Comparisons of Antecedents of Trailblazing/Adoption and Quantitative/Qualitative Studies of Public Policy Innovation Identified in a Systematic Literature Review
– IV

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ABSTRACT

Are the antecedents identified in trailblazing/adoption and quantitative/qualitative public policy innovation studies similar or different? This quantitative study answers this question by identifying, categorizing and analyzing their antecedents, identified in a systematic literature review (SLR). Trailblazing is the first three adoptions of an innovation in its population/ community, adoption is all adoptions, in any organization. If their antecedents were different, this would lend credibility to the idea that they are different phenomena. The criteria for inclusion in the SLR were met by 87 publications; 594 antecedents were identified. Analysis identified 508 unique antecedents, 28 grouped antecedents, 5 factors and 3 clusters.

In 21 trailblazing studies, 131 antecedents were identified, a mean of 6.2 antecedents per document: 57 internal grouped antecedents, 38 political and 36 external antecedents. The most important (most mentioned) antecedents were part of internal cluster. In 66 adoption studies, 463 antecedents were identified, 7.0 per document, 12.9 per cent more. The number of antecedents found in trailblazing and adoption were different (different defined as =>10% difference). In adoption studies, internal antecedents (247) were also mentioned most, followed by 135 external and 81 political antecedents. Internal cluster (total of 304 antecedents) is relevant to the internal operations of a government; political (119) to the political domain, outside the government; external (171) to the environment outside both the government and the political domain. Between trailblazing and adoption, of 28 grouped antecedents, some were similar (16) (<10% different), more were different (12) (=>10% difference in their proportion of their cluster). Trailblazing and adoption do not appear to be the same phenomena.

Quantitative and qualitative studies were also compared. In 37 quantitative studies, 248 antecedents, a mean of 6.7 antecedents per study and in 50 qualitative studies, 346 antecedents, a mean of 6.9 per study were found. This is a difference in the mean number of antecedents found per study of 3.0%, similar means. In quantitative literature, 122 internal antecedents, 76 external and 50 political were identified. In qualitative literature, 182 internal, 95 external and 69 political antecedents were mentioned. Some grouped antecedents of quantitative and qualitative studies were similar (19), fewer were different (8). Grouped antecedents of trailblazing and adoption studies were more different and those of quantitative and qualitative studies were more similar.

Key words: Public policy innovation, innovation antecedents, innovation adoption, innovation trailblazing, innovation variables, innovation stages, systematic literature review.

Introduction

Dissemination (diffusion) of policy innovation, focused on whether an innovation has been introduced into a government (yes/no) has been a major interest in the public administration but not so much the policy innovation literature, which focuses on individual innovations. Adoption is any implementation of an innovation in an organization. Trailblazing, the first three adoptions in a population/community is more difficult to accomplish because it occurs when the innovation is new in the population/community and may be more difficult to research because there is far less trailblazing than adoptions and later adoptions are more credible. Trailblazing may have different antecedents.

Trailblazing is up to the first three times an innovation is implemented in governments' or innovations' populations (e.g. all USA states) or communities (e.g. a professional community), a larger context than adoption in a single government, the definition of innovation often used in adoption studies. Adoption is implementations. Examples of trailblazing are Germany when it introduced a social security program for the first time worldwide in 1883, a public program to cover the costs of sickness and maternity services; a work injury program in 1884; and a pension program in 1889, all worldwide firsts, introduced by a conservative government (Collier and Messick, 1975). Saskatchewan, Canada trailblazed 126 policy innovations, 1971-82 (social democratic government) (Glor, 1997). California was the first USA state to adopt a policy banning discrimination based on sexual orientation, in 1979 (Democratic government) (Colvin, 2006).

In five Nordic governments, a survey found 20 – 30 per cent of all public service respondents stated they were the first to introduce the innovations studied, presumably in their organization (Bloch and Bugge, 2013). This is congruent with Rogers' (1995) definition of innovation as anything perceived as new by the adopter; it is a common economic definition, based on Schumpeter (1942). Rogers (1995: 22) distinguished novelty in a *system* in five adoption stages: (1) innovation (invention), (2) early adoption, (3) early majority, (4) late majority, and (5) laggard adoption. Together, they describe all the adoptions of an innovation in a system, from most to least novel. Rogers did not give them objective definitions but identified the stages as ordinal and specific to each innovation. Bloch (2011: 16) defined two degrees of novelty: (1) first to develop and introduce the innovation; (2) an innovation already introduced by others, but new for the organization. We(I) (1997; 2002; 2017a, b; 2019) defined Rogers' first two stages (invention/innovation, early adoption) as trailblazing, and defined them objectively as the first, second and third adoptions in a government's community or population (systems) and as an improvement (1997: 4). Dissemination is fourth and subsequent adoptions. A community is a community of practice (e.g. members of a professional association). A population is a group of similar governments (e.g. national or federal governments).

Antecedents are conditions and activities existing before a decision to implement an innovation is taken. They have the potential to influence a decision to adopt an innovation and are

independent variables for the decisions. The data for this study was collected in a systematic literature review (SLR) of trailblazing and adoption. 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" (Moher et al, 2009). The SLR methodology is outlined in Glor (2021a). The Commonalities and differences and which antecedents and clusters are seen as important in trailblazing (early adoption) and adoption of policy options as found in the SLR are examined in Glor (2021b). An inventory, taxonomy and classification system for the antecedents is developed in Glor (2021c)—they are used here. The analysis of unique antecedents (508) produced a table that includes all the antecedents, identifies the number of times each unique term was used, and allocates them to grouped antecedents, factors and clusters (available on request). The levels are classified, in a hierarchy, as antecedents, unique antecedents, grouped antecedents, factors and clusters. This paper attempts to identify and distinguish the antecedents of trailblazing/adoption and quantitative/qualitative studies of public policy innovation, to determine whether they can be distinguished, are different/similar and whether they are important/unimportant in the literature. Trailblazing/adoption and quantitative/qualitative make good comparisons because they are about different things—stage of adoption on one hand and methodology on the other. A fifth paper (Glor, 2021d) compares the antecedents of some different types of innovation as found in literature reviews, SLRs and meta-analyses, such as policy trailblazing in a population/ community; adoption, processes, dissemination among organizations; private, public and public-social sectors.

The SLR of 87 peer-reviewed publications found 21 publications on trailblazing and 66 on adoption. Adoption was found in literature that said it was about adoption and did not say it was about dissemination or diffusion. Adoption is defined as all of Rogers' five stages of adoption (invention/innovation, early adoption, early majority, late majority, laggard) in a population of governments or a community e.g. of professionals, politicians. Rogers expected the adoption curve to define innovativeness and to have specific ranks in a system. He did not a define system but populations and communities can be treated as systems. Trailblazing is defined as Rogers' first two stages, defined quantitatively as the first three adoptions in a population or community. The SLR searched for literature on antecedents of trailblazing and adoption policy adoption. Adoption includes a small amount of trailblazing.

This paper also distinguishes the antecedents identified in the trailblazing/adoption literature as quantitative/qualitative. In the 87 documents, the SLR found 37 quantitative and 50 qualitative studies. Quantitative data can be counted, measured and expressed using numbers. Besides being nominal and ordinal, its data is interval and ratios can be calculated. Qualitative data is descriptive and conceptual. It can be categorized based on traits and characteristics to produce nominal and ordinal data.

First, this quantitative study considers whether the antecedents of trailblazing and adoption of policy innovation identified are similar or different. Second, it assesses whether antecedents of quantitative and qualitative studies of them are similar or different and third, it compares whether the two types of studies identify the same or different antecedents. The paper tests five hypotheses:

H1: Antecedents of trailblazing and adoption of public policy innovation cannot be distinguished.
*H2***:** Antecedents of trailblazing and adoption of public policy innovation are similar.
H3: Antecedents of quantitative and qualitative studies of public policy innovation cannot be distinguished.
H4: Antecedents of quantitative and qualitative studies of public policy innovation are different.
H5: Antecedents of trailblazing/adoption form so many common patterns with quantitative/qualitative antecedents that they are not different.

The next stages of this paper are as follows. First, the methodology is explained. Second, the results are outlined and the hypotheses tested. Third, results are discussed. Finally, conclusions are drawn.

Methodology

A SLR of trailblazing and adoption was conducted. The SLR data collection process is outlined in Glor (2021a). The data was reviewed four times, a fourth time to distinguish quantitative/qualitative studies.

Data selection and collection process. The criteria for including documents in the SLR were (1) public sector, including government, state agencies and state-owned enterprises; (2) policy (including programs); (3) innovation trailblazing or adoption; (4) antecedents identified; (5) in English. Literature could have been published any year, in any peer-reviewed publication. Eighty-seven documents met the criteria, mentioning 594 antecedents, that were assessed for duplicates, to create unique antecedents (508) then were classified into 28 grouped antecedents, 15 factors within clusters, 5 factors across clusters and 3 clusters. Attention was paid to whether differences in the data made it dissimilar.

Analyses. The data was distinguished as trailblazing/adoption and quantitative/ qualitative. The quantitative data was divided by its sources of data—yearbooks, surveys/ questionnaires, case studies (multiple/single) and other quantitative sources. Data are reported as numbers and percentages of grouped antecedents, factors (identified but not explored here) and clusters. Comparisons are conducted of numbers and proportions of grouped antecedents, factors and clusters in the categories of trailblazing/adoption and quantitative/qualitative studies.

Summary measures. The trailblazing/adoption and quantitative/qualitative data were compared as numbers and percentages within grouped antecedents, factors and clusters. These were compared (see Results) and similarities/differences defined and identified. Hypothesis measures are indicated in Table 1.

Risk of bias. Some quantitative research considered one or many innovations, others collected information from yearbooks, surveys/questionnaires, one innovative government (e.g. Glor, 1997), many governments (e.g. Cutright, 1965; Mohr, 1969) or in other quantitative fashion. Sources of information, definitions, approaches and what was studied were not standardized in the literature Some studies were quantitative (37), others qualitative (50 studies).

For the most part they did not accumulate evidence but this study does so. Some similar antecedents were identified (86) but different terms (508 unique terms) were usually used.

Table 1: Hypotheses and their Measures

Hypotheses	**Measures**
H1: Antecedents of trailblazing and adoption of public policy (including program) innovation cannot be distinguished.	Conduct an SLR of antecedents of policy innovation trailblazing (first three adoptions) and adoption (all adoptions). Identify and count number of antecedents of trailblazing/adoption and quantitative/qualitative literature. Identify their antecedents, analyze and classify them into antecedents, unique antecedents, grouped antecedents, vertical and horizonatal factors and clusters. If this can be done, trailblazing and adoption literature can be distinguished.
H2: Antecedents of trailblazing and adoption of public policy innovation are similar.	Similarity of trailblazing and adoption grouped antecedents is measured as <10% of a cluster's antecedent count. Difference of trailblazing and adoption grouped antecedents is measured as =>10% of a cluster's antecedent count.
H3: Antecedents of quantitative and qualitative studies of public policy innovation cannot be distinguished.	Analyze the antecedents of policy trailblazing and adoption literature into quantitative and qualitative studies. Identify and count their antecedents. Classify and count them into unique antecedents, grouped antecedents, vertical and horizontal factors and clusters of quantitative and qualitative studies. If this cannot be done, they cannot be distinguished. If this can be done, they can be distinguished.
H4: Antecedents of quantitative and qualitative studies of public policy innovation are different.	For quantitative and qualitative studies, identify and classify their antecedents, unique antecedents, grouped antecedents, factors and clusters. Distinguish grouped antecedents of quantitative and qualitative studies as similar or different by defining similar as a difference between grouped antecedents of <10% as a portion of their clusters and different as =>10% of a cluster.
H5: Antecedents of trailblazing/adoption form so many common patterns with quantitative/qualitative antecedents that they are not different.	Compare per centages of grouped antecedents for categories of trailblazing/ adoption and quantitative/qualitative. Treat a difference between trailblazing/adoption and quantitative/qualitative of <10% as similar and =>10 as different. Compare differences of sign as a measure of difference. Identify patterns by subtracting difference for each quantitative/qualitative grouped antecedent from difference for each same trailblazing/adoption grouped antecedent. Determine whether they are similar or different: I. Percentage of grouped antecedents -Calculate the difference between per centages of grouped antecedents within trailblazing/adoption and quantitative/qualitative studies II. Difference of differences -Calculate difference of differences: <10 per centage points is a common pattern between trailblazing/adoption and quantitative/qualitative grouped antecedents =>10 per centage points is a different pattern between trailblazing/adoption and quantitative/qualitative grouped antecedents III. Consider meaning of different signs

Results

Initially the published terms were identified (594); the 87 documents analyzed did not use consistent terminology for their antecedents. They were therefore analyzed into an inductive terminology and classification system of 508 same/similar unique antecedents, 28 grouped antecedents, 15 factors (5 that applied to all clusters) and 3 clusters (Glor, 2021cIII).

Table 2: Numbers and Differences, Grouped Antecedents of Trailblazing/Adoption, Quantitative/ Qualitative Studies

Types of Grouped Antecedents:	Trail-blazg	Adop-tion	Dif **	Tr + Adopn	Quant	Qual	Dif ***	Quant + Qual
External Cluster Grouped Antecedents:								
External Environment No.	11	14	*-3*	*25*	14	11	*+3 M*	*25*
Institutional context No.	1	16	*-15*	*17*	6	11	*-5 L*	*17*
Governance Environment No.	1	31	*-30*	*32*	9	23	*-14 L*	*32*
Citizen pressure/role No.	8	42	*-34*	*50*	17	33	*-16 L*	*50*
Policy No.	0	17	*-17*	*17*	10	7	*+3 M*	*17*
Drivers/Demands (push)/ external support/good economy) No.	7	6	*+1*	*13*	8	5	*+3 M*	*13*
Obstacles/Barriers (Inventory low/Pull) No.	4	7	*-3*	*11*	6	5	*+1 B*	*11*
Influence of other governments/ regions No.	4	2	*+2*	*6*	6	0	*+6 M*	*6*
Total External Cluster No.	*36*	*135*		*171*	*76*	*95*		*171*
% Vertical	*100.6*	*100.1*			*100.0*	*100.1*		
Cluster Vertical %	*27.5*	*29.2*		*28.8*	*30.6*	*27.5*		*28.8*
Cluster Horizontal %	*21.1*	*78.9*		*100.0*	*44.4*	*55.6*		*100.0*
Political Cluster:								
Ideology[1] No.	8	9	*-1*	*17*	10	7	*+3*	*17*
Politics No.	4	20	*-16*	*23*	8	16	*-8*	*23*
The Political No.	0	6	*-6*	*6*	1	5	*-4*	*6*
Political culture No.	8	20	*-12*	*28*	9	19	*-10*	*28*
Political Support No.	9	1	*+8*	*10*	9	1	*+8*	*10*
Political Actors/People No.	0	22	*-22*	*22*	3	x19	*-16*	*22*
Drivers/demands No.	6	0	*+6*	*6*	6	0	*+6*	*+6*
Political barriers No.	0	3	*-3*	*3*	1	2	*-1*	*3*
Inclusive process for building political platform No.	3	0	*+3*	*3*	3	0	*+3*	*3*
Total Political Cluster No.	*38*	*81*	*-43*	*119*	*50*	*69*	*-19*	*119*
Vertical %	*29.0*	*17.5*		*19.9*	*20.2*	*19.9*		*19.9*

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[1] The SLR reviewed 6 papers published before and 81 published after the neoliberal turn in government ideology starting in about 1979.

Types of Grouped Antecedents:	Trail-blazg	Adop-tion	Dif **	Tr + Adopn	Quant	Qual	Dif ***	Quant + Qual
Horizontal %	*32.2*	*67.8*		*100.0*	*42.0*	*58.0*		*100.0*
Internal cluster:								
Problem, Creativity, Ideas No.	14	36	*-22*	*50*	8	42	*-34*	*50*
Enhance capacity to innovate No.	0	x13	*-13*	*13*	8	5	*+3*	*13*
Internal only No.	0	3	*-3*	*3*	1	x2	*-1*	*3*
Organizational culture/climate No.	6	19	*-13*	*25*	15	10	*+5*	*25*
Structure No.	13	29	*-16*	*42*	21	21	*0*	*42*
Innovation process No.	8	62	*-54*	*70*	39	31	*+8*	*70*
Obstacles/Barriers (pull) No.	1	28	*-27*	*29*	13	16	*-3*	*29*
Demand (push, drivers) No.	5	27	*-22*	*32*	3	29	*-26*	*32*
People:								
People only No.	5	11	*-6*	*16*	7	9	*-2*	*16*
Other people No.	5	16	*-11*	*21*	5	16	*-11*	*21*
People/employees, Staff/ individual characteristics No.	0	3	*-3*	*3*	2	1	*+1*	*3*
Total Internal No.	*57*	*247*	*-190*	*304*	*122*	*182*	*-60*	*304*
Vertical %	*43.5*	*53.3*		*51.3*	*49.2*	*52.6*		*51.3*
Horizontal. %	*18.8*	*81.3*		*100.1*	*40.1*	*59.9*		*100.0*
Grand Total :	**131**	**463**		**594**	**248**	**346**	**+98**	**594**
Vertical %	*100.0*	*100.0*		*100.0*	*100.0*	*100.0*		*100.0*
Horizontal %	*22.1*	*77.9*		*100.0*	*41.8*	*58.3*		*100.1*
# of documents	**21**	**66**		**87**	**37**	**50**		**87**
% of documents	**24.1**	**75.9**		*100*	**42.5**	**57.5**		*100.0*

Abbreviations: TR=trailblazing, Adopn=adoption, dif=difference, no.=number, antec= antecedent, quant=quantitative, qual=qualitative. **** Difference:** Number of mentions for Trailblazing minus number of mentions for Adoption. ***** Difference:** Number of mentions for Quantitative minus number of mentions for Qualitative.

H1: Antecedents of trailblazing and adoption cannot be distinguished.

Of 87 documents retained for analysis from the SLR, using the definitions and criteria identified earlier, 21 were on trailblazing (131 antecedents, a mean of 6.2 antecedents) and 66 on adoption (463 antecedents, a mean of 7.0 antecedents per document) (Table 2), a difference of 12.9 per cent. Antecedents of trailblazing and adoption could be distinguished by the means of antecedents studied: H1 that antecedents of trailblazing and adoption cannot be distinguished was thus not supported and provided some evidence that antecedents of trailblazing and adoption can be distinguished.

H2: Antecedents of trailblazing and adoption are similar

Trailblazing publications (21) identified 131 antecedents, a mean of 6.2 per document; adoption publications (66) identified 463 antecedents, a mean of 7.0 per document, a difference of 12.9 per cent per document (Table 3). The mean antecedents per document are different: H2 is therefore not supported by this measure.

Table 3: Comparison of Antecedent Totals Trailblazing/Adoption and Quantitative/ Qualitative Data

Types of Grouped Antecedents	Grand Total	Trail-blazing	Adoption	Trailblazing + Adoption	Quantita-tive	Qualita-tive	Quant + Qual
Grand Total	594	131	463	594	248	346	594
Vertical %	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Horizontal %	100.0	22.1	77.9	100.0	41.8	58.3	100.1
# documents	87	21	66	87	37	50	87
% documents	100	24.1	75.9	100	42.5	57.5	100.0

An interesting difference was the greater importance of political cluster for trailblazing than adoption (Table 4). This is not surprising finding because elected officials may be less involved when many other governments have already adopted an innovation but it is an important one for trailblazing. This suggests that not only the cabinet and legislature but also the political domain must, at least in some cases, be onside to secure approval for trailblazing.

Table 4: Comparison of Grouped Antecedents of Trailblazing and Adoption Studies by Cluster

	External Cluster Antecedents	Political Cluster Antecedents	Total External + Political	Internal Cluster Antecedents	Total Grouped Antecedents
Total Trailblazing (21 docs)	*36*	*38*	*74*	*57*	*131*
Horiz %	27.5	29.0	56.5	43.5	100.0
Vertical %	21.1	31.9	25.5	18.8	22.1
Total Adoption (66)	*135*	*81*	*216*	*247*	*463*
Horiz %	29.2	17.5	46.7	53.3	100.0
Vertical %	78.9	68.1	74.5	81.3	77.9
Are trailblazing & adoption different?					
Grand Total (87)	**171**	**119**	**290**	**304**	**594**
Horizontal %	*28.8*	*20.0*	*48.8*	*51.2*	*100.0*
Vertical %	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Note: This table is a summary of data from Table 2.

Fewer important (=>10%) *internal* antecedents were identified than for the other clusters, mathematically because so many more internal antecedents were identified. Internal antecedents are relevant to the internal operations of a government, including the cabinet, legislature and civil service; political ones relate to the political domain outside the government, including ideology, politics and political parties; external antecedents relate to the environment outside the government and outside the political domain—e.g. the economy, society and population; governance environment (e.g. democracy); institutional context (legal culture, legitimacy); the citizen role; influence of other governments/regions; and policies. The proportion of grouped antecedents in external cluster of the trailblazing and adoption literature (27.5 vs. 29.2%) was similar but the proportion was different in political cluster (29.0 vs. 17.5%, a difference of 11.5 per centage points) and internal cluster (43.5 vs. 53.3%, a difference of 9.8 per centage points, almost 10). An interesting commonality between trailblazing and adoption literature was the

finding that internal cluster antecedents are the most important (most numerous). This suggests scholars think the antecedents of activity within government are most important to both trailblazing and adoption of policy innovations. I/we are surprised, given the requirements and difficulty securing support for trailblazing. While internal antecedents were most important for both trailblazing and adoption, there was quite a difference in their importance: 43.5 vs 53.3% of antecedents (Table 5).

Table 5: Major* Per Centage Differences between Trailblazing and Adoption per Grouped Antecedent by Cluster

Grouped Antecedents with Major Differences (=>10% points)	Trailblazing Cluster %	Adoption Cluster %	Standardized: Difference* %
External Cluster:			
External Environment/Context %	30.6	10.4	*+20.2*
Governance Environment %	2.8	23.0	*-20.2*
Policy %	0	12.6	*-12.6*
Drivers/Demands (push)/ external support/good economy) %	19.4	4.4	*+15.0*
Total External Cluster No.	*36*	*135*	*171*
Total Cluster %	*100.0*	*100.1*	*100.0*
Cluster Vertical %	*27.5*	*29.2*	
Cluster Horizontal %	*21.1*	*78.9*	*100.0*
Political Cluster:			
Ideology %	21.1	11.1	*+10.0*
Politics %	10.5	24.7	*-14.2*
Political Support %	23.7	1.2	*+22.5*
Political Actors/People %	0	27.2	*-27.2*
Drivers/demands %	15.8	0	*+15.8*
Total Political Cluster No.	*38*	*81*	*119*
Total Cluster %	*100.1*	*100.0*	*100.0*
Cluster Vertical %	*29.0*	*17.5*	
Cluster Horizontal %	*32.2*	*67.8*	100.0
Internal cluster:			
Problem, Creativity, Ideas %	24.6	14.6	*+10.0*
Structure %	22.8	11.7	*+11.1*
Innovation process %	14.0	25.1	*-11.1*
Total Internal Cluster No.	*57*	*247*	*-190*
Total Cluster %	*100.1*	*99.9*	
Vertical %	*43.5*	*53.3*	
Horizontal. %	*18.8*	*81.3*	*100.1*
Grand Total	**131**	**463**	**594**
Vertical %	*100.0*	*100.0*	100.0
Horizontal %	*22.1*	*77.9*	100.0
# of documents	**21**	**66**	**87**
% of documents	**24.1**	**75.9**	*100.0*

* Major is defined as =>10% difference between portion of cluster within trailblazing and adoption. *** Difference**= Per centage of mentions for Trailblazing minus per centage of mentions for Adoption. Note: 16 grouped antecedents do not appear.

In Table 2, the differences in the numbers of grouped antecedents mentioned in trailblazing and adoption literature are compared. In external cluster, there were substantially more mentions in adoption of four grouped antecedents—institutional context (15 more, only 1 mention in trailblazing), government environment, citizen pressure/role and policy. These four accounted for 96 of the 103 different counts, 93.2 per cent. Scholars think the importance of grouped antecedents of trailblazing and adoption are different in external cluster. Three of the grouped antecedent major differences (Table 5) were structural (governance environment, policy), two non-structural (external environment, drivers). In political cluster, five grouped antecedents exhibited major differences (difference =>10 mentions) between trailblazing and adoption: political actors/people, political support, drivers, politics and ideology. None of the political major differences was structural. In internal cluster, there were fewer major differences between grouped antecedents of trailblazing and adoption. The biggest differences (11.1% points) were for structure and the innovation process (11.1%), both structural. A third major difference was problem, etc. (10% points). Policy, the political, political actors, political barriers, enhance capacity to innovate, internal only and people, etc. were not mentioned in the trailblazing literature. Drivers, etc. and inclusive process for building political platform were not mentioned in the adoption literature.

The antecedents of trailblazing and adoption identified in the SLR are close to a full population because the literature assessed is the full population of literature or at least, close to it. Statistical analysis is therefore not appropriate: the data is not a sample. Rather, the data collected is accurate for the population.

Because there were so many more adoption than trailblazing studies, they were standardized by using per centages. Table 5 standardizes the differences by comparing the proportion each grouped antecedent represented of its cluster. It only lists the 12/28 differences (=>10 % points). The adoption per centage is subtracted from the trailblazing per centage, to calculate the difference between trailblazing and adoption. For example, the grouped antecedent external environment is 10.4 per cent of the external cluster for adoption and 30.6 per cent of the external cluster for trailblazing. The difference is 20.2 per centage points, a major difference. The per centages are compared rather than the numbers within each cluster because the numbers of trailblazing (21) and adoption (66) studies are different and adoption therefore has more antecedents. This approach adjusts for that difference and clear differences emerge with the standardization. Sixteen grouped antecedents of trailblazing and adoption were not different (<10 per centage points). Since 18 grouped antecedents were similar but 12 were different, H2 that trailblazing and adoption are similar was not entirely supported. This provided evidence that some antecedents of trailblazing and adoption are different and clarifies which ones (Table 5).

H3: Antecedents of quantitative and qualitative studies of public policy innovation cannot be distinguished.

The quantitative research (37 documents, 248 antecedents, a mean of 6.7 antecedents/study) studied fewer antecedents than the qualitative research (50 documents, 346 antecedents, a mean of 6.9/study), a difference of means of 3.0%, a small difference and therefore similar means (Table 2). While the publications covered a wide range of antecedents, they did not cover sufficiently similar issues to be able to be combined into a meta-analysis.

Table 6: Differences of Per Centages for Grouped Antecedents as a Proportion of Clusters for Trailblazing/Adoption and Quantitative/Qualitative Data

Types of Grouped Antecedents (Vertical Measures):	Trail-blazing	Adop-tion	Differ-ence*	Quant.	Qual.	Differ-ence**	Dif. Bet. Col. 4 & Col. 7
External Cluster:							
External Environment/ Context %	30.6	10.4	*+20.2*	18.4	11.6	*+6.8*	**13.4**
Institutional context %	2.8	11.9	*-9.1*	7.9	11.6	*-3.7*	**12.8**
Governance Environment %	2.8	23.0	*-20.2*	11.8	24.2	*-12.4*	**7.8**
Citizen pressure/role %	22.8	31.1	*-8.3*	22.4	34.7	*-12.3*	**4.0**
Policy % Vertical	0	12.6	*-12.6*	13.2	7.4	*+5.8****	**18.4**
Drivers/Demands (push)/ external support/good economy) %	19.4	4.4	*+15.0*	10.5	5.3	*+5.2*	**9.8**
Obstacles/Barriers (Inventory low/Pull) %	11.1	5.2	*+5.9*	7.9	5.3	*+2.6*	**9.5**
Influence of other governments/regions %	11.1	1.5	*+9.6*	7.9	0	*+7.9*	**1.7**
Total External No.	*36*	*135*		*76*	*95*		
External %	*100.6*	*100.1*		*100.0*	*100.1*		
External % of Grand Total	*27.5*	*29.2*		*30.6*	*27.5*		
Horizontal %	*21.1*	*78.9*		*44.4*	*55.6*		
Political Cluster:							
Ideology %	21.1	11.1	*+10.0*	20.0	10.1	*+9.9*	**0.1**
Politics %	10.5	24.7	*-14.2*	16.0	23.2	*-7.2*	**21.4**
The Political %	0	7.4	*-7.4*	2.0	7.2	*-5.2*	**2.2**
Political culture %	21.1	24.7	*-3.6*	18.0	27.5	*-9.5*	**5.9**
Political Support %	23.7	1.2	*+22.5*	18.0	1.4	*+16.6*	**5.9**
Political Actors/People %	0	27.2	*-27.2*	6.0	27.5	*-21.8*	**5.4**
Drivers/demands %	15.8	0	*+15.8*	12.0	0	*+12.0*	**3.8**
Political barriers %	0	3.7	*-3.7*	2.0	2.9	*-0.9*	**2.8**
Inclusive process for building political platform %	7.9	0	*+7.9*	6.0	0	*+6.0*	**1.9**
Total Political No.	*38*	*81*		*50*	*69*		
Total Political %	*100.1*	*100.0*		*100.0*	*99.8*		
Political % of Grand Total	*29.0*	*17.49*		*20.2*	*19.9*		
Horizontal %	*32.2*	*67.8*		*42.0*	*58.0*		
Internal Cluster:							
Problem, Creativity, Ideas %	24.6	14.6	*+10.0*	6.6	23.1	*-16.5*	**26.5**
Enhance capacity to innovate %	0	5.3	*-5.3*	6.6	2.7	*+3.9*	**9.2**
Internal only %	0	1.2	*-1.2*	0.8	1.1	*-0.3*	**0.9**
Organizational culture/climate %	x10.5	7.7	*+2.8*	12.3	5.5	*+6.8*	**4.0**
Structure %	22.8	11.7	*+11.1*	17.2	11.5	*+5.7*	**5.4**
Innovation process %	14.0	25.1	*-11.1*	32.0	17.0	*+15.0*	**26.1**
Obstacles/Barriers (pull) %	1.8	11.3	*-9.5*	10.7	8.8	*+1.9*	**11.4**
Demand (push, drivers) %	8.8	10.9	*-2.1*	2.5	15.9	*-13.4*	**11.3**
Total People:	*17.6*	*12.1*	*+5.5*	*11.4*	*14.2*	*-2.8*	**8.3**
People only %	8.8	4.4	*+2.1*	5.7	4.9	*+0.8*	**1.3**
Other people %	8.8	6.5	*+2.3*	4,1	8.8	*-4.7*	**7.0**
People/employees/ Staff/individual characteristics %	0	1.2	*-1.2*	1.6	0.5	*+1.1*	**2.3**
Total Internal No.	*57*	*247*		*122*	*182*		
Internal Total %	*100.1*	*99.9*		*100.4*	*99.8*		
Internal % of Grand Total	*43.5*	*53.3*		*49.2*	*52.6*		
Horizontal %	*18.8*	*81.3*		*40.1*	*59.9*	*100.0*	
Grand Total	**131**	**463**		**248**	**346**	*98*	
Vertical %	*100.0*	*100.0*		*100.0*	*100.0*		
Horizontal %	*22.1*	*77.9*		*41.8*	*58.3*		
# of documents	**21**	**66**		**37**	**50**		
% of documents	**24.1**	**75.9**		**42.5**	**57.5**		

Abbreviations: No.=Number. *** Difference**= Number of mentions for Trailblazing minus number of mentions for Adoption. **** Difference**= Number of mentions for Quantitative minus number of mentions for Qualitative data. ***** Difference** for trailblazing/adoption and quantitative/qualitative score with different signs. Column 8: Common pattern=<10 per centage points difference of cluster total between columns 4 and 7. Different pattern=>10 per centage points difference.

There were differences. Quantitative and qualitative studies could be distinguished, because authors identified them as such or it could be ascertained. The biggest difference in grouped antecedents was the greater importance of demand (push, drivers) in qualitative literature (Table 2). Because the qualitative literature identified more antecedents (44% more), a direct comparison of numbers of antecedents had limited value across the literature in identifying what the two literatures found to be important, so again per centages were compared instead. The per centage differences between the portion each cluster represented was in every case more than 10 per centage points (Table 6). Eight of 28 grouped antecedents had major differences (Table 8). H3 that antecedents of public policy innovation cannot be distinguished was therefore not supported. The data provided some evidence that antecedents of quantitative and qualitative studies of public policy innovation can be distinguished.

H4: Antecedents of quantitative and qualitative studies of public policy innovation are different.

The antecedents were standardized, because there were 13 more qualitative than quantitative studies and therefore qualitative studies found more grouped antecedents: Standardization assured differences were real. Table 2, column 8 and Table 6, column 7 identify the numerical and per centage differences for each grouped antecedent between quantitative and qualitative literature. Some grouped antecedents were mentioned proportionately more often (Table 6). In external cluster, governance environment and citizen pressure were more important

Table 7: Comparison of Antecedents of Quantitative and Qualitative Literature by Cluster

Type of Study	External cluster	Political cluster	External + Political Clusters	Internal cluster	Total
Quantitative Total (37 documents)	**76**	**50**	**126**	**122**	**248**
Horiz. %	*30.6*	*20.2*	*50.8*	*49.2*	*100.0*
Vertical %	*44.4*	*42.0*	*43.4*	*40.1*	*41.8*
Qualitative Total (50)	**95**	*69*	**164**	**182**	**346**
Horiz. %	*27.5*	*19.9*	*47.4*	*52.6*	*100.0*
Vertical %	*55.6*	*58.0*	*56.6*	*59.9*	*58.2*
Grand Total (87 docs)	**171**	**119**	**290**	**304**	**594**
Horiz. %	*28.8*	*19.9*	*48.8*	*51.3*	*100.0*
Vertical %	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Table 7 analyzes the grouped antecedents and clusters of quantitative and qualitative literatures. In both literatures, more internal grouped antecedents were identified than either external or political antecedents. When external and political clusters are combined as "external", however, the proportion of "external" plus political was about the same for trailblazing (50.8 vs 49.2%) and qualitative (47.4 vs 52.6%) studies, not important differences. The number of grouped antecedents found per document were surprisingly similar, considering that quantitative studies are limited in the number of antecedents they can study at a time by the degrees of freedom (N-1) while qualitative studies are not. The qualitative literature discussed similar numbers of grouped antecedents overall. With the exceptions of governance environment and

citizen role being more important in the qualitative literature, the balance of antecedents and types of antecedents was about 50/50; qualitative studies always studied a slightly higher per centage of antecedents than quantitative literature, however. These are similarities in qualitative literature. In political cluster, political actors were more important in qualitative literature and political support in quantitative literature. In internal cluster, problem, etc. and demand, etc. were more important in qualitative literature; innovation process in quantitative literature. At the level of number of antecedents, there was a difference of 19 for external cluster, 19 for political cluster and 60 for internal cluster, a total of 98 of 594 antecedents different, in favour of qualitative studies (Table 7).

Table 8: Major Per Centage Differences between Quantitative and Qualitative Studies per Grouped Antecedent by Cluster

Types of Grouped Antecedents:	Quantitative Vertical	Qualitative Vertical	Major* Difference Vertical
External Cluster:			
Governance Environment %	11.8	24.2	*-12.4*
Citizen pressure/role %	22.4	34.7	*-12.3*
Total External No.	*76*	*95*	*171*
Total % of External Cluster	*100.0*	*100.1*	
Vertical %	*30.6*	*27.5*	
Horizontal %	*44.4*	*55.6*	100.0
Political Cluster:			
Political Support %	18.0	1.4	*16.6*
Political Actors/People %	6.0	27.5	*-21.5*
Drivers/demands %	12.0	0	*12.0*
Total Political No.	*50*	*69*	*119*
Total % of Political Cluster	*100.0*	*100.0*	
Vertical %	*20.2*	*19.9*	0.3
Horizontal %	*42.0*	*58.0*	100.0
Internal cluster:			
Problem, Creativity, Ideas	6.6	23.1	*-16.5*
Innovation process %	32.0	17.0	*15.0*
Demand (push, drivers) %	2.5	15.9	*-13.4*
Total Internal No.	*122*	*182*	*304*
% of Internal Cluster	*100.4*	*99.8*	
Vertical %	*49.2*	*52.6*	
Horizontal. %	*40.1*	*59.9*	100.0
Grand Total:	**248**	**346**	**594**
Vertical %	*100.0*	*100.0*	
Horizontal %	*41.8*	*58.3*	*100.1*
# of documents	**37**	**50**	**87**
% of documents	**42.5**	**57.5**	**100.0**

* Major is =>10 per cent difference

Important Groupings. In terms of numbers, a larger number of important groupings were identified for quantitative grouped antecedents than for qualitative, which were more concentrated. Important is defined as =>10 per cent different. Because so many grouped

antecedents were identified (Table 2, 6), 10 per cent is an important difference[2] (Table 8). The major differences for each cluster are identified next.

External Cluster. Citizen pressure/role was extremely important (>30%) in qualitative studies and very important (>20%) in quantitative studies. External environment and governance environment were important (10-19%) in quantitative studies; they were important and very important, respectively in qualitative studies. Institutional context was important in qualitative but not important in quantitative literature. Both governance environment and institutional context were more important in qualitative than quantitative studies. Policy and drivers/demands were only important in quantitative studies.

Political Cluster. Politics, ideology and political support were more important in quantitative studies than qualitative. Politics were only extremely important in quantitative literature. While political culture was important in quantitative studies, it was more important in qualitative. Political actors/people, political culture and political support were most important in qualitative studies; politics, political culture, ideology and political support were most important in quantitative studies, suggesting quantitative studies considered political issues more directly.

Many scholars do not consider political cluster separately from the others, as I/we do. If external and political cluster were combined, they would account for 50.8 per cent of the quantitative and 47.4 per cent of qualitative antecedents. Internal cluster accounts for 51.3% of them all; 49.2% of quantitative and 52.6% of qualitative antecedents. Scholars such as Berry and Berry (2007) treated the political as part of an internal cluster (defined as the jurisdiction) while others such as Sorensen and Vabo (2020) and Glor (2018) treated the political as external to the public service. Within the qualitative literature, the results are similar (47% external and political cluster; 53% internal). Calculated this way, the literature thus found that about half of antecedents influencing quantitative and qualitative studies of policy innovations were "external" and half internal (Table 7).

The literature is not informative about the influence of cabinets/ministers on policy innovations; this is probably due to the secrecy of their deliberations—scholars do not have access to the information. This absence is important: scholars can only study antecedents about which they can gain information and only secure information from those willing to provide it. Cabinet and caucus members are often sworn to secrecy. While quantitative studies were more systematic, they typically studied the opinions of (mostly senior, some middle) managers; similarly, opinions were asked about which governments introduced innovations first. In the voluntary sector, likewise, questionnaires were answered by chief executive officers (CEOs), thus also securing senior management opinions. Publin (e.g. Koch, Cunningham, Schwabsky and Haukness, 2006) e.g. surveyed CEOs of voluntary organizations as representative of the public and identified three types of antecedents—informational, organizational and top management—as most important. I/we consider all three to be internal. CEOs were (naturally) preoccupied with internal antecedents as they run an administration.

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[2] Extremely import is considered to be =>30%, very important 20-29%, important 10-19%.

Table 9: Comparison of Antecedents of Quantitative Studies by Sources of Information by Number and Percentage of Grouped Antecedents by Cluster

Type & No. of Ranked Publications	External Cluster Antec.	Horiz. %	Political Cluster Antec.	Horiz. %	Internal Cluster Antec.	Horiz. %	Total Antec. % Vert % Horiz
Surveys (11)	**x12,** 1.1/ publication		4, 0.4/ publication		72, 6.5/ publication		88, 8.0/ publication
Question-naires (5)	13, 2.6/ publication		2, 0.4/ /publication		10, 0.5/ publication		25, 5.0 /publication
Interviews (2)*	0, 0.0 /publication		2, 1.0/ publication		1, 0.5/ publication		3, 1.5/ publication
Total (18)	**25, 1.4/** publication		**8, 0.4/** publication		**83, 4.6/** publication		**T=116**, 6.4/ publication
		38.4		16.7		68.0	46.8% 100.0%
Case studies -multiple-6	15, 2.5/ publication		2, 0.3 /publication		14, 2.3/ publication		31, 5.2/ publication
-single-3	1, 0.3/ publication		4, 1.3/ publication		8, 2.7 /publication		13, 4.3/ publication
Total (9)	**16, 1.8/** publication		**6, 0.7/** publication		**22, 2.6/** publication		**T=44, 4.9/** publication
		21.1 36.4		12.0 12.5		18.0 18.9	17.7% 100.0%
Original research: -Original database-6	19, 3.2/ publication		32, 5.3/ publication		13, 2.2/ publication		x64, 10.7/ publication
-SLR-1	4, 4.0/ publication		0, 0/ publication		4, 4/ publication		8, 8.0/ publication
Total (7)	**23,** 3.3/ publication		**32,** 4.6/ publication		**17,** 2.4/ publication		**T=72,** 10.3/ publication
		30.3 31.9		64.0 44.4		13.9 23.6	29.0% 99.9%
Yearbooks/ Govt data (3)	12, 4.0/ publication	11.0% 80%	4, 1.3 publication	4.2% 20%	0, 0/ publication	0 0	**16, 5**.3/ publication 6.5% 100%
Total 37 Quantitative documents	**76, 2.1/** publication	**100.1** **30.6**	**50,** 1.4/ publication	**100.1** **20.2**	**122**, 3.3/ publication	**100.0** **49.2**	**248,** 6.7/ publication 100% 100.0%

Notes: Some research has multiple types of methodology but they are only counted as one type; e.g. the PUBLIN studies and Ingerslev (2014) both had two surveys and interview. They are only counted as surveys. Batt-Rawden, Björk & Waaler (2017) included individual and focus group interviews and observation (N=26) but were only recorded as interviews.

Internal cluster had the most grouped antecedents (266). In quantitative studies, in order, innovation process, structure, organizational culture and problem, etc. scored important; none scored over 20 per cent of their cluster. In qualitative studies, demand (push, drivers); the innovation process; and structure scored important. Problem, etc. scored very important.

External cluster was more important for quantitative (30.6%) than for qualitative (27.5%) literature. Political (20.2% vs. 19.9%) and internal (49.2% vs. 52.6%) cluster were similarly important. Internal cluster was similarly important in quantitative and qualitative literature (49.2 vs 52.6%) but not in trailblazing/adoption (43.5 vs. 53.3%) (Table 6). The percentages of each cluster in the quantitative and qualitative literatures were not greatly different.

Sources of Quantitative Information. Table 9 provides the sources of data used in quantitative studies. The 37 quantitative publications identified 248 grouped antecedents, a mean of 6.7. The most antecedents were found in original databases (10.3 antecedents/study); the least, through interviews (1.5/). For external cluster the smallest number of antecedents per study was 0.0 for interviews, the highest (4.0) for one SLR and for yearbooks, etc. For political cluster, the lowest was 0 for the one SLR, the highest (5.3) for original research. For internal cluster, the lowest was 0 for yearbooks, etc. and highest (10.7) for original research. Internal antecedents were mentioned particularly often in surveys (6.5/) and the SLR (4.4/).

Within external cluster, more antecedents were studied per publication in yearbooks, etc. (2.7); within political cluster, in other quantitative studies; within internal cluster, in surveys, etc. and case studies. Yearbooks, surveys, etc. and case studies identified much fewer political antecedents than other quantitative While yearbooks, etc. did not include information on internal antecedents, they dominated the rest: there was a time lag between these types of studies: yearbooks were used in early studies. Other quantitative studies identified political antecedents most. Because the type of antecedent identified most varied by source of information, a bias may have been introduced into the research by the source of information chosen.

Although there were some similarities between 28 grouped antecedents of quantitative and qualitative literature (Table 6), and more similarities than in the trailblazing/adoption literature, they were not entirely similar. The data provided some evidence, however, that antecedents of quantitative and qualitative studies were not different as only 8 grouped antecedents had major differences, so H4 was not supported. Unlike the health literature, topics and antecedents were not restudied in new environments in the policy innovation literature, producing a limited amount of quantitative literature, and so a meta-analysis could not be done.

H5: Antecedents of trailblazing/adoption form so many common patterns with quantitative/qualitative antecedents that they are not different.
Patterns are substantial similarities or differences. Trailblazing/adoption differences were compared to quantitative/qualitative differences on the assumption that the measures should be similar if they are not the same phenomena, different if they are different phenomena, in which case the antecedents could be predictors of trailblazing/adoption. Similar patterns would suggest the antecedents are not good measures of the independent variables of the phenomena; different patterns that these are good measures of the independent variables of the two phenomena.

Patterns were assessed by comparing the amount of difference between the trailblazing/adoption difference and the quantitative/qualitative difference (calculated in Table 6, column 8) and by their signs. A common pattern is defined as <10 per centage points difference between columns 4 and 7. A different pattern is =>10 per centage points difference. For external environment, e.g. the trailblazing/adoption difference is +20.2 and the quantitative/qualitative

difference is +6.8. The difference between the two is 20.2 minus 6.8= 13.4 per centage points difference, a difference (no pattern). Likewise, for enhance capacity to innovate, the trailblazing/ adoption difference is -5.3 and the quantitative/qualitative difference is +3.9. The difference between them is 5.3 plus 3.9= 9.2 per centage points difference, a similarity (a pattern). Grouped antecedents that scored different signs in one category compared to another are notable. They scored different patterns if they scored different signs (Table 10). Such scores affirmed the phenomena were different.

Table 10: Patterns in Difference of Differences between Per Centages Grouped Antecedents Represent of Clusters, Trailblazing/Adoption vs Quantitative/Qualitative

Similar Patterns	Different Patterns	
Similar Pattern	*Major Difference (no pattern)*	*Sign Difference (no pattern)*
External cluster: -governance environment; -citizen pressure; -drivers; -obstacles; -influence of other governments 5 grouped antecedents	External cluster: -institutional context; -policy 2 grouped antecedents	External cluster: -policy 1 grouped antecedent
Political cluster: -ideology; -the political; -political culture; -political support; -political actors; -drivers; -political barriers; -inclusive process, platform. 8 grouped antecedents	Political cluster: -politics 1 grouped antecedent	Political cluster: - none 0 grouped antecedents
Internal cluster: -enhance capacity; -internal only, -organizational culture; -structure; -people only; -other people; -people/employees, etc. 7 grouped antecedents	Internal cluster: -problem, creativity, ideas; -innovation process; -obstacles; -demand. -*total people (all people grouped antecedents added together). 5 grouped antecedents	Internal cluster: -enhance capacity to innovate; -innovation process; -obstacles; -other people -people/employees/staff/individual characteristics 5 grouped antecedents
20 grouped antecedents similar	*9 grouped antecedents major differences	6 grouped antecedents different signs (3 overlaps with column 2)

* Columns 1 and 2 add to 29 instead of 28 as they do elsewhere because total people is included. It is not elsewhere.

Similar patterns were formed between trailblazing/adoption antecedents and quantitative/qualitative studies (<10 per centage points) for 17 grouped antecedents: 5 in external cluster, 9 in political, 4 in internal cluster. Different patterns were formed between trailblazing/adoption and quantitative/qualitative for 9 grouped antecedents: 2 in external, 1 in political, 5 in internal cluster. The ones that scored differently (no pattern) were institutional context; policy; politics; problem, etc., innovation process; obstacles; demand; total people. Different patterns were formed for some that scored different signs (no pattern): policy; enhance capacity; innovation process; obstacles; total people; other people; people/employees/etc. (Table 10).

Six grouped antecedents measured different signs in the literature. Five of six grouped antecedents with different signs were from internal cluster, of a total of eleven internal grouped antecedents. Three of the 6 grouped antecedents with different signs overlapped with the no pattern differences of differences. This produced nine (of 28) grouped antecedents with either a difference of differences =>10 per centage points or a different sign.

Four grouped antecedents had both a major difference and a sign difference: policy, innovation process, obstacles, total people. These four grouped antecedents distinguished trailblazing/adoption from quantitative/qualitative the most ways and therefore the best. Major differences (=>10 per centage points) also distinguished them: The very largest differences were between phenomena that scored =>20 per centage points difference: politics; problem, etc.; and innovation process (Table 6, 10). Since important differences were found between trailblazing/adoption and quantitative/qualitative studies for 8 grouped antecedents, H5 that their antecedents form so many common patterns that they are not different is not supported: 20 (71.4%) grouped antecedents form patterns, 8 (28.5%) do not; 3 additional grouped antecedents have different signs. The analysis provides support for the idea that some grouped antecedents do not form common patterns and are therefore different. These findings could potentially form the basis for future topics of research and surveys.

Discussion

The trailblazing and adoption literatures both found internal cluster antecedents to be the most numerous (most important), suggesting the antecedents of activity within the government are most important to policy innovation. This was not expected for trailblazing but was for adoption. On the other hand, the political cluster was less important for adoption than for trailblazing (Table 4). This was expected, as the political arena is more involved in trailblazing, when the innovation has not attained legitimacy in the population/community, than in adoption, when the innovation has gained some or even a great deal of legitimacy, at the governmental or organizational (branches, directorates, divisions, units) level. Likewise, the lower importance (though still the highest importance) of internal cluster in trailblazing, was expected. That internal cluster should be so important in adoption should also have been expected. Public servants play an important role in the adoption of innovations, especially their dissemination.

The reasons are not clear but some speculation may be warranted. A first reason could be substantive—internal antecedents could actually be most important in trailblazing and adoption of policy innovation (see Polsby, 1984 for USA). Despite the fact that trailblazing reflected proportionately fewer internal antecedents than adoption, we(I) still have some doubts that internal antecedents are most important as this is not our/my experience, which indicates that public servants are very important in dissemination but not as important in trailblazing. At the same time, elected officials often give public servants their platforms, and ask them to develop means to implement external and political clusters. In such cases, public servants are very important but so are politicians. Internal cluster's greater representation in the literature could also be due, second, to the difficulty studying them or third, possibly they are represented in

different literatures than those studied; e.g. no literature on social movements was found. This raises the question: which scholars are interested in policy innovation antecedents? The literature studied was largely from the public administration field. Public administration scholars might be expected to study and be most familiar with the administration of innovations. Political scientists, who study politics, have shown limited interest in innovation. Policy literature typically studies change and transfer, not innovation. Perhaps scholars of public administration, interest groups and policy could be expected to study and be most familiar with public administration. Whether internal antecedents really most important in policy innovation should remain a moot point until further research is done on external and political antecedents. The balance in numbers of antecedents when external and political clusters are combined suggests they are equally important.

The number of antecedents mentioned in internal cluster were also the most—about half of all antecedents mentioned—in quantitative and qualitative literatures. The proportion of antecedents that each cluster represented within quantitative and qualitative literatures was similar (external 30.6 vs. 27.5; political 20.2 vs 19.9, internal 49.2 vs 52.6%) (Table 8, vertical). This suggests that at a high level of generality both quantitative and qualitative scholars consider the external and internal clusters to be equally important. Across the quantitative and qualitative literature, however, they found differences. The per centage that each cluster represented of the grouped antecedents for quantitative and qualitative studies were different, however, except for internal: external (44.4 vs 55.6%), political (42 vs 58%), internal (40.1 vs 39.9%) (Table 8, horizontal). Thus, while scholars used different terminologies for antecedents (suggesting the need to examine and agree on terminology and classification), at a higher level of generality, they found antecedent similarities within quantitative and qualitative literature but differences across them. This was not the case for trailblazing and adoption, however, where there was about a 10 per centage point difference between problem, etc.; innovation process; and demand. Nonetheless, the most antecedents were mentioned for internal cluster in all four categories of studies.

Problems identifying antecedents. Considerable work was required to collect the SLR data; another challenge with the antecedent literature is the large variety of topics covered, ranging across education, health, social services, income security, the economy, individual and unrelated case studies, topic-related case studies, and more. Even much of the European literature, the most developed, tends to study case studies, only sometimes larger agglomerations such as the European Union. An exception is the OECD literature, which has studied country economies and their innovation in a comparable manner. Their focus is economic measures, even for public sector innovation. Like the quantitative antecedent literature, they studied what can be measured, thus simplifying antecedents.

A substantial number of authors writing about policy innovation did not indicate which stage of innovation they were studying, using the general term "adoption". This treated innovation as a single phenomenon, merging Rogers' (1995) five adoption stages. Their approach implies that the antecedents were the same for all five stages of innovation. This assumption has been further examined here: Grouped antecedents of trailblazing and adoption were found to

represent different proportions of clusters, quantitative and qualitative antecedents were more similar but not entirely similar (Table 6).

How different are the grouped antecedents of trailblazing/adoption studies versus quantitative/qualitative studies? The last column of Table 6 identifies how different these two types of studies are. Differences =>10 per centage points are considered important. Important differences include, in external cluster, external environment, institutional context (considered important in adoption and qualitative studies) and policy (considered important in adoption and quantitative studies); in political cluster, politics (a very important difference, >20%); in internal cluster, important differences for obstacles and demand (=>10% difference) and a very important difference (>20%) for problem, creativity, ideas, which are important in all types of studies except quantitative literature. The important differences between trailblazing/adoption and quantitative/qualitative studies from Table 6 are repeated in Table 11. These are good comparisons because they are clearly about different things—stage of adoption and methodology—and the measure is clearly very different—of differences of differences. When both difference of differences and signs are considered, nine of 28 grouped antecedents had either a difference of differences =>10 per centage points or a different sign. These are sufficient differences that trailblazing/adoption and quantitative/qualitative should not be considered to have the same patterns.

Table 11: Important Differences of Per Centages for Grouped Antecedents as a Proportion of Clusters for Trailblazing/Adoption and Quantitative/Qualitative Data

Types of Grouped Antecedents (Vertical Measures):	Trail-blazing	Adop-tion	Differ-ence*	Quant	Qual	Differ-ence**	Magnitude of Dif of Difs, Col. 4 & 7
External Cluster:							
External Environment/ Context %	30.6	10.4	*+20.2*	18.4	11.6	*+6.8*	**13.4**
Institutional context %	2.8	11.9	*-9.1*	7.9	11.6	*-3.7*	**12.8**
Policy % Vertical	0	12.6	*-12.6*	13.2	7.4	*+5. 8 ****	**18.4**
Political Cluster:							
Politics %	10.5	24.7	*-14.2*	16.0	23.2	*-7.2*	**21.4**
Internal Cluster:							
Problem, Creativity, Ideas %	24.6	14.6	*+10.0*	6.6	23.1	*-16.5*	**26.5**
Obstacles/Barriers (pull) %	1.8	11.3	*-9.5*	10.7	8.8	*+1.9*	**11.4**
Demand (push, drivers) %	8.8	10.9	*-2.1*	2.5	15.9	*-13.4*	**11.3**

Abbreviations: No.=Number. *__Difference (Dif)__= Number of mentions for Trailblazing minus number of mentions for Adoption. **__Difference__= Number of mentions for Quantitative minus number of mentions for Qualitative data. ***__Difference__ for trailblazing/adoption and quantitative/qualitative score with different signs. Column 8: Common pattern=<10 per centage points difference of cluster total between columns 4 and 7. Different pattern=>10 per centage points difference.

While the classification levels were found in the SLR, one antecedent was surprisingly absent, networks. Lewis, Considine and Alexander (2011), e.g. in a study of innovation norms and procedural orientations in 11 volunteer Australian local governments, found that politicians and senior bureaucrats were the most influential in innovation and they were also central in strategic networks, which were the most influential. Advice and strategic information networks were studied; networks of politicians and bureaucrats were different. This means that innovation

and innovators inhabit a specific kind of institutional space, defined in part by structural position and even more by their place in informal, actor networks, primarily professional ones. Networks were links between structural and individual elements. Boundary-scanning and -spanning, required for networking was also not mentioned.

Conclusion

Literature on or including antecedents of trailblazing and adoption of public policy innovation—Rogers' (1995) invention/early adoption stages and all five stages of adoption—was reviewed (87 publications met the criteria). A total of 594 antecedents were identified, analyzed into 508 unique antecedents, 28 grouped antecedents and 3 clusters. In order, the most frequently mentioned clusters were internal (304), external (171) and political (119) (Table 1). They were also analyzed as quantitative and qualitative studies.

In 21 trailblazing studies, a total of 131 antecedents were identified, a mean of 6.2 antecedents per document. In 66 adoption studies, 463 antecedents were identified, 7.0 per document. In 37 quantitative studies, 248 antecedents were identified, 6.7 per document. In 50 qualitative studies, 6.9/document (Table 2). In trailblazing studies, 57 internal, 38 political and 36 external antecedents were mentioned. In adoption studies, internal antecedents were mentioned 247 times, external antecedents 135 times, political antecedents 81 times (Table 3).

Of 87 studies, 37 were quantitative (248 grouped antecedents) and 50 qualitative (346). In quantitative literature, 122 internal antecedents, 76 external and 50 political antecedents were mentioned. The most important (most mentioned) quantitative external grouped antecedents were citizen pressure, external environment, policy and governance environment; in political cluster, ideology, political culture and political support were mentioned most. In internal cluster, the innovation process was most important.

In qualitative literature, 182 internal, 95 external and 69 political antecedents were mentioned. In external cluster, citizen pressure/role was extremely important; in political cluster, political culture and political actors were important; in internal cluster, problem, creativity, ideas and innovation process were most important (Table 4). The sources of quantitative data were of several types: yearbooks, surveys/questionnaires/interviews, case studies and other (Table 5). There were insufficient numbers and types of quantitative studies on trailblazing of policy innovation to do a meta-analysis.

The hypotheses' results are outlined in Table 12: All five were unsupported, thus providing some support for their antitheses being true. Grouped antecedents of quantitative and qualitative research were more similar than that on trailblazing and adoption. The type of antecedent identified most varied by source of information, so a bias may have been introduced

into the research through the sources of information chosen by the authors or by their field of expertise[3].

Table 12: Results for Hypotheses

Hypothesis	Measured by	Results
H1: The antecedents of trailblazing and adoption cannot be distinguished.	A SLR searched published peer-reviewed literature for the antecedents of public policy innovation, divided into Roger's (1995) stages. Trailblazing was defined as the first two stages (innovation, early adoption) and adoption as all five stages (innovation, early adoption, early majority, late majority, laggard).	Not supported
H2: Antecedents of trailblazing and adoption are similar.	*Trailblazing and adoption studies.* How many studies were done of trailblazing and adoption and what were their antecedents? Are their antecedents similar or different?	Not supported
H3: Antecedents of quantitative and qualitative studies of public policy innovation cannot be distinguished.	*Quantitative/qualitative studies.* Were the studies quantitative or qualitative?	Not supported
H4: Antecedents of quantitative and qualitative studies of public policy innovation are similar.	Assessed which studies were quantitative and qualitative. Identified types of quantitative studies done Determined whether their antecedents similar or different by defining different as =>10% difference in portion of a cluster's grouped antecedents.	Not supported
H5: Antecedents of trailblazing/adoption form so many common patterns with quantitative/qualitative antecedents that they are not different.	Consider numbers of grouped antecedents per category for patterns. -Difference of differences <10 per centage points (same pattern) = 20 grouped antecedents -Difference of differences =>10 per centage points (different pattern) between trailblazing/adoption and quantitative/qualitative =8 grouped antecedents B. Different sign= 6. Total different =11	Not supported

Institutional context; policy; politics; problem, etc.; innovation process; obstacles; demand; and people distinguished the categories most in the public policy innovation antecedent literature. While the antecedent literature suggested that internal antecedents were most important to policy innovation, I/we are somewhat sceptical. Further research should be done on their external and political antecedents before this conclusion can be drawn. Future research should also replicate studies with new locations or governments/populations/communities, as Walker and colleagues have done for large and small process innovations in local governments (e.g. Korac, Saliterer and Walker, 2017). Due to the benefits of replications, they can be more certain of their results than we can be of ours. Future research on antecedents should address networks more.

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[3] Thank you to Gene A. Brewer for this latter insight.

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