC	Police	3	3	3	3
Hamilton	ON	Police	3	3	3	3
Toronto	ON	Police	3	3	3	3
Victoria	BC	Police	3	3	3	3
Edmonton	AB	Health	3	3	3	4
Calgary	AB	Health	3	3	3	4
Hamilton	ON	Health	3	3	3	5
Toronto	ON	Health	3	3	3	5
Calgary	AB	Police	3	3	3	6
Edmonton	AB	Police	3	3	3	6
Victoria	BC	Water	3	3	4	7
Vancouver	BC	Water	3	3	4	7
Vancouver	BC	Health	3	3	4	7
Victoria	BC	Health	3	3	4	7
Toronto	ON	Transit	3	4	5	8
Hamilton	ON	Transit	3	4	5	8
Vancouver	BC	Transit	3	4	5	9
Victoria	BC	Transit	3	4	5	9

Table 6. Cluster membership in 3, 4, 5, and 9-cluster solutions.

and by province. Notice, in Figure 1, the first group to split off from cluster three as we move slightly downward in the figure: it is a handful of transit sequences (Toronto, Hamilton, Vancouver, and Victoria) at the far right-hand side of the figure. These four sequences begin with a period of private governance (type 12 in Table 1) and then move toward regional governance, often under the administration of a special-purpose body (e.g., types 25, 26, and 27). Continuing downward in the figure, the next cluster to separate contains water and health sequences in Vancouver and Victoria, near the right-hand side of Figure 1. These four sequences resemble each other closely in their relatively early move from local general-purpose governance (type 13 in Table 1) to regional special-purpose bodies with high levels of council involvement (type 25). The lesson of both of these moves, then—the move from a three-cluster to a four-cluster solution, and the subsequent move to a five-cluster solution—is that both shared policy domain and shared provincial location appear to be important for understanding resemblances among the institutional sequences.

Continuing downward, the next cluster to split away (this is cluster number 3 in the five-cluster solution in Table 6, in the center of Figure 1) is the large group of police and health sequences. These sequences share a common early history, moving from general-purpose governance or optional special-purpose bodies (such as types 11 and 13 in Table 1) through a period of mandatory special-purpose governance with a limited council role (types 5 and 6), and then into another period of special-purpose governance with slightly higher levels of council involvement. In recent years, these sequences have diverged, with some moving to the regional or provincial scale and others remaining unchanged. Many of the sequences in this cluster are quite complex and have featured numerous tweaks to the role and involvement of municipal councils within their governing institutions. This cluster eventually splits apart by domain, with most of the police sequences together on one side and the health sequences (along with Edmonton and Calgary policing) on the other.

As we move from the top to the bottom of Figure 1, then, the importance of shared-domain and shared-province resemblance becomes increasingly clear. In many cases, the final branching point at the bottom of the figure—that is, the point at which cluster sizes are smallest and distances between sequences in each cluster are very low—is a domain–province pairing: policing in Calgary and Edmonton, health in Toronto and Hamilton, transit in Vancouver and Victoria. Notice, for instance, the importance of these domain–province pairings in the nine-cluster solution reported in Table 6; in the nine-cluster solution, all of the thirty sequences are organized into a cluster that contains their same-domain and same-province counterpart. This contrasts sharply with shared-city resemblance; in the same nine-cluster solution, just four of the thirty sequences belong to a cluster containing a sequence from a different domain in the same city.

In short, then, despite the technical details of the optimal matching process, the cluster analysis suggests a simple preliminary conclusion: if our goal is to sort the long-term history of urban policy institutions in these six cities and five domains into patterns of resemblance, we need to do that sorting on the basis of shared policy domain and shared province.

Regression

To supplement our cluster analysis, we can use regression to estimate the impact of shared city, province, and domain on the average distance between institutional sequences. The dependent variable in this regression is pairwise distance, which ranges from a low of 0.02 to a high of 2.00, with a mean value of 1.34. Each of the independent variables is a binary distinction between *shared* and *not shared*. As we explained above, our goal in this analysis is not to suggest that any of the three independent variables have a direct causal role in producing sequence resemblance, except in the negative sense that certain kinds of resemblance might make some causal theories more or less plausible. Instead, the purpose of the regression analysis is simply to estimate the average change in pairwise distance between sequences that occurs when we switch each of the independent variables from *not shared*.

The results in Table 7 strengthen the plausibility of our interpretation above. Shared city has no significant association with sequence distance. Shared domain, however, reduces distance by an average of 0.69, a very considerable amount, while shared province reduces distance by 0.16. Simply put, sequences tend to be much more similar to one another when they are in the same policy domain, and somewhat more similar to one another when they are in the same province.

Discussion

Unsurprisingly, decades-long patterns of urban policy institutions are complex, resisting sim- ple summary. Nevertheless, the results above are striking in their consistency, pointing toward the fundamental importance of the policy domain in patterns of resemblance among institutional se-

	(1) Distance
sharedcity	0.0592
	[-0.0836,0.202]
shareddomain	-0.686
	[-0.792,-0.581]
sharedprovince	-0.166
	[-0.271,-0.0603]
Constant	1.498
	[1.447,1.550]
Observations	435

Table 7. Shared province, city, and domain and sequence distance.

Note: OLS regression. 95% confidence intervals in brackets.

quences. If we were forced to select just one of the three contexts with which to sort and describe the patterns, our choice would have to be the policy domain.

Fortunately, no one is forcing us to do anything. It is clear from the cluster analysis that the strength of the domain-based sorting does vary from domain to domain, and shared-province resemblances are also important for understanding the distances between the sequences. Resemblances among sequences in the same domain tend to be strong, but these resemblances grow even stronger when the two sequences share a provincial boundary. And even when sequences are not in the same policy domains, the regression analysis suggests that distances between sequences tend to shrink when those sequences are in the same province.

Perhaps most strikingly, these results leave little room for city-centered descriptions of resemblance. They suggest that long-term sequences of policy institutions in a given city are more likely to resemble sequences in the same domain in another city—and even in another province—than to resemble sequences in other domains within the same city. There is little in these results to support the view that place-based factors in particular cities—whether they be political-economic contexts, public-private governance regimes, local political cultures, or other factors—"bend" institutions across urban policy domains into similar shapes over time. Put most provocatively, these results sug- gest that those of us who are interested in the long-term dynamics of urban governance must reorient ourselves away from historical studies of single cities and toward analyses of the development of particular policy domains across city and even provincial boundaries.

Even as we consider such a reorientation, however, it is important to emphasize once again the difference between descriptive patterns and causal processes. Cities, we have found, are not useful categories for sorting patterns of resemblance and difference among long-term sequences of policy institutions. The categories of *policy domain* and *province* are much more informative for this descriptive task. At the same time, these broader patterns could well be generated by causal processes that originate in political action within cities. Consider, for example, the resemblances between water sequences in Vancouver and Victoria. Although these sequences are descriptively sorted by domain and by province rather than by city, Canadian urban historians will know that they were not the result of top-down decision making at the provincial level in British Columbia. Instead, they resulted from the action of urban advocates in both cities, who shared policy ideas about water governance and persuaded the province to enable their proposed regional governance institutions by means of permissive provincial legislation (Cain, 1976). Much the same is true in other domains as wellpublic health, public schooling, public transit, and so on-in which coalitions of urban actors across city and provincial boundaries share policy innovations and "theorize" optimal institutional alternatives (Lucas, 2016; Strang & Meyer, 1993; Wallner, 2014) to enable their diffusion from one city to another. Thus, while there is little city-by-city clustering in the data set, this tells us little about the causal processes by which domain-by-domain and province-by-province patterns emerge, processes in which cities may well have played an important indirect role.

Conclusion

My aim in this article has been to compare long-term sequences of urban policy institutions in six Canadian cities, five policy domains, and three provinces to test the descriptive power of three well known approaches to urban policy and governance: those oriented around the policy domain, those oriented around the higher-order government, and those oriented around the individual city. I have carried out this comparison using a new data set on Canadian urban policy institutions, and I have argued that the resulting patterns are sorted primarily by shared policy domain and secondarily by shared province. I have focused in this article on supplying a credible comparative description of long-term institutional patterns, a description that has thus far been notably absent from the urban governance literature.

The next step, of course, is to investigate how these patterns have been produced. It may be that a functionalist explanation, grounded in the nature of the policies themselves, is what accounts for the commonness of domain-by-domain resemblances (Peterson, 1981). It may be a story of policy transfer, grounded in relations among local or provincial *epistemic communities*, that produced the patterns that we have uncovered (Dolowitz & Marsh, 2000; Haas, 1992). It may be that cities are more "sites" than "communities" of governance, playing host to numerous loosely coupled provincial-municipal policy fields.¹⁹ Or it may be something else: path dependence, institutional isomorphism, ideology. In short, the causal story remains to be told. My hope is that this article has been persuasive in clarifying just what it is that we need to explain.

While the findings in this article are compatible with a range of causal accounts, they also have important implications both for our methods and for our theories of urban political development. For our *methods*, these findings provide clear empirical support for a growing chorus of urban politics scholars who have advocated a move away from single-case studies of particular cities and toward a more comparative approach to urban politics, policy, and governance. If patterns of urban policy institutions are sorted by policy domain, for example, then our explanations of those patterns must originate in comparative analyses of those domains across cities. We simply will not understand how urban policy institutions have developed until we can account for that development within the comparative context of broader patterns of resemblance in provinces and policy domains. For our theories, the findings in this study suggest that the most plausible place to begin our explanations of urban political development, at least in the area of urban policy institutions, is with accounts in what I have called the domain-based school of scholarship. Thus far, such accounts have been more common among political scientists and public policy scholars than among those for whom urban politics is a primary focus. Understanding how these theories can illuminate urban political development, despite the chasm that has so often separated these theoretical communities, is therefore a pressing priority for theorists of public policy and governance in the North American city.

Notes

- 1. My approach here is also indebted to the discussion of domains and regimes in Sapotichne and Jones (2012) and levels of analysis in Denters and Mossberger (2006).
- 2. In the case of Baumgartner and Jones, these subdomains are the "parallel-processing" half of the story; policymaking occasionally bursts through into macropolitical "serial-processing" institutions as well.
- 3. Of course, there is no necessary relationship between city-based approaches and single-case studies, as the case of Savitch and Kantor clearly demonstrates. But single-case studies of policy and governance in a given city are often built on such city-based assumptions.
- 4. These criteria, and some portions of my discussion in this paragraph, are taken from Lucas (2016).
- 5. I used a number of sources to identify these domains, including Fowler and Siegel (2002), Sancton (2015), Statistics Canada (2009), and Sancton and Young (2009). This resulted in a list that included personal and property protection (policing, firefighting, licensing, regulation), transportation (roads, parking, public transit), health (hospitals, public health), education (public elementary schools, public secondary schools, separate schools), tourism and promotion (trade promotion, tourism, economic development), public utilities (water supply, sewage, waste collection, electricity), recreation and culture (libraries, parks, recreation), housing, planning, and zoning.
- 6. My guide in this instance was primarily the policy domain breakdown in Statistics Canada (2009); I selected no more than one domain from each of the categories in the previous footnote.
- 7. This meant that I excluded what are otherwise very interesting and important urban policy domains, such as local planning, housing, and recreation, whose local histories in Canada begin in earnest after the end of the First World War.
- 8. This resulted primarily in the exclusion of parks and sewage as possible domains, both of which have received very limited treatment in the published urban governance literature and in government documents and reports in Canada.
- 9. Schools and public health, for instance, are areas of traditionally high provincial involvement and intervention; policing and public transit are areas of traditionally low levels of direct provincial involvement
- 10. Schools and policing are traditionally high-cost domains; public health has tended to be a relatively low-cost domain; public transit and water have varied over time depending on infrastructure needs, service levels, and user fees.

- 11. The incorporation dates are as follows: Calgary 1894, Edmonton 1904, Hamilton 1847, Toronto 1834, Vancouver 1886, Victoria 1862.
- 12. Perhaps the most obvious missing cities are Winnipeg and Montreal. Because my research design requires two comparable cities in each province, I had to exclude the otherwise interesting case of Winnipeg. The complex and in many ways unique development of the city of Montreal, combined with the problem of access to sources, meant that I chose to focus on cities in British Columbia, Alberta, and Ontario rather than Quebec.
- 13. For one-tier structures, the inoperative tier is simply coded as not applicable.
- 14. Sources for this sequence include Gilkes and Symons (1975) and Stenning (1981), as well as the following legislation: Statutes of Alberta 1934, c.72; 1951, c.9; 1968, c.68; 1971, c.85; 1973, c.44; 1980, c.83.
- 15. jacklucas.pennyjar.ca/governance.html
- 16. Appendix 2 summarizes adjustments to the data set for OM analysis.
- 17. As is standard in the literature, I have used Ward's linkage. See Anyadike-Danes and McVicar (2010).
- 18. Duda and Hart's stopping rule, the Je(2)/Je(1) index, suggests strong internal clustering in the two-, three-, four-, five-, and nine-cluster solutions. I have therefore reported each of these solutions in Table 6 (with the exception of the two-cluster solution, which I discuss above).
- 19. I borrow sites of governance from Horak and Young (2012).
- 20. Of course, I have been guided by the literature in doing so.

Acknowledgments

For helpful comments on earlier drafts of this article, the author would like to thank Steve Patten and those in attendance at the 2015 Urban Affairs Association and the 2015 Prairie Political Science Association meetings. Thanks also to the University of Alberta's Killam Postdoctoral Fellowship for research support during the construction of the data set.

About the author

Jack Lucas is an Assistant Professor of Political Science at the University of Calgary. His research is focused on institutional and policy change in Canadian cities, with a particular focus on urban political authority and the long-term development of the local state. He received his PhD from the University of Toronto, and was a Killam Postdoctoral Fellow at the University of Alberta during the 2014–2015 academic year.

References

- Abbott, A., & Forrest, J. (1986). Optimal matching methods for historical sequences. Journal of Interdisciplinary History, 16, 471-494.
- Abbott, A., & Tsay, A. (2000). Sequence analysis and optimal matching methods in sociology: Review and prospect. Sociological Methods and Research, 29, 3–33.
- Aisenbrey, S., & Fasang, A. E. (2010). New life for old ideas: The "second wave" of sequence analysis bringing the "course" back into the life course. *Sociological Methods and Research*, *38*, 420–462.
- Anyadike-Danes, M., & McVicar, D. (2010). My brilliant career: Characterizing the early labor market trajectories of British women from generation X. *Sociological Methods and Research*, *38*, 482–512.
- Armstrong, C., & Nelles, H. V. (1988). Monopoly's moment: The organization and regulation of Canadian utilities, 1830–1930. Toronto: University of Toronto Press
- Artibise, A. F. J., & Stelter, G. (Eds). (1979). The usable urban past: Planning and politics in the modern Canadian city. Toronto: Macmillan Canada.
- Bakker, K., & Cook, C. 2011. Water governance in Canada: Innovation and fragmentation. *International Journal of Water Resources Development*, 27, 275–289.
- Baumgartner, F., & Jones, B. D. (2009). Agendas and instability in American politics (2nd ed.). Chicago: University of Chicago Press.
- Brzinsky-Fay, C., & Kohler, U. (2010). New developments in sequence analysis. Sociological Methods and Research, 38, 359–364.
- Brzinsky-Fay, C., Kohler, U., & Luniak, M. (2006). Sequence analysis with Stata. The Stata Journal, 6, 435-460.
- Buton, F., Lemercier, C., & Mariot, N. (2014). A contextual analysis of electoral participation sequences. In P. Blanchard, F. Buhlmann, & J.-A. Gauthier (Eds.), *Advances in sequence analysis: Theory, method, applications* (pp. 191–211). New York: Springer International Publishing.
- Cain, L. P. (1976). Water and sanitation services in Vancouver: An historical perspective. B.C. Studies, 30(3), 27-43.

- Cobban, T. (2003). The political economy of urban redevelopment: Downtown revitalization in London, Ontario, 1993–2002. *Canadian Journal of Urban Research*, *12*, 231–248.
- Davies, J. S. (2003). Partnerships versus regimes: Why regime theory cannot explain urban coalitions in the UK. *Journal of Urban Affairs*, 25, 253–269.
- Davis, D. F. (1985). The "metropolitan thesis" and the writing of Canadian urban history. *Urban History Review*, 14(2), 95–113.
- Denters, B., & Mossberger, K. (2006). Building blocks for a methodology for comparative urban political research. *Urban Affairs Review*, 41, 550–571.
- Dolowitz, D. P., & Marsh, D. (2000). Learning from abroad: The role of policy transfer in contemporary policymaking. *Governance*, 13(1), 5–23.
- Foster, K. (1997). The political economy of special purpose government. Washington, DC: Georgetown University Press.

Fowler, E., & Siegel, D. (Eds.). (2002). Urban policy issues (2nd ed.). Toronto: Oxford University Press.

- Garcea, J., & LeSage, E. C. (Eds.). (2005). Municipal reform in Canada: Reconfiguration, re-empowerment, and rebalancing. Toronto: Oxford University Press.
- Gauthier, J.-A., Buhlmann, F., & Blanchard, P. (2014). Introduction: Sequence analysis in 2014. In P. Blanchard, F. Buhlmann, & J.-A. Gauthier (Eds.), Advances in sequence analysis: Theory, method, applications (pp. 1–17). New York: Springer International Publishing.
- Gauthier, J.-A., Widmer, E. D., Bucher, P., & Notredame, C. (2009). How much does it cost? Optimization of costs in sequence analysis of social science data. *Sociological Methods and Research*, *38*, 197–231.

Gilkes, M., & Symons, M. (1975). Calgary's finest. Calgary: Century Calgary Publications.

- Good, K. (2009). Municipalities and multiculturalism: The politics of immigration in Toronto and Vancouver. Toronto: University of Toronto Press.
- Haas, P. M. (1992). Epistemic communities and international policy coordination. *International Organization*, 46, 1–35.
- Hollister, M. (2009). Is optimal matching suboptimal? Sociological Methods and Research, 38, 235-264.
- Horak, M., & Young, R. (Eds.). (2012). Sites of governance: Multilevel governance and policy making in Canada's big cities. Montreal: McGill-Queen's University Press.

Isin, E. F. (1998). Governing Toronto without government: Liberalism and neoliberalism. *Studies in Political Economy*, 56, 169–191.

- John, P., & Cole, A. (2000). When do institutions, policy sectors, and cities matter? Comparing networks of local policy makers in Britain and France. *Comparative Political Studies*, 33, 248–268.
- Leo, C. (2003). Are there urban regimes in Canada? Comment on Timothy Cobban's The Political Economy of Urban Redevelopment: Downtown Revitalization in London, Ontario, 1993–2002. Canadian Journal of Urban Research, 12, 344–348.
- Lesnard, L. (2010). Setting cost in optimal matching to uncover contemporaneous socio-temporal patterns. Sociological Methods and Research, 38, 389–419.
- Lesnard, L. (2014). Using optimal matching analysis in sociology: Cost setting and sociology of time. In P. Blan- chard, F. Buhlmann, & J.-A. Gauthier (Eds.), Advances in sequence analysis: Theory, method, applications (pp. 39–50). New York: Springer International Publishing.
- Lucas, J. (2016). Fields of authority: Special purpose governance in Ontario, 1815–2015. Toronto: University of Toronto Press
- Lucas, J. (forthcoming). Urban governance and the American political development approach. Urban Affairs Review. OnlineFirst doi: 10.1177/1078087415620054.
- MacIndoe, H., & Abbott, A. (2004). Sequence analysis and optimal matching techniques for social science data. In M. Hardy & A. Bryman (Eds.), *Handbook of data analysis* (pp. 387–406). Thousand Oaks, CA: Sage.
- Magnusson, W. (2005). Are municipalities creatures of the provinces? Journal of Canadian Studies, 39(2), 5-29.
- Magnusson, W., & Sancton, A. (Eds.). (1983). City politics in Canada. Toronto: University of Toronto Press.
- Molotch, H., Freudenburg, W., & Paulsen, E. (2000). History repeats itself, but how? City character, urban tradition, and the accomplishment of place. *American Sociological Review*, 65, 791–823.
- Moore, A. A. (2013). Planning politics in Toronto: The Ontario Municipal Board and urban development. Toronto: University of Toronto Press.
- Mossberger, K. (2009). Urban regime analysis. In J. S. Davies & D. L. Imbroscio (Eds.), *Theories of urban politics* (pp. 40–54). Thousand Oaks, CA: Sage.
- Mullin, M. (2009). Governing the tap. Cambridge, MA: MIT Press.
- Peterson, P. (1981). City limits. Chicago: University of Chicago Press.
- Pierre, J. (2005). Comparative urban governance: Uncovering complex causalities. Urban Affairs Review, 40, 446–462. Rast, J. (2015). Urban regime theory and the problem of change. Urban Affairs Review, 51, 138–149.
- Sabatier, P. (1988). An advocacy coalition framework of policy change and the role of policy-oriented learning therein. *Policy Sciences*, *21*(3), 129–168.
- Sabatier, P., & Weible, C. (2007). The advocacy coalition framework. In P. Sabatier (Ed.), *Theories of the policy process* (pp. 189–220). Boulder, CO: Westview Press.

- Saltzstein, A. L., Copus, C., Sonenshein, R. J., & Skelcher, C. (2008). Visions of urban reform: Comparing English and U.S. strategies for improving city government. *Urban Affairs Review*, 44, 155–181.
- Sancton, A. (2008). The limits of boundaries: Why city-regions cannot be self-governing. Montreal: McGill-Queen's University Press.
- Sancton, A. (2015). Canadian local government: An urban perspective (2nd ed.). Toronto: Oxford University Press.
- Sancton, A., & Young, R. (Eds.). (2009). Foundations of governance: Municipal government in Canada's provinces. Toronto: University of Toronto Press.
- Sapotichne, J., & Jones, B. D. (2012). Setting city agendas: Power and policy change. In K. Mossberger, S. E. Clarke, & P. John (Eds.), *Oxford Handbook of urban politics* (pp. 442–467). Oxford: Oxford University Press.
- Sapotichne, J., Jones, B. D., & Wolfe, M. (2007). Is urban politics a black hole? Analyzing the boundary between political science and urban politics. *Urban Affairs Review*, 43, 76–106.
- Savitch, H. V., & Kantor, P. (2002). *Cities in the international marketplace: The political economy of urban development in North America and Western Europe*. Princeton, NJ: Princeton University Press.
- Siegel, D. (1994). The ABCs of Canadian local government: An overview. In D. Siegel & D. Richmond (Eds.), Agencies, boards, and commissions in Canadian local government (pp. 1–19). Toronto: Institute of Public Administration of Canada.
- Statistics Canada. (2009). Table 3850024: Local general government revenue and expenditures. Technical report. Ottawa: Statistics Canada.
- Stenning, P. (1981). Police commissions and boards in Canada. Toronto: Centre for Criminology.
- Stone, C. N. (1989). Regime politics: Governing Atlanta 1946–1988. Lawrence: University Press of Kansas.
- Strang, D., & Meyer, J. W. (1993). Institutional conditions for diffusion. Theory and Society, 22, 487-511.
- Taylor, Z., & Burchfield, M. (2010). Growing cities: Comparing urban growth patterns and regional growth policies in Calgary, Toronto and Vancouver. Toronto: Neptis Foundation.
- Tolbert, P. S., & Zucker, L. G. (1983). Institutional sources of change in the formal structure of organizations: The diffusion of civil service reform, 1880–1935. Administrative Science Quarterly, 28(1), 22–39.
- Voisey, P. (1994). Urban history. In D. Owram (Ed.), *Canadian history: A reader's guide* (pp. 228–245). Toronto: University of Toronto Press.
- Wallner, J. (2014). Learning to school: Federalism and public schooling in Canada. Toronto: University of Toronto Press.
- Wilson, M. C. (2014). Governance built step-by-step: Analysing sequences to explain democratization. In P. Blanchard, F. Buhlmann, & J.-A. Gauthier, Advances in sequence analysis: Theory, method, applications (pp. 213–230). New York: Springer.
- Wright, J. R. (1983). Urban parks in Ontario. Toronto: Province of Ontario Ministry of Tourism and Recreation.

Appendix 1

Cost settings for OM analysis

Substitution costs

In the discussion above, I explained the need for a substitution cost matrix which creates higher costs for transitions from policy institutions that are unlike one another along multiple dimen- sions when compared to transitions from policy institutions that are unlike one another along just one dimension. These dimensions relate to basic institutional type (the distinction between public and private and the distinction between special purpose and general purpose), scale (local or re- gional scale), and personnel. I have therefore assigned substitution costs according to the following rules:

- (1) Geographic scale. Costs range from 0 to 1. Policy institutions with the same scale have a substitution cost of 0, and those with different scales have a cost of 1. Two-tier types have a cost of 0.5 from both local and regional types, since they rest between the two poles.
- (2) *Institutional type: public/private*. Costs range from 0 to 1. Shared types have a substitution cost of 0, and different types have a cost of 1. Private types include both municipal franchises and municipally owned private corporations.
- (3) *Institutional type: general-purpose/special-purpose*. Special purpose versus general-purpose governance, ranging from 0 to 1. Same-institution types have a cost of 0 and different-institution types have a cost of 1. Elected special purpose bodies have a cost of 0.5 from appointed special purpose bodies.
- (4) Council authority. The role of council in selecting governance personnel and serving as governance personnel, ranging from 0 to 1. Council authority can be none, low, medium, or high. All types that "touch" each other (none-low, low-medium, medium-high) are coded as 0.5. Same-authority types coded as 0. All others coded as 1.

Substitution and indel (insertion and deletion) costs are a matter of debate in the OM literature. A wide range of theoretical, empirical, and rule-of-thumb strategies have been suggested in order to guide researchers in the selection of these costs (Abbott & Tsay, 2000; Gauthier, Buhlmann, & Blanchard, 2014; Gauthier, Widmer, Bucher, & Notredame, 2009; Hollister, 2009; Lesnard, 2010). At present, however, no single approach has become widely accepted, and many otherwise attractive approaches have serious weaknesses which prevent their widespread adoption (Gauthier et al., 2014). For this reason I have chosen to select substitution and indel costs based on the specific goals of the theoretical and empirical analysis above.²⁰

Indel costs

Indel costs are more important for final OM results than was once recognized in the OM literature. I have set indel costs at 1—one fourth of the maximum substitution value—based on two main considerations. First, indel cost settings "coerce" the OM algorithm in one of two directions: low settings emphasize common subsequences and de-emphasize the timing of changes, whereas high settings emphasize common stages, occurring at similar times (Lesnard 2010, 2014). More practically speaking, very low indel costs eliminate all substitution costs that are twice the indel cost (if an insertion and a deletion costs less than a single substitution, then the indel will be used). This has the effect of flattening the substitution cost matrix, making the de facto maximum substitution cost equivalent to two times the indel cost (Hollister, 2009).

We are faced, then, with two unattractive extremes. On the one hand, indel costs could be set very low, such as 0.4, as Andrew Abbott (Abbott & Tsay, 2000) has recommended. This would come at the cost of effectively discarding the substitution cost matrix that I have discussed above, since all substitution costs would be higher than an insertion and a deletion. On the other hand, we could place indel costs quite high, as was once common in OM studies and is still recommended by some researchers (Lesnard, 2010). This would seriously penalize sequences that proceed through the same stages and types but do so "out of sync" with one another.

Our principal interest in this article is not shared timing but shared sequence, which means that indel costs should be set at the lower end. I have therefore set indel costs at 1. At some level, this choice is arbitrary (I cannot justify a value of 1 as opposed to, say, 1.2), but it is also motivated by the underlying research question. While this setting does come at the cost of flattening out very high substitution costs, I believe that this disadvantage is outweighed by the advantages of a lower indel cost in permitting "time-warping" to match out-of-sync but otherwise similar sequences to one another (Lesnard, 2010).

Alternative cost settings

Here I explore the actual impact of alternative cost settings on the findings above (Abbott & Tsay, 2000, p. 12; Anyadike-Danes & McVicar, 2010, p. 489; Brzinsky-Fay & Kohler, 2010, p. 361). Table 8 summarizes a five-cluster solution using low indel costs (0.4), the medium indel costs (1) used in the main text above, and high indel costs (4). I have also included a cluster dendrogram for each of the three indel settings below. As expected, cost settings do have an ef- fect on the distance matrix, and thus on the clusters that I have analyzed above. In the case of low indel costs, 70% of the sequences fall into the same cluster as in the main text; in the case of high indel costs, the proportion is 80%. Many sequences are similar enough, in path, type, and the length of each individual component, that varying indel costs have little effect on final clustering.

What accounts for the differences in the other sequences? For the low indel settings, the an- swer is common subsequence. In these cases, sequences that share same-type spans are rewarded, even if the sequence is otherwise very different, because same-type spans reduce the number of indels required to match one sequence to the other. At the other end of the spectrum, high indel settings reward sequences that are similar to one another in the timing of individual changes and the relative

City	Prov.	Domain	Low	Med	High
Calgary	AB	Schools	1	1	1
Edmonton	AB	Schools	1	1	1
Vancouver	BC	Schools	1	1	1
Toronto	ON	Schools	1	1	1
Hamilton	ON	Schools	1	1	1
Victoria	BC	Schools	1	1	1
Hamilton	ON	Water	2	2	2
Edmonton	AB	Water	2	2	2
Calgary	AB	Water	2	2	2
Calgary	AB	Transit	2	2	2
Edmonton	AB	Transit	2	2	2
Toronto	ON	Water	2	2	2
Vancouver	BC	Police	3	3	3
Hamilton	ON	Police	3	3	3
Toronto	ON	Police	3	3	3
Victoria	BC	Police	3	3	3
Edmonton	AB	Health	3	3	4
Calgary	AB	Health	5	3	4
Hamilton	ON	Health	5	3	4
Toronto	ON	Health	5	3	4
Calgary	AB	Police	3	3	4
Edmonton	AB	Police	3	3	4
Victoria	BC	Water	4	4	4
Vancouver	BC	Water	4	4	4
Vancouver	BC	Health	5	4	4
Victoria	BC	Health	5	4	4
Toronto	ON	Transit	4	5	5
Hamilton	ON	Transit	4	5	5
Vancouver	BC	Transit	4	5	5
Victoria	BC	Transit	4	5	5
	Similarity to medium costs:		70 %		80 %

Table 8. Cluster ar	lysis and indel costs.
---------------------	------------------------

Note: Values in bold mark differences resulting from alternative indel cost settings.

absence of policy institutions in the sequence (such as provincial governance or private governance) which have high substitution costs compared to the others. A visual comparison of Figure 3 and Figure 4, which compare the medium and the high indel costs, shows that the final clustering looks very similar, with the exception that transit sequences, containing long spans of private governance, are "pushed out" of the large cluster to the right and into a distinct cluster of their own.

The cost settings that I have selected for use in the main text of this article are not perfect, and changes to indel cost settings do, unsurprisingly, have an impact on the findings. These settings remain a matter of debate, and ultimately of judgment, even among the most seasoned practitioners of OM analysis. I do believe, however, that the cost settings I have used chart a defensible middle ground between two extremes, both of which result in analyses that are more difficult to interpret and of less substantive interest, given our particular research question, than the settings that I have chosen above (Hollister, 2009, p. 249).

Appendix 2

Data set adjustments

I have modified the raw data set in two ways to prepare it for OM analysis. While neither of these adjustments is strictly necessary—and I show below that neither adjustment has an important effect on the results—the adjustments make the results easier to interpret and more clearly focused on the specific priorities of our comparison.

The first adjustment was to remove *no policy provision* from the beginning of sequences, resulting in the removal of types 30 and 31 (described in Table 1) from the data set. I have made



Figure 2. Cluster analysis with low indel costs.



Figure 3. Cluster analysis with medium indel costs.

this change because each of the five policy tasks in the data set were adopted at somewhat different times; public education, for example, was introduced in Canada early in the nineteenth century, while it was not until much later in the nineteenth century that public transit became a salient policy concern. For this reason, some sequences begin with lengthy runs of *no provision* (see Table 2 above). To leave these non-provision runs in the sequences would have emphasized resemblances among sequences that are of little theoretical interest for our purposes, biasing the results toward "same domain" resemblances simply because of the presence or absence of non-provision at the beginning. Our concern is the sequence of policy institutions, not the year or decade in which policy tasks were adopted.



Figure 4. Cluster analysis with high indel costs.

The second adjustment was to standardize all of the sequences into 100-period runs. This change was motivated by a similar concern: to minimize the importance of overall sequence length on the resulting patterns of resemblance. In the absence of standardization, two otherwise identical sequences, such as AAAABBCC and AABBCC, would nevertheless pay a "cost" in insertions in order to make them identical. It is common to avoid this problem by dividing each pairwise distance measure by the longer of the two sequences (Abbott & Tsay 2000, p. 13), but this approach still restricts the researcher's freedom in setting insertion costs (Hollister, 2009, p. 242). I have therefore opted to standardize the sequences into 100-period lengths, in which each type is converted into a proportion of the total length. This focuses the OM search on the patterns that are most of interest to us: similar governance types, in a similar order, over similar lengths of the overall sequence.

While these adjustments make the analysis cleaner and easier to interpret, my findings above are robust to an analysis that uses the raw data set rather than the adjusted one. Figure 5 displays a cluster analysis using the same substitution and indel costs as above, but with the raw rather than the adjusted data set.

The clustering in Figure 5 is very similar to Figure 1. Some distances are longer, owing to the indel operations required to make the sequences the same length. The raw analysis also pushes sequences with periods of non-provision closer to one another, though the effects on the final analysis are subtle. Overall, the differences between the two approaches are minimal, but the raw analysis does put more emphasis on periods of non-provision (and may also increase overall distance measures due to differences in sequence length, though these are reduced by the common standar-dization technique of dividing each distance by the length of the longer sequence). These emphases are of less interest to us than the standardized analysis, which captures sequences of institutional types since each policy domain became active, which is why I have opted for the standardized data set in the analysis above. Above all, however, this appendix demonstrates that the findings I have described above are robust to an analysis that uses the raw rather than the modified data set.

90 🍝 J. LUCAS



Figure 5. Raw data set cluster analysis.