

**Can the PRISMA Protocol be used to Guide a  
Systematic Literature Review of Antecedents  
of Policy Innovation Trailblazing and  
Adoption?  
– I**

**Eleanor D. Glor**

**Editor-in-Chief**

**The Innovation Journal: The Public Sector Innovation Journal**

**Fellow, McLaughlin College  
York University, Toronto, Canada**

# Can the PRISMA Protocol be used to Guide a Systematic Literature Review of Antecedents of Policy Innovation Trailblazing and Adoption? – I

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## ABSTRACT

Methodology for systematic literature reviews (SLRs) is not well developed in public policy compared to the health field. This paper explores use of the health PRISMA protocol for SLRs to guide an SLR of antecedents of trailblazing and adoption of public policy innovation and whether it is a suitable protocol for public policy. Trailblazing is the first two stages—vention and early adoption—of Rogers’ (1995) five stages of innovation adoption in a governmental or organizational population. Completing applicable items in the checklist, a SLR of 87 peer-reviewed publications identified 594 antecedents; trailblazing/adoption and empirical/non-empirical studies are distinguished and the theories reflected are identified.

**Key words:** systematic literature review, public policy innovation, innovation antecedents, innovation variables

## Introduction

This paper conducts a SLR, guided by the Preferred Reporting Items for Systematic Reviews and Metaanalyses (PRISMA) protocol, and assesses whether PRISMA, developed for medical studies and considered a gold standard, is appropriate for public policy innovation. A SLR is a “review of a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant research, and to collect and analyze data from the studies that are included in the review. Quantitative studies that accumulate data can be studied through meta-analyses” (Moher et al, 2009). Moher et al developed the PRISMA protocol and found the “quality of reporting of systematic reviews is still not optimal” in the medical field. In a book review of Jill Fisher’s *Adverse Events*, for example (e.g.), Elliott (2020) identified ethical problems in pharmaceutical testing. This paper is guided by the protocol checklist (Moher et al, 2009): The **Title** and **Abstract** are provided above.

**Rationale.** SLRs are more developed in the medical than the public policy or innovation fields. Medical protocols have been developed, the only field in which this has been done. The older QUOROM (Moher et al, 1994, 1999) and more recent PRISMA (Moher et al, 2009; Liberati et al, 2009) statements provide helpful checklists (Moher et al, 2009: Table 1; PLoS Medicine Editors, 2011). The checklist requests more information about individual studies than is provided in typical public policy or innovation publications. Nonetheless, most items could be used in a SLR of trailblazing<sup>1</sup> of policy innovation, and PRISMA provided a considered,

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<sup>1</sup> We used the term introduction in previous publications but confusion has emerged between the stages of diffusion and stages of the process of implementation of innovation, both of which were using the term introduction. In this

structured protocol.

This is only the third time the protocol has been used in the public innovation field. It was previously used to study one innovation, cocreation/co-production with citizens in public innovation (Voorberg, Bekkers and Tummers, 2015) and barriers to the public sector innovation process (Cinar, Trott and Simms, 2019). This is the first time its applicability is discussed. This paper uses the 27-item checklist to guide a SLR of antecedents of trailblazing of public policy innovation and to structure results found. The items are titles.

Public policies are “made by governments, and the ‘actions’ ...are government decisions to act or not to act to change, or maintain, some aspect of the status quo (Birkland, 2001: chapter 1). The public policy literature has examined innovation to some extent (e.g., Berry and Berry, 2007; Howlett, 2014), although specific policies have been the focus (e.g., Berry and Berry, 1990). Policy innovations are new public policies with new aspects (e.g., new approaches to a problem or program aspects/target groups), implemented in/by a government.

The paper distinguishes the dependent variable earliness of adoption of policy innovation from probability of adoption but includes documents on both when they are not distinguished. Berry and Berry (1999:179) said: “When propensity to adopt is conceived of as the probability of adoption, the focus of research must be a single policy. However, when one is studying the innovativeness of the states as reflected in their earliness of adoption, attention can focus on either one policy or a set of policies.” All innovations have by definition been implemented. Using the term stage for stages of adoption, we emphasize the timing of adoption. I, like Rogers, use innovativeness as early adoption. Other authors merge all stages of adoption in their studies and use the term innovation to refer to adoption in an organization at any time. This is the economic approach of the Oslo Manual (OECD/Eurostat, 2018), initially used to assess economic innovations but expanded to all sectors in the latest version (OECD, 2018). This usage does not distinguish the newness of innovations within their community/population, only their newness within a government/organization. They are interested in whether an innovation is adopted, not the order of adoption, which is harder to determine.

Stages of adoption and stages of the implementation process are different phenomena. Lasswell (1956) and Rogers (1995). expanded by Glor (1998: 330), outlined the innovation implementation process in stages. At one point, process stages were rejected in the public policy literature (e.g., Sabatier, 2007; Berrier and Berrier, 2007) but have recently been used again (e.g., Howlett and Cashore, 2020: 16;) as agenda setting, policy formulation, decision-making, policy implementation and policy evaluation (also Goyal and Howlett, 2020).

Some publications use the term adoption without defining it. It is defined here as all stages of public policy innovation adoption. Rogers’ (1995: 263-266) five stages are used—innovation, (invention) (I define as first adoption); early adoption (I define as second or third adoption); early majority, late majority and laggard adoption of innovation. Rogers did not give them objective definitions. He defined innovation as anything perceived as new by the adopter: this definition is often used in the innovation literature for studying the probability of adoption. The OECD and others define it as new within a government or organization; typically, they mean

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paper “trailblazing” is used to reduce this confusion.

new in a department (ministry) as departments have different policy roles. Organizations are administrative units delivering policies/programs/administrative processes. I study earliness of adoption and define innovation as something new and an improvement adopted for the first, second or third time in an innovation's community/population.

Innovation communities and populations are at a logically higher level than governments and organizations. They are the groups outside the government with which governments and public servants work and compare themselves. A community could be, e.g., a professional association such as the International Institute of Administrative Sciences. A population could be all the governments like the one being studied, such as all USA states, federal governments, European/ North American governments. This paper is, therefore, an examination of government innovativeness within a broader context.

*Antecedents of trailblazing*, the variables studied are phenomena occurring before and thought to influence all stages of the innovation process for trailblazers. The term antecedent is used synonymously with variable/determinant/moderator/influence. Antecedents of trailblazing exert their influence on the *innovation implementation process*: readiness, negotiating approval, effective implementation, results, learning and fate, including dissemination (Glor, 1998: 330; 2018, 2019). Rogers (1995: chapter 7) expected the shape of the *adoption curve* to be normal and to define innovativeness. His five stages (invention, early adoption, early majority, late majority, laggard adoption) occur along the plot, an S-curve (like most social phenomena). He only defined "early" within a specific adoption, not generally as I have. I define innovativeness as trailblazing and subsequent adoptions as dissemination but Rogers defined dissemination as the whole history of adoption. This I call diffusion. This paper focuses on trailblazing; dissemination comes later. Much public policy innovation research amalgamates all five stages of innovation, so I assume that literature about "adoption" is such research, hence including some trailblazing. Only a few authors said so, however.

Trailblazing is important because the innovation is new in a larger context—the government may be inventing the innovation and is inventing a way to introduce the innovation in its government and its community/population. This can be very beneficial for the innovation's community/population but the government may have little to go on. The government compares itself to its community/population with regard to the issue (e.g., right-wing governments interested in reducing/eliminating income security). For the more left-wing Government of Saskatchewan (a Canadian province) that introduced five new income security programs, 1970-82, e.g., its community included the Government of Canada, progressive Canadian provincial and American state governments and other progressive governments (e.g., New Zealand). Policy innovation communities can be public/political/electoral supporters, elected/appointed officials (Binnema, Michels and 't Hart, 2020) and professional associations/communities/networks of practice but these tend to adhere closely to the ideology of their governments.

This paper is concerned with the applicability of PRISMA SLR methodology to trailblazing and adoption. It only includes documents about adoption that could have included trailblazing, ones that did not identify the stage of adoption they were studying and therefore presumably included trailblazing. It conducts an SLR of literature on antecedents of trailblazing assesses its applicability.

**Research framework.** SLRs often do not use a theoretical framework, as the literature studied uses several. Documents include case studies, innovations of many/one government and identify many antecedents. Glor's (2014a) innovation research framework recommended using four theories to study innovation (Gioia and Pitre, 1990), addressing the impact of individual innovations and innovations' impacts on politics, organizational people, functions and structures. Theories were humanist, interpretive, functionalist and structuralist (Glor, 2014a, b). Functionalist theory explores issues/factors correlating highly with the issue studied. Theoretical interests are relationships, causation, generalization and theory-building through causal analysis. Antecedents are often studied using functionalist theory. Pollitt (2002: 481-2) compressed organizational theories into functionalist and non-functionalist. Functionalist theories, emphasizing efficiency, environmental fit and a focus on results, included institutional economics (principal agent including New Public Management (NPM) and property rights including privatization, corporatization, contracting-out and performance pay) and contingency (logic of efficiency and adaptation to environments through learning) theories. Pollitt called the non-functional theoretical tradition social constructivist or interpretive/hermeneutic, strongly shaped by a logic of appropriateness. Constructivist theories emphasize institutional path dependency, the importance of legitimacy, symbolism and fashion, and argue the evolution of organizations cannot be explained solely by functional factors or utility maximization.

The data collected was analyzed into three types of antecedents—external, political and internal to government. Berry and Berry (2013) and others have organized theirs into two—external and internal, with internal defined as internal to the jurisdiction. I define internal as internal to the bureaucracy. It is important to distinguish political cluster for policy innovations, because the political plays such an important role in government policy.

*What Has and Has Not been Addressed.* Some SLRs (see earlier) and meta-analyses have been conducted in the innovation field, including a meta-analysis of mostly private sector innovation adoption<sup>2</sup> (Damanpour, 1991) and one of diffusion and adoption of public sector innovation (de Vries, Tummers and Bekkers, 2018). *The Diffusion and Adoption of Public Sector Innovations: A Meta-Synthesis of the Literature. Perspectives on Public Management and Governance (PMRA)*, 1(3): 159-176. Literature reviews have been conducted of service innovations (Greenhalgh et al (2004); process innovations (Walker, 2014); environmental antecedents of innovation adoption (Korac, Saliterer and Walker, 2017); the relationship between innovation and organizational size (Camisón-Zornoza, Lapiedra-Alcamí, Segarra-Ciprés and Boronat-Navarro, 2004.); social innovation in the public sector (Bekkers, Tummers and Voorberg, 2013); and all empirical public sector innovation literature (181 items) published 1990 to 2014 in the major literature, including but not exclusively on antecedents, summarized as addressing “intra-organizational antecedents, resources and actors and external, environmental antecedents, resources and actors” (de Vries, Bekkers and Tummers, 2016: 147. They indicated that: “...antecedents that need to be further explored in public innovation research include both the environmental and the organizational contexts in which innovations take place, their nature,

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<sup>2</sup> Damanpour (1991) analyzed 23 mostly private sector quantitative studies of determinants and moderators of organizational innovation and recommended studying type of innovation and stage of adoption, but as secondary contingencies (intermediate variables) between primary contingencies and organizational characteristics. Damanpour and Wischnevsky (2006: 286) recommended comparing “the units that succeed in *generating* innovations with those that do not, and the units that succeed in *adopting* innovations with those that do not.”

and also the enabling antecedents and their underlying contingencies.”<sup>3</sup> Some of the SLRs discussed antecedents but none distinguished stages of innovation adoption, thus suggesting that antecedents are the same for all stages. Adoption is well covered. Compared to their research, the current paper addresses a larger time period (1969-2020), more than major literature and smaller sub-sets: only antecedents, only policy innovation (excludes processes/administration; evaluation, fate stages), and excludes dissemination (Rogers’ final three stages) when possible.

No SLR was conducted previously of antecedents of policy innovation trailblazing. This methodology paper contributes an inductive SLR guided by the PRISMA protocol to ascertain the applicability of the checklist for policy innovation trailblazing. The independent antecedents thought to influence the dependent variable of public policy innovation trailblazing were analyzed into groups of antecedents, factors and clusters and distinguished trailblazing/adoption and empirical/non-empirical studies. It was not easy to study trailblazing because much literature studies “adoption” of public innovation, which, in the absence of more precise definitions, presumably includes all of Rogers’ stages. A decision had to be made whether to study only literature on trailblazing or to include the literature on adoption, knowing adoption included trailblazing. Both were included.

Historical institutionalists have suggested that study of variables is not the best way to study policies. Hacker (1998), e.g., indicated measures of variables are one-shot (at one point in time) and that issues influencing innovation should instead be examined over time, indicating variables miss the history of issues and organizations. Some authors, however, have considered antecedents at more than one time, e.g., Glor (2017a) measured antecedents five policy innovations and assessed their antecedents at the time of both trailblazing and fate, to see if the measurements of the antecedents changed (they did). Our instrument addressed some issues that changed over time; e.g., political environment. In addition, the text discussed historical issues. Time adds value but it need not be lost when studying antecedents. Public policy scholars have suggested studying groups of related policies, serving the same goals, but little work has yet been done (Capano and Mukherjee, 2020). Despite the need to study the history of issues, because the decision to adopt occurs at one point in time, is influenced by antecedents and antecedents may be similar across organizations, the influence of independent antecedents on the dependent variable trailblazing of policy innovation is of interest. Antecedents important in innovations’ histories are included here, when available.

**Objectives** are to determine whether the PRISMA checklist can guide a SLR of antecedents of trailblazing of public policy innovation and to determine whether enough literature is available to do a SLR. The PRISMA protocol is used to guide this review. This has only been done twice before in study of government innovation. Although their SLRs were presented somewhat differently, they did not study trailblazing and PRISMA’S applicability was not discussed.

The *questions* addressed in this paper are (1) Can the PRISMA Protocol be used to guide a SLR of trailblazing and adoption of public policy innovation? (2) How many antecedents does the literature identify for public policy (including program) innovation? (3) Can the antecedents be grouped? (4) What is the breakdown of documents found on trailblazing versus adoption, empirical versus non-empirical studies? (5) Could a meta-analysis be done?

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<sup>3</sup> Their paper is not included in this SLR because it included process innovations.

## Methodology

**Protocol.** Most elements in the PRISMA protocol (Moher et al, 2009) checklist<sup>4</sup>, adapted minimally. A few irrelevant items were not considered; e.g., registration number for the trial (none available), participants in the study (there were no participants; what was studied was identified, however), intervention (there were no interventions, although the innovation(s)<sup>7</sup> objectives were identified). This exercise presents an opportunity to see whether value is realized in completing the relevant items.

*Challenges* were faced. *First*, sufficient literature had to be found to allow exploration of antecedents: Sufficient were found. *Second*, a limited number of papers (21) distinguished the five stages of adoption. Rogers (1995) described his five stages in terms of communication (his area of expertise) of innovations but his categories serve as descriptors of stage of adoption as well. *Third*, a considerable amount of literature does not define innovation and/or adoption. When adoption was addressed separately from diffusion, the adoption literature was included. *Fourth*, the policy framework used was often not clear and sometimes, even when it was described, there were flaws in it; e.g., Osborne and Brown (2011) found that there were flaws in the public policy framework for innovation in public services, that they were often at odds with evidence and that they lacked a holistic understanding of the nature of innovation and its policy and managerial challenges. Glor (2014a) outlined four possible innovation frameworks and also found logical inconsistencies in the public sector innovation trailblazing literature. *Fifth*, the literature used the term antecedents for more than one logical level; e.g., Bloch and Bugge (2013) identified the obstacle ‘lack of funding’ as an antecedent while Mohr (1969) identified ‘strength of obstacles against’ as an antecedent. These are at different levels of generality and cannot be compared directly, so the same term should not be used. I treated lack of funding as an antecedent; obstacles as a grouped antecedent.

It can be difficult to achieve the objectives of a SLR, objectives are different for different types of SLR. Gough, Thomas and Oliver (2012: 4) distinguished review types as aggregative, configurative and both (mixed). *Aggregative reviews* attempt to be exhaustive or at least avoid bias in the way studies are found. Researchers attempt to find studies that support each other so that the reviewer can have greater certainty about the magnitude and variance of the phenomenon investigated. The literature reviewed here did not aggregate well. *Configurative reviews* seek to find sufficient cases to explore patterns; they are not necessarily exhaustive. The data gathered could be configured and was. Another paper (Glor, 2021) is the main source of this information. *Mixed method* has three steps: ask a broad review question, synthesize research or other knowledge and synthesize the mixed knowledge (Gough, Thomas and Oliver, 2012: 6, Figure 3). Most reviews contain elements of both, and are *mixed reviews*, as is this one.

**Eligibility criteria.** The eligibility criteria were (1) public sector, including government, state agencies and state-owned enterprises; (2) policy (including programs); (3) innovation trailblazing or adoption; (4) identified antecedents. An item was only retained in the review if it met the eligibility criteria. The literature could have been published any year, in any scholarly publication.

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**Information sources** were scholarly peer-reviewed articles, books, chapters and reports published 1965 to December 2020. All were blind peer-reviewed except an exchange by innovation professionals (Innovation Network, 1999) and possibly some reports.

**Search.** The search was conducted in English. I conducted the search, reviewed the literature and recorded it. The words searched included antecedent, determinant/variable/obstacle/barrier/pull/push/drivers/demand. Literature on adoption was included if it was not defined as diffusion or dissemination, because adoption presumably included some trailblazing.

First, a snowball search was done, then a systematic search, then fine turning. In phase 1, a search was conducted, February to April 2020 for literature that addressed antecedents of trailblazing, using a snowball method (a non-probability sampling method), by accessing references in known literature. While it is unusual to start with a snowball phase, few new articles were added in the subsequent phases, so this was not a bad place to start. Bekkers, Tummers and Voorberg (2013) also used a snowball methodology in their public sector literature review of all stages of innovation but they identified literature from major journals only. I accessed a wider range. In phase 1, at least 62 papers on public sector innovation were rejected because they were not about trailblazing of policy innovation, 84 were about or included antecedents of trailblazing and were retained; 25 were about dissemination and 9 about fate and were rejected. One author of a systematic review was contacted for references but did not respond. In phase 2, June, July 2020, an SLR was conducted. The word “antecedents of public sector innovation,” without quotation marks, were searched in journals (ICImago’s 10 highest-ranked public administration journals, to 2018, *Canadian Public Policy*, *Canadian Public Administration*, *JSTOR*) and in databases (ResearchGate, Google Scholar, Microsoft Academic). In phase 3, subsequent reading found a few more articles. A total of 69 papers were rejected and 87 were accepted.

Relevant literature was included by the Publin (e.g., Vigoda-Gadot, Shoham, Ruvio and Schwabsky, 2005) and LIPSE (e.g., Bekkers, Tummers and Voorberg, 2013) scholars, who also studied the public innovation literature. The latter studied dissemination of innovation, and co-creation and co-production, specific innovations. An effort was made to find literature they did not review from the major literature, such as in *The Innovation Journal: The Public Sector Innovation Journal (TIJ)*. Most of the retained literature was identified in phase 1, by accessing literature thought to include policy innovation antecedents and pursuing relevant references. In phase 2, the SLR, several papers were reassessed and rejected. Fine tuning in phase 3 involved reviewing the publications again, rejecting additional publications and adding new papers, for a total of 87. Flow Diagram 1 shows the search process, order and findings at each phase.

**Study selection.** A SLR is an iterative process. Its quality depends heavily on the scope and quality of the studies included (Moher et al., 2009). All literature specifically addressing trailblazing and policy innovation antecedents that did not specifically indicate it was about other stages was retained, a wide screen. This approach had the strength of assuring much of the literature addressing antecedents of innovation trailblazing was included. One author of a systematic review was contacted and helped clarify the distinction between systematic reviews and meta-analyses. All of the studies screened and assessed for eligibility were tracked except the private and voluntary sector studies, which were rejected.

## Flow Diagram 1: SLR Process

### Phase 1 (March 2020): Snowball methodology

Unknown number reviewed, but almost all were on public sector policy innovation. 79 documents on trailblazing retained.

#### **Reasons Rejected:**

- Private sector innovation: # reviewed not recorded
- Policy/program innovation:
  - Trailblazing: 87
  - Dissemination: 25
  - Fate: 9
- Processes/administrative innovations-28:
  - Trailblazing: 16
  - Dissemination: 4
  - Fate: 8

#### Summary:

62 items known to be rejected.

82 on trailblazing retained.

### Phase 2 (June, July 2020): Databases and public policy journals (described in text)

#### **Reasons Rejected:**

- Papers retained earlier were reassessed as dissemination-3
- Papers retained earlier were reassessed as process/administration-3

#### **Summary Phase 2:**

82 papers identified in Phase 1.

-6 reclassified

-10 new papers reviewed in Phase 2:

- 7 papers rejected:
  - About dissemination of policy innovation: 5
  - About dissemination of process/administrative innovation-2
- 3 papers about trailblazing added

Total retained: 79

### Phase 3 (August 2020 to March 2021): Database reviewed two more times.

Papers rejected-2

#### **Papers added:10**

**Database: 87 documents**, 594 antecedents, 508 unique antecedents, 28 unique grouped antecedents: 37 quantitative (248 antecedents) studies, 50 qualitative (346 antecedents); 21 trailblazing (131 antecedents) documents, 66 adoption (463).

**Study selection.** A SLR is an iterative process. Its quality depends heavily on the scope and quality of the studies included (Moher et al., 2009). All literature specifically addressing trailblazing and policy innovation antecedents that did not specifically indicate it was about other stages was retained, a wide screen. This approach had the strength of assuring much of the literature addressing antecedents of innovation trailblazing was included. One author of a systematic review was contacted and helped clarify the distinction between systematic reviews and meta-analyses. All of the studies screened and assessed for eligibility were tracked except the private and voluntary sector studies, which were rejected.

**Data collection process.** I reviewed each article. Fewer than 20 were reviewed more than once at stages 1 and 2 but they were reviewed again later, twice. The word “antecedent” was searched and the abstract, introduction, results and conclusion were read in every paper. Other parts were sometimes read. A data table was prepared and a row completed for each document.

**Data items.** The independent variable was antecedents of trailblazing or adoption of public (government) policy innovation. Antecedents were recorded using the names authors gave them. They were external, contextual, vertical, horizontal, as Korac, Saliterer and Walker (2017)

identified them, and more—a total of 594 antecedents. They were analyzed into groupings, in an attempt to understand and summarize what the literature had identified.

**Risk of bias in individual studies.** Biases are possible in innovation literature. Even in the most sophisticated medical literature and with consistent use of ethics and review committees, biases have been discovered. Dwan et al (2010: 1), e.g. identified both publication and outcome reporting biases. In a *publication bias*, studies are published or not depending on their results. An *outcome reporting bias* occurs when variables are selected for publication based on their results. All of the published results are reported in this study, as recommended by PRISMA. In a within-study selective reporting bias, studies are published that report the results of only a subset of the original variables recorded for inclusion; none was reported. If this occurred in the innovation literature, there is no way to adjust for it here because this study uses the published literature. All antecedents found in the literature were noted and summarized. Both these risks existed when authors did not provide enough information to determine whether they had occurred.

**Summary measures.** The antecedent data was aggregated into grouped antecedents, factors and clusters. They were reported as numbers and percentages of antecedents in grouped antecedents, and clusters, and comparisons were conducted of results for grouped antecedents and their percentages in the categories of initiated and adopted documents (see Results).

**Synthesis of results.** *Question 1:* PRISMA Protocol could be used to guide a SLR of trailblazing of public policy innovation. *Question 2:* The 87 documents that met the criteria were not consistent in terminology for antecedents: their terminology was accepted as published, yielding 594 antecedents. *Question 3:* Antecedents could be grouped. Analysis of similar antecedents were aggregated into 28 unique grouped antecedents, 15 vertical, 5 horizontal factors and 3 clusters. *Question 4:* Twenty-one documents were on trailblazing innovation (131 antecedents), 66 on adoption (463 antecedents); 37 studies were quantitative (248 antecedents), 50 qualitative (346). *Question 5:* The quantitative documents had a wide range of antecedents but insufficiently similar topics were addressed to be combined into a meta-analysis.

**Risk of bias across studies** affects the cumulative evidence. One risk was variation in size: three were single case studies, others were quantitative and studied several or many innovations in one government, one or several innovations across many governments (e.g., Cutright, 1965 studied a few innovations in 76 countries). There was no standardized approach—definitions, approaches and what was studied were not standardized. When studies were quantitative, different antecedents were studied, from different perspectives; however, many similar antecedents were also identified, although often using different terms. They were therefore grouped. If Dwan et al's (2010: 1) publication and outcome reporting biases occurred, they cannot be detected. Another potential bias exists between trailblazing and adoption literature, however. The literature about all adoption confounds the results for trailblazing. This mixture of antecedents of trailblazing and all adoption that included trailblazing confounded the antecedents somewhat, if they were different, but assured all of the possible trailblazing literature was included. Full inclusiveness was served, specificity was not for that literature. The scores for grouped antecedents of trailblazing versus adoption were compared, to address this risk. While some grouped antecedents reported individual differences (e.g., institutions, policy, politics, the political, political support, political actors, enhance capacity to innovate), overall, between trailblazing and adoption, external cluster had similar portions, political and internal clusters had

about a 10 percentage point difference in their portions. So, there were some differences between trailblazing and adoption.

**Additional analyses.** Trailblazing-adoption, quantitative-qualitative literature and types of empirical literature were identified, as were types of theories employed. External antecedents were similarly important in all four types of studies; political antecedents were more important and internal antecedents less important in trailblazing. Comparing Pollitt's (2002: 481-2) functionalist and non-functionalist organizational theories, *non-functionalist theories* were reflected: institutional path dependency in the grouped antecedent institutions (17 mentions) and internal structure (42); legitimacy and fashion in citizen pressure (50) and influence of other governments (6); a logic of appropriateness in the governance environment (32), ideology (17), politics (24), political culture (28), process for building a political platform (3) and political actors (22) and government employees (40). *Functionalist theories* were also reflected: environmental fit in external environment/context (25), governance environment (32), policy (largely innovation policy) (17), drivers/demands/external support/good economy (13), obstacles/barriers (11), all of the political cluster (total 119) except political actors (22), all of internal cluster (304) except structure (42).

## Results

**Study selection.** The most thought-provoking decision was whether or not to include all papers that included trailblazing. The decision to do helped assure inclusion of as much literature as possible that included trailblazing. While trailblazing and adoption studies were compared, further research is needed on antecedents of trailblazing—it could be included as part of studies of dissemination, as some did (e.g., Poel, 1976; Colvin, 2006).

**Study characteristics.** Studies met the criteria—on public sector innovation, on or included trailblazing, identified antecedents. Literature was not compared for study size or follow-up period—only one had follow-up, over decades (Glor 2017a, b; 2018, 2019; Glor and Ewart, 2016).

**Results of individual studies.** The studies, their definitions and approaches were not standardized and sometimes not described. Fewer were empirical (37) than non-empirical (50). Different antecedents were studied, from different perspectives: e.g., some studied whether and when a policy innovation was adopted in relation to other governments (e.g., Poel, 1976); Glor, 1997) and others whether specific innovations had been adopted and how many governments had adopted them (e.g., Colvin, 2006).

**Synthesis of results.** The antecedents identified in each study were recorded, summarized and analyzed into grouped antecedents, factors and clusters. Because there were so many (594); antecedents were analyzed into unique antecedents (508); unique grouped antecedents (28), such as citizen pressure, institutions, political culture, structure and people; factors (5); and clusters (3).

**Risk of bias across studies** affects the cumulative evidence. One risk lies with differences in types of studies. Were the results different for trailblazing/adoption, empirical/non-empirical, case study and survey studies? Within empirical studies, 21 papers were about trailblazing

(22.1%), 66 about adoption (77.9%). A few were about both (e.g., Poel, 1976; Colvin, 2006): they are counted as trailblazing. As a proportion of antecedents identified, all kinds identified internal antecedents most often (43.5 vs. 53.3% of each category's antecedents), except original research. Adoption studies found external antecedents (29.2%) more often than political (19.9%). Trailblazing studies found political antecedents to be about as important as external (29.0 vs. 27.5%). The difference in the portion of antecedents found in the external cluster for trailblazing and adoption did not vary much (27.5 vs. 29.2%). There was some difference in the portion of internal antecedents identified (43.5% in trailblazing, 53.3% in adoption). Although this suggests internal antecedents are very important in both, it seems to be somewhat less important for trailblazing. This makes sense as public servants are less likely to play a key role in initiating trailblazing policy innovations while political clusters are more important.

Similar portions of external antecedents were found in empirical, non-empirical, adoption and trailblazing studies (30.6, 27.5, 29.2, 27.5%). Trailblazing had the highest portion of political antecedents among all categories; adoption had the lowest (29.0, 17.5%). Similar portions of empirical and non-empirical antecedents were political (20.2, 19.9%). None of the four types of studies found a large portion of political or external antecedents, however. Notably, all studies identified similar portions of internal antecedents (about 50%), trailblazing had the lowest (43.5%).

Definitions, approaches and what was studied were not standardized. There were more studies of adoption than of trailblazing (66 vs. 20). Some studies were empirical (37), more were non-empirical (50). Different public policy issues were studied, from different perspectives, thus contributing breadth but not yet producing cumulative, comparable evidence, so a meta-analysis could not be done. Though authors often used different terms, similar grouped antecedents could nonetheless be identified. They are what was studied.

*What types of empirical studies were done?* To do a meta-analysis, empirical literature is needed. Subsets of empirical literature were identified, based on their methodology. They collected their information four ways—from surveys/questionnaires/interviews (18), multiple and single case studies (9), original research (7)<sup>5</sup> and government documents (3). Of the 37 empirical studies, most were surveys, etc. Original research studied the most antecedents per study (10.3). The case studies were from Europe, North America and Saudi Arabia. No literature was found that explored antecedents in a more complex manner (such as their interactions or groupings). The policy literature's multiple streams framework identified five streams originally (Kingdon, 1984)—the problem, policy, politics; program and process streams. These showed up in this study of antecedents. Although the multiple streams framework has attempted to consider more issues in policy development, and some authors have seen them as stages (Herweg, Huß and Zohlnhofer, 2015; Howlett, McConnell and Perl., 2015; Zahariadis and Exadaktylos, 2016), policy literature has mostly studied change.

**Additional analyses.** Trailblazing-adoption, empirical-non-empirical literature and types of empirical literature was compared. The literature had to be scored again each time to do these comparisons.

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<sup>5</sup> This adds to 37 instead of the 36 empirical studies because one study included two types.

## Discussion

The PRISMA checklist was a usable guide for the systemic literature review. That Voorberg, Bekkers and Tummers (2015) and Cinar, Trott and Simms (2019) also used it successfully also suggests it is serviceable. It has a number of downsides, however. First, its format does not concur with that of the usual public policy/administration article and it lacks a category to discuss the contribution of the research. It is a technical approach. Second, it is evidence-focussed but public policy is only somewhat so. Third, it assumes it is assessing experiments with one variable. Public policy antecedents and interventions are much more complex, social and are almost never limited to one variable (mean number of antecedents/article 6.8). Their meaning and what they relate to was sometimes not discussed.

**Summary of evidence.** The literature identified many antecedents of trailblazing of innovation: 87 documents were reviewed on trailblazing of public policy innovation, 594 antecedents identified; 21 articles specifically on trailblazing, 131 antecedents, 6.2 antecedents/article. This does not seem a large number of antecedents to describe per paper and reflects the lack of a full discussion of antecedents in some papers. Nonetheless, the antecedents likely partially explain the contexts and resources available to an innovation, proposed, approved and implemented. Antecedents may continue to influence evaluation, dissemination and survival/failure stages.

Antecedents were the sole focus of only a few articles: much literature considered antecedents as one among other issues; some considered antecedents only in passing. This contributed to many determinants of innovation being identified. Quantitative measures have been used somewhat but the data could only be accumulated analytically because so many different antecedents were identified. Another paper could group the antecedents more to see whether greater clarity can be created about the kinds of antecedents that authors considered important.

The order in which innovations were introduced was studied more in earlier innovation literature and in studies of progressive governments than today, when interest tends to focus on retrenchment and whether an innovation has been adopted, encouraging a mimetic approach: Studies typically do not identify the order of adoption. This is in part a practical issue, determined by what information is available and whether information and research funding can be secured. Surveys of managers, e.g., typically ask whether an innovation has been adopted and do not inquire about the order of adoption (e.g., Koch, Cunningham, Schwabsky and Haukness, 2006), which they may not know. Only original research (e.g., Poel, 1976; Glor, 1997) and one survey (Bloch and Bugge, 2013) asked about order. Occasionally an original dissemination study identifies both (e.g., Colvin, 2006). These are the main trailblazing sources of information.

Some policy innovation studies (e.g., Collier and Messick, 1975; Poel, 1976; Glor, 1997; Colvin, 2006) focused on or included research on which governments were trailblazers but most studies have focused on dissemination of public administration (e.g., Walker, 1969; Gray, 1973; Mohr, 1969) and management (NPM) innovations without reference to the trailblazers. The current study cast a wide net by including not only studies exclusively on trailblazing of policy innovation but also on research that studied adoption but did not specify a stage and therefore

probably included some trailblazing

**Limitations and Strengths.** This study has both. The most important limitation is that literature on all stages of adoption of innovation were sometimes combined with papers exclusively on trailblazing in order to be sure to include all trailblazing antecedents. There were insufficient numbers of papers exclusively on trailblazing to draw many conclusions. More work is needed on inventions and early adoptions.

Another limitation is the difference in what empirical and non-empirical literature can cover. Quantitative data required antecedents be measured and were limited to studying N-1 antecedents. Non-empirical literature could only address a limited number of antecedents in detail. That the numbers of antecedents found in each cluster are dissimilar among the clusters provides some evidence that the clusters exist and that the literatures address somewhat dissimilar issues. The numbers of antecedents found in the clusters are somewhat different. Again, this provides some evidence that the grouped antecedents and clusters exist in the literature.

The strengths of this study are that it identifies the antecedents identified in the policy trailblazing literature, assesses the status of the research, identifies the major interests of researchers and what they think the antecedents are. This has not been done before and therefore fills a gap. It also highlights the political antecedents more clearly.

**Is a SLR an appropriate approach?** This is a broader question, raising additional issues. In medical research, humans across the world are sufficiently similar that a medical or pharmaceutical intervention is likely to have the same impacts. This is not, however, as likely to be true between men/women/children, adults and seniors. A good deal of medical research ignores these differences. *First*, in public policy, differences are likely to be magnified. Historical, governance environment, domain of intervention, ideology/politics, internal culture and many more differences exist. The comparability of a policy innovation introduced in different countries, states and governments may be more limited. *Second*, one sector may not have the same reaction to an innovation as another; e.g., collaboration could be more effective in the social sector than the economic sector, developed countries than less developed; local governments than state, national or international ones. *Third*, policy innovations may not be as comparable as medicine across countries, governments, interventions and sectors as medical interventions, which exist in one or two (human/animal) populations, sectors, disciplines and problems. The medical SLR methodology can be applied to policy innovation but policy and innovation are not one thing, but rather they are concepts applied across many domains. To render them comparable may require many more studies.

## Conclusion

It was possible to conduct a SLR of trailblazing of public policy innovation using the PRISMA checklist: it could be considered for other SLRs as well but with care. Eighty-seven documents met the criteria—this is a sufficiently large number for a SLR—that identified 594 antecedents--many antecedents were identified because authors used numerous terms for

antecedents. They aggregated into 508 unique antecedents, 28 unique grouped antecedents, 5 factors and 3 clusters. The contents were examined in this paper. A large number of internal antecedents were identified. This may indicate internal antecedents were the most important, or the easiest to study (elected and appointed public servants could be successfully approached); the most familiar and understood; of most interest to stakeholders or funders, public servants or researchers; the phenomenon was complicated or complex; the audience was presumed to be elected or appointed officials; they were the most controllable and safest—or, this is where the most innovations or antecedents occurred. This internal focus for influences on trailblazing of policy was surprising but external and political antecedents were also noted.

Individual articles dealt with a limited number of antecedents (mean 6.8/document). By doing so, scholars portrayed policy innovation as simpler than the totality of the literature presented it. In particular, large numbers of antecedents were identified for two issues of current interest: innovation capacity and collaboration with citizens, users and service providers.

Schools within which the examination of policy innovation occurred may be having an effect on antecedents of interest; e.g., political scientists are interested in the political cluster and economy,<sup>6</sup> new institutionalists and public policy scholars in ecology, history, time and institutions and studying change.

The variable language used for antecedents raised the question of whether authors have considered what other authors have said about antecedents. Some items gave the impression of being self-standing work rather than an effort to build on existing knowledge and suggested the antecedents of each innovation are unique. While this is doubtless partially true, progress in understanding the antecedents of innovation cannot be made unless knowledge is accumulated. The large number of antecedents testifies to lack of theory, integration and classification in the innovation field. It also questions the level at which antecedents should be considered.

*Future research.* The notion that public policy innovation can be studied as one phenomenon—adoption—needs further examination. I found the antecedents of policy innovation adoption were somewhat different from trailblazing. Researchers should identify the trailblazers when they study adoption.

The research so far has four primary weaknesses that need to be addressed. First, lack of comparability among studies and sometimes lack of basic data such as N. This includes the implicit assumption that public policy innovation is all one thing and that the antecedents of trailblazing of different types of innovation are similar; e.g., that the antecedents of economic and income security policy innovations are similar. This needs to be checked. Second, this study had to use a wide screen to identify antecedents of trailblazing of policy innovation. More trailblazing research is needed. Third, the types of antecedent identified most varied by type of study (e.g., surveys, etc. vs case studies). A bias may have been introduced by the types of study chosen. Presumably, certain types of research lend themselves to certain types of antecedents but authors should give careful consideration to the type of methodology chosen. Fourth, there are too few studies of the same type of innovation to allow direct comparison and meta-analyses. This

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<sup>6</sup> The right-wing has been seeking to defund university political science departments in USA and Canada, and has succeeded at some universities; e.g., University of Regina, Canada).

problem is inherent to the study of trailblazing. Trailblazing has not been studied a lot or maybe there are not a lot of them, especially with constrained government activity. As more trailblazings and adoptions are studied, more comparisons may be possible.

Hopefully more research will be done on antecedents of trailblazing and comparison studies will be done. Their results could be compared to findings in this paper. If enough research is done on the same antecedents, it may be possible to identify empirical studies that are comparable and do a meta-analysis on them. Researchers should also explore whether antecedents of dissemination and fate of public policy and public administration/management innovations and the more general public policy/process literature are influenced by similar/different antecedents and whether they address/ignore the political premises on which they are based and their effects. It would also be interesting to see whether the differences found in types of antecedents in this SLR are replicated.

In the medical field, researchers knowledgeable about SLRs and meta-analyses initially held a conference to develop their checklist. To determine whether a separate one is needed in the public innovation field would require a group to gather, perhaps at a large conference, to discuss whether the field needs to and is ready to develop a protocol for SLRs and whether and how this could be done. Some progress has been made by the Nordic research project Measuring innovation in the public sector in the Nordic countries (MEPIN) whose objective is to: “develop a measurement framework for collecting internationally comparable data on innovation in the public sector, which both will contribute to our understanding of what public sector innovation is and how public sector organisations innovate and ... develop metrics for use in promoting public sector innovation” (Bloch, 2011: 5). This work is not complete.

### **About the Author:**

*Eleanor D. Glor* is Editor-in-Chief and Founding Publisher of *The Innovation Journal: The Public Sector Innovation Journal* ([www.innovation.cc](http://www.innovation.cc)) and Fellow, McLaughlin College, York University, Toronto, Canada. She worked for the Government of Canada, two Canadian provincial governments, a regional municipality and a city during her career as a public servant. Eleanor has published about innovation in the areas of aging, rehabilitation, public health, aboriginal health, Saskatchewan and other Canadian innovations. She has published six books, five chapters and numerous articles on public sector innovation from an organizational, especially a public service perspective.

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