THE SOCIAL IMPACT OF OPEN GOVERNMENT DATA

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by

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THE SOCIAL IMPACT OF OPEN GOVERNMENT DATA

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LIST OF USEFUL TERMS AND ABBREVIATIONS

ATI	Access to Information
DI	Data Intermediary; an actor that bridges the gap between marginalized groups and OGD by facilitating physical access, technical capacity, and value for use of information; code used to identify research participants who access and analyze government data
Civic Technologist	an individual skilled in information technology interested in creating tools that use networked technologies and information to improve citizens' access to information and/or government services
CED	Coalición Educación Digna; the organizing coalition of the Dominican 4% Movement
Confech	Confederación de Estudiantes Chilenos; the formal, organized body of university students in Chile
CSO	Civil Society Organization; formal non-governmental organization with a civic mission
ODB	Open Data Barometer; yearly cross national study of open government data started in 2013 and produced by the World Wide Web Foundation
OGD	Open Government Data also referred to open data;
RTI	Right to Information
PO	Public Official; code used to identify research participants who were either public servants or elected officials
SG	Social group; informal groups of individuals belonging to a shared identity or experience; code used to identify research participants belonging to a social movement organization.
Social Movement Organization	Formally organized (such as CSO) groups with links to informal social groups that form the broad network of the social movement

SUMMARY

Open government data (OGD) proponents claim that OGD should have a noticeable impact on marginalized groups' inclusion in policy making. Supposedly, society's marginalized achieve inclusion by using OGD to overcome information asymmetries to hold government accountable with data-supported claims. While this notion of OGD as a tool for social change through political advocacy is plausible, research on OGD consistently reports little evidence of social impact.

Through a comparative study of social projects in Hong Kong, the Dominican Republic, and Chile I conducted a qualitative investigation into why OGD's social impact is so elusive. In each case I traced OGD through political, technical, and social processes to determine if and how OGD empowers marginalized groups. Over ten months, I conducted one-hundred interviews with social movement leaders and participants, public officials, and data intermediaries. After transcribing and translating interview texts, I used thematic open coding to analyze interview data. Through this analysis I identified what social, political, and technical preconditions increased the propensity of social movement organizations and activists to make use of OGD to achieve social impact.

According to my findings, the claim that marginalized groups make use of OGD to achieve increased inclusion in policy making is inaccurate and inappropriate. This research brings clarity to what claims can be made for a social impact of OGD. Five main takeaways emerged: marginalized groups do not make use of OGD to achieve social change through political advocacy; academics and practitioners should modify their conceptualization and measurement of social impact to reflect a generative interpretation of empowerment; democratic mechanisms for political accountability encourage civic reuse of OGD in articulating claims on government;

sociopolitical contexts, specifically the neoliberal reform experience, are an important determinant of the reuse of OGD to achieve social change; and OGD is not equally complementary to all policy issues.

The following chapter explains the significance of the research domain and provides an introduction to OGD and the claim for social impact. In Chapter Two I consult relevant bodies of literature including research on open government data, democratic theory, information communication technology for democracy, and social movement theory to build a conceptual framework for OGD's social impact. In Chapter Three I justify the use of the comparative method and inductive logic as well as outline the research methodology and design. The results and findings from field work in Hong Kong, the Dominican Republic, and Chile are documented in Chapters Four, Five, and Six. I discuss lessons and recommendations for the OGD research and practitioner field in the final chapter. Results from thematic open coding of interview data in each case and an exercise in Boolean logic and predictive modeling can be found in the Appendix.

CHAPTER 1. INTRODUCTION

The civic use of open government data for increased inclusion in policy making situated in the broader context democracy and how to innovate a more participatory democracy. Currently there is a very active debate on the decline of democracy. Some scholars say that while there are a greater number of democracies than ever, if we look inside democracies, there is a glaring problem of "bad governance," and a proliferation of minimalist democracies (Moller and Skaaning, 2013, Puddington, 2011). According to Freedom House's 2015 rankings of freedom in the world, most countries do not enjoy complete civil liberties and political rights. Of the 195 countries assessed, 89 (46 percent) were rated Free, 55 (28 percent) Partly Free, and 51 (26 percent) Not Free (Freedom House 2015). Democratic deepening is often a product of rights claiming by marginalized groups. This research looks at how marginalized social groups use open government data to make claims on government, particularly in times of social movement.

In this text, when I refer to open government data or OGD or even open data I am referring to public sector information that is made available online. The most succinct definition of OGD I have found is from Janssen et al (2012) who describe it as "non-privacy-restricted and non-confidential data which is produced with public money and made available without any restrictions on its use or distribution" (Janssen et al. 2012, 258). There are standards for how this data should be made available that were first penned by civic technologists from the open government working group and more recently updated by the Sunlight Foundation. These standards include completeness, timeliness, machine-readable, etc.

A lot of people wonder how OGD is different from right to information (RTI). The OGD movement can be considered a technological extension of the RTI movement. Advocates of RTI see access to public sector information as fundamental to a robust democracy (Allen 1992), but

do not find the technological component of online portals, smart phone apps, and machine-readable data as equally essential (Janssen 2012). As of February of 2016, 113 governments offered citizens the right to access government information (rightoinformation.org 2016). The movement has gathered momentum in the past ten to 15 years. Since 2006 the number of countries with RTI legislation has tripled.

There are big claims about how RTI will improve democracy and civic participation and these claims are still made by the OGD community. To understand this claim I share this one to the Zambian government made by the executive director of Women and Law in Southern Africa, Matrine Chuulu. In 2013 she said

> [Right to information] legislation is an essential tool for development for any country and its practical value to communities would be empowering communities, particularly in rural areas with detailed information about various projects from conception of the ideas up to completion. The communities would thus be empowered to ensure transparency in the processing of projects, and accountability for public funds. (Chuulu 2013)

This promise of social empowerment and oversight over political processes has carried over to the OGD movement.

Like the passage of RTI legislation, country level commitments to OGD are also increasing at a rapid rate. This is evidenced by country participation in the Open Government Partnership (OGP). The OGP is a multilateral commitment to open data and open gov with a mission of "transparency and civic empowerment through OGD and new technologies." It was launched in 2011 by 8 countries (Brazil, Indonesia, Mexico, Norway, the Philippines, South Africa, the United Kingdom and the United States). Now, in 2016, there are 70 countries that are

member nations including the Dominican Republic and Chile, two of the countries in this comparative study. At the national and international level, OGD initiatives are viewed as way to fix bad governance and to increase democratic ideals of transparency and participation. Governments across the globe and development agencies across the global north are putting emphasis and money into these initiatives.

In addition to this programmatic push for OGD at international and national levels there is a network of researchers that measure OGD readiness, implementation and impact. They report this in the Open Data Barometer (ODB). The ODB is quite a massive undertaking. It involves a network of 150 researchers that comb through and categorize 1,300 government datasets in 92 countries (opendatabaramoter.org). In-country experts evaluate government portal datasets and report on the impact of OGD in the past year. The scorecard in Figure 1 (below) reports Chile's levels of readiness, implementation, and impact from 2015. Chile performs quite well in the region and is ranked 30th out of the 92 countries in the sample. In the circle plot, the missing chunk is impact, and the lowest of all impact scores is social impact. This low score is common finding from year to year and across the sample.

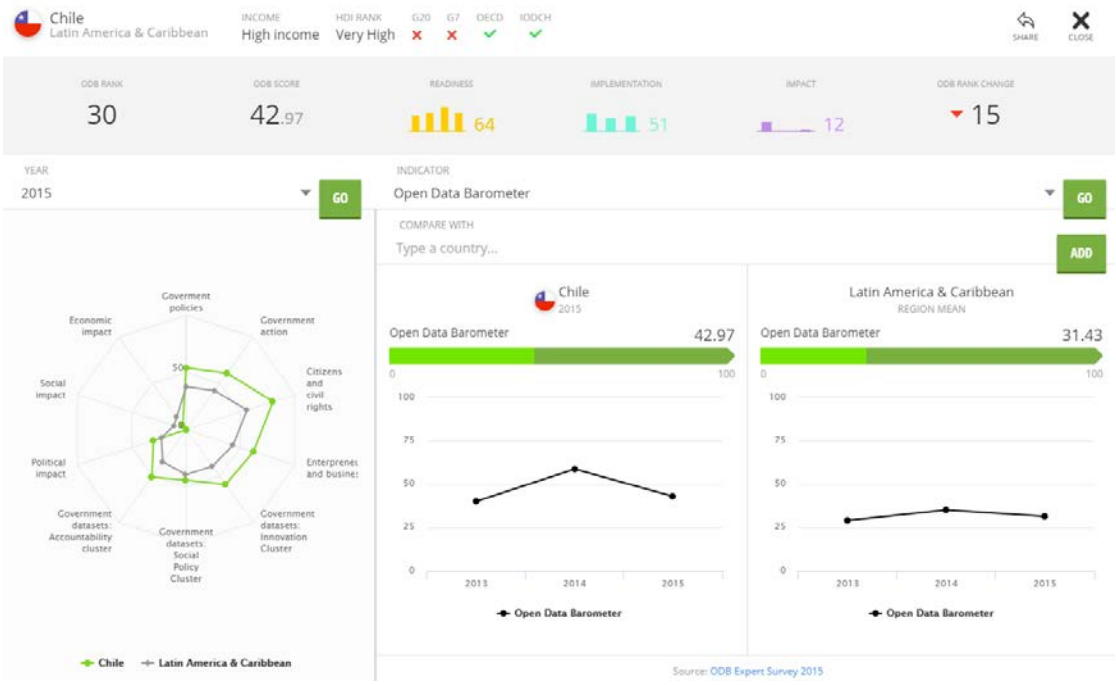


Figure 1 Chile Open Data Barometer 2015 Score Card

The barometer refers to social impact simply as increased inclusion of marginalized in society, and they measure it with this question to the network of in-country experts: “To what extent has open data had a noticeable impact on increasing the inclusion of marginalized groups in policy making and accessing government services?” To get a sense of what a high level of social impact would be this is a statement from the ODB research handbook that corresponds to the highest score of social impact: “Open data is widely cited to have made a significant contribution to the inclusion of marginalized groups, with rigorous evidence to back these claims: for example a peer reviewed study showing the greater inclusion of at least one marginalized group.” (opendatabarometer.org)

In Figure 2 I built a histogram of the social impact scores from 2014. You can see a high concentration of zero evidence of social impact.

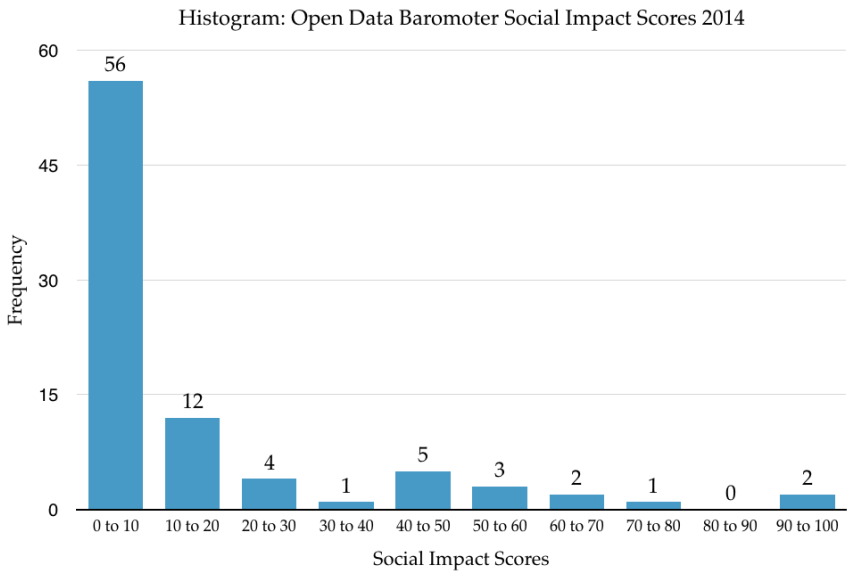


Figure 2 Histogram of 2014 OGD Social Impact Scores

I also plotted the implementation scores against social impact in Figure 3. I expected to see a positive and significant predictive power of implementation on impact. If a country is implementing OGD successfully, social impact would be more likely to occur. An R^2 of .36 means implementation predicts social impact 36 percent of the time. This is not a very convincing correlation. This all begs the question of why is social impact so elusive and what do we not understand about the preconditions necessary to achieve social impact.

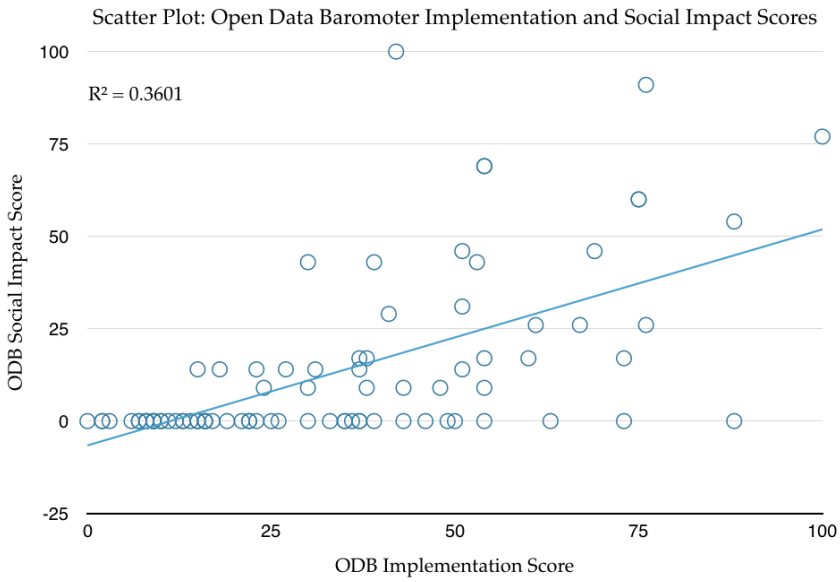


Figure 3 Scatter Plot of Open Data Barometer 2014 Implementation and Impact Scores

There are speculations as to why social impact is lacking. For example, some contend marginalized populations lack data literacy, internet connectivity, and data analysis tools and know-how to participate in OGD. These explanations focus on technological capacity and fail to situate them within the political context. Technology is a new and exciting input to the system of social change, but it must be contextualized in democratic theory.

To investigate social impact I chose social movements as a unit of analysis. I use this as an event in time to ask, “How do social groups use open government data to make claims and to influence government decision-making?” I focus particularly on the claim of inclusion in policy making as opposed to accessing government services. To investigate this question I had to trace OGD through technical, social and political spaces. To first form an analytical framework for my research design I consulted the relevant literature. The chapter to follow describes the relevant literature I used to build an analytical framework as well as speculative process through with to trace OGD.

CHAPTER 2. LITERATURE REVIEW

To achieve the social impact described by academics and practitioners of OGD, data has to move through political, technical, and social spaces. To trace this process, I had to first conceptualize it. To do this I consulted the literature from the academic fields of open government data, democratic theory, information communication technologies and democracy, and social movement theory. I chose these particular bodies of literature to connect the concepts of data, government accountability, and marginality found in the OGD community's working definition of social impact (depicted in Figure 1 below). The analytical framework gives conceptual structure to the OGD community's interpretation of social impact and therefore informed my research design of what impact process I expected to occur in Hong Kong, the Dominican Republic, and Chile.

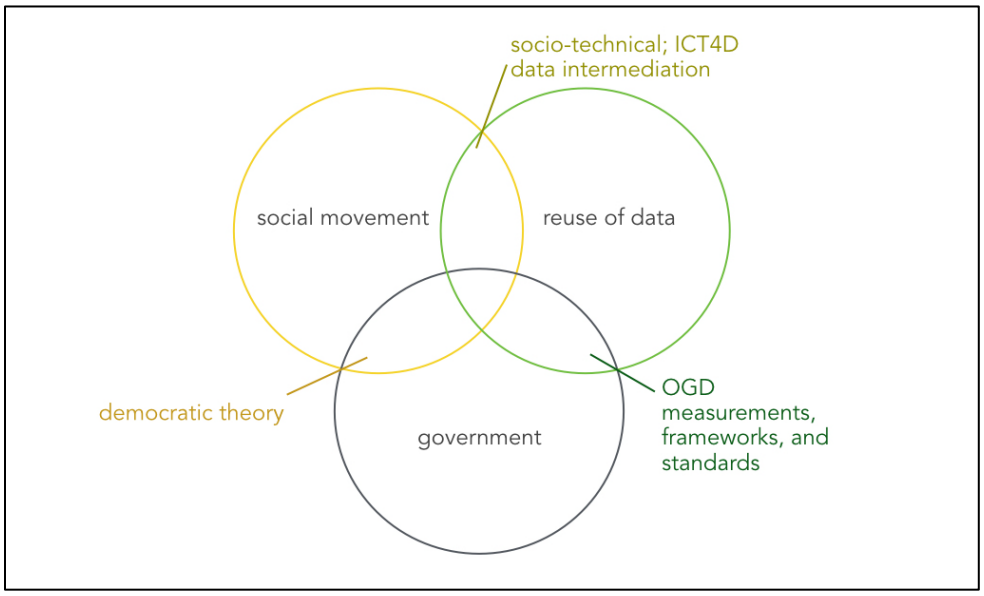


Figure 4 Analytical Milieu

2.1 Open Government Data

Governments around the world collect data on a variety of indicators including economic performance, population demographics, environmental trends, public utilities, etc. This data, often referred to as public sector information (PSI), enables government officials to create and later evaluate government policy and programs. In the early 2000s, technologists from the private and public sectors began to recognize the value of PSI in a machine-readable format. According to Janssen, these technologists valued the RTI Movement's call for transparency and accountability, but also identified the potential economic, political, and social benefits of making PSI available in more user-friendly, machine-readable formats. The Open Government Data (OGD) Movement began in 2007 when proponents formed a working group and outlined a list of data and access standards for governments to adopt (Open Government Working Group 2007). Their criteria include access, reuse, timeliness, completeness of data, interoperability, format, and uniformity of government data while protecting individual privacy. The goal of these standards was to permit access to the most complete, updated, and user-friendly data that can be used under creative commons jurisdiction. Janssen et al (2012) succinctly combine the concepts of the rights-based and technology-driven movements in this definition of open government data: "non-privacy-restricted and non-confidential data which is produced with public money and made available without any restrictions on its use or distribution" (Janssen et al. 2012, 258).

2.1.1 Expected Impacts of OGD

Open data scholars and proponents expect political, economic, and social benefits of OGD (Davies et al. 2015; Keserū and Chan 2015; World Wide Web Foundation 2015; Davies 2010,2013, 2014; Chattapadhyay 2014; Carpenter and Watts 2013; Chui et al. 2014; Fechner and Kray 2014; Gruen et al. 2014; Janssen and Zuiderwijk 2014; Zuiderwijk et al 2014; Harrison et al. 2012; Shadbolt et al. 2012; Barros 2013; Evans and Campos 2013; Granickas 2013;

Magalhaes et al. 2013; Ubaldi 2013; Chuulu 2013; Hogge 2010; Robinson et al. 2009). The economic payoff of OGD is perhaps the easiest impact to measure. Impact can be found in increased efficiencies and opportunities to innovate in information services. Datasets stimulate creation of new business ventures (Granickas 2013). Public sector geospatial data is widely used in the private sector. In 2010, the United Kingdom made public a dataset of maps and addresses that was projected to generate 22 million (USD 2011) to the British economy by 2016 (Carpenter and Watts 2013). In contrast to economic impact, the social impact of OGD is quite difficult to measure. Scholars and practitioners assume freely available government datasets decrease information asymmetry, allowing social groups to participate more fully in policy formation. This social impact of OGD is widely viewed to be the greatest challenge in practice and the most difficult outcome to measure (Davies 2013, 2014, Davies et al. 2015, Granickas 2013, Ubaldi 2013, Zuiderwijk et al 2012).

2.1.2 Evaluations of OGD readiness, implementation, and impact

Since the start of the OGD movement, scholars and practitioners have been investigating and monitoring the supply and reuse of online and publicly available government data. The World Wide Web Foundation produces an Open Data Barometer (ODB or Barometer) "to uncover the true prevalence and impact of open data initiatives around the world." Researchers and government representatives compile data on open data readiness, implementation, and impact in ninety-two countries.[1] Data collection includes peer-reviewed subject matter expert surveys, a review of open data laws, cataloging of datasets available by country, and socio economic and political secondary data.

The ODB's readiness sub-index attempts to measure government data accessibility, ICT infrastructure, open data entrepreneurial activity, and civil society readiness. Government plays

[1] 86 in the first year

an important role in providing laws, data, and incentives to encourage an open data culture. The Barometer's indicators for government readiness include expert surveys on the vision and priority of open data legislation in the political agenda. Researchers also evaluate how easily government information and services are accessed online. Infrastructure readiness is captured primarily through a measure of internet users per 100 people. The barometer also considers entrepreneurs to be important to open data readiness. Innovative technologists build applications and products with open government data sets that improve government services and consumers' access to information, supporting the growth of a knowledge-based economy. The ODB measures entrepreneurial readiness to indicate to what extent IT professionals engage with government officials. It also asks what in-country training is available for individuals to use open data. The Barometer includes a secondary measure of entrepreneurial readiness with the World Economic Forum's indicator of the rate at which firms adopt new technology. The social impact readiness score includes Freedom House rankings in political rights and civil liberties as an indicator of civil society's capacity to engage in political advocacy. Expert survey questions measure this readiness by asking how civil society organizations are engaging with governments regarding open data and what opportunities government officials extend to engage civil society organizations (CSOs). In-country issue experts rate social impact on a score of zero to ten, providing explanatory evidence as well as an indicator of confidence in their scoring.

In addition to the readiness score, the ODB measures implementation of OGD based on the availability and accessibility of government data sets. Researchers catalog datasets and evaluate whether or not data is up to date, free to access, openly licensed, easily located, machine readable, etc. Additionally, data is categorized by its use in the areas of innovation, social policy, and accountability. The innovation cluster, used primarily by entrepreneurs, includes map data, transportation, crime statistics, and trade data. A social policy data cluster allows for planning and critiquing of social programs and includes health and education sector performance, environment

statistics, census data, and land ownership data. Citizens can hold government and corporations accountable with a third data cluster called accountability, which includes data on legislation, election results, government budget and spending, and company register.

Measuring the impact of open data is done using qualitative methods. Like the implementation sub-index, impact is divided into three categories: social, political, and economic. Evaluation of the impact of OGD is based entirely on qualitative data. In-country subject matter experts are recruited to evaluate economic, political, and social impact by responding to a set of questions that ask them to rank their country on a scale from 1 to 10, 10 indicating significant evidence of impact. Evaluators are required to validate a score of greater than 5 by providing evidence of impact documented in case studies found in mainstream media or academic journals over the preceding twelve months. Projects that are documented in peer-reviewed academic articles earn a greater impact score because they indicate a more rigorous test of evaluation validity.

2.1.3 Social Impact of OGD

The 2013 ODB concluded that evidence for social impact – greater inclusion of marginalized groups in policy making- was very little. In 2014, ODB researchers added an environmental component to the social impact of OGD. The Barometer was reframed to include environmental sustainability in addition to increased inclusion of marginalized. The same methodology was used and in-country experts were asked "To what extent has open data had a noticeable impact on environmental sustainability in the country?" in addition to "To what extent has open data had a noticeable impact on increasing the inclusion of marginalized groups in policy making?" The second edition claimed national levels of open data impact to be higher where city level activity in open data is also high, but continued to find little evidence of social impact (Figure 2, Ch.1). Based on this finding, the report urged practitioners to contextualize

open data tools so that they meet local needs. It also recommended interventions that foment a civic value for OGD by offering training in data literacy and data use.

In addition to a consistently low evidence of impact, these reports revealed puzzling inconsistencies around the relationship between readiness, implementation, and impact. Countries scoring relatively high in social impact did not consistently score high in open data readiness and implementation. And some countries scoring low in impact scored high in readiness and implementation. These inconsistencies suggest measurement error or the exclusion of indicators that may better correlate readiness and implementation to social impact. For example, a Freedom House ranking may not be the most complete measure of society's readiness to use open data in advocacy efforts. This measure of political rights and liberties would not be representative of the rights and access experienced by marginalized groups.

In 2015, OGD impact on environmental sustainability had gone up 14 percent, economic impact on entrepreneurship increased by 15 percent, but political impact and government efficiency decreased (Davies et al. 2015). The 2015 Barometer reported the least evidence of impact on social issues (Ibid.). The findings of this research will help understand why the social impact of increased inclusion of marginalized groups is so elusive.

In addition to these annual reports, OGD researchers continue to find gaps in the conceptual understanding of OGD's social impact, and they echo the lack of evidence of social impact (Davies, 2010, Davies 2014, Granickas 2013, Ubaldi 2013, Zuiderwijk et al 2012, Keserū and Chan 2015). In 2010, OGD scholar Tim Davies investigated the civic reuse of government data accessed from the United Kingdom open data portal. Davies tested the claim that OGD can turn conventional issue-based engagement into data-aware and data-informed public debates. He found that debates were dominated by technical concerns about OGD standards. Davies recognized that popular models of digitizing democracy are very different from models of

empowering the marginalized, and he remained uncertain of how OGD feeds into models of collective empowerment.

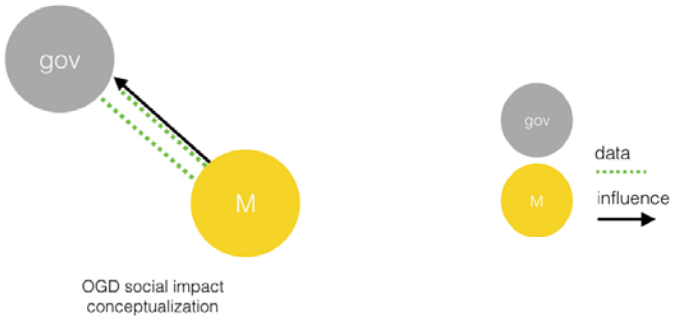


Figure 5 OGD Conceptualization of Social Impact

In 2013 the Open Knowledge Foundation launched seventeen case studies across the global south to investigate OGD impact in developing countries. A report on these seventeen case studies summarized the key insights into the practice of OGD in developing countries. Before discussing its key insights, the report stated that investigations of supply, access, and use of open data in its seventeen cases across Asia, Africa, and Latin America turned up little evidence of the direct use and outcomes of OGD (Davies 2014, 8). The first key insight stated that there are many gaps between the availability of datasets and any observed impact. The author offered several strategies to explain this gap. He urged the field to move away from an implicitly linear expectation that data plus intermediation equals impact and suggested the importance of the political context in understanding this gap.

In a 2015 study open data researchers Keserū and Chan attempted to provide a better understanding of how access to government data leads to social impacts. Recognizing the overall lack of evidence of social impact, the researchers crowdsourced a living database of 136 open data projects with goals of social impact (using broad definitions of both OGD and social impact). Keserū and Chan organized projects into four types of social impact. They can (1) inform citizens

to make informed choices, (2) promote civic engagement in political processes, (3) crowdsource feedback for policy makers, and (4) monitor and hold decision-makers accountable. From this sample they chose three cases to explore and demonstrate how theory of change and outcome mapping could be applied to better measure social impact of OGD projects. Their research offered a tool for monitoring and evaluating social impact that improved upon the former linear model. This exercise is useful in demonstrating other ways to evaluate projects, but it does not provide increased understanding around the process of marginalized groups making use of OGD to achieve a social impact.

2.1.4 Data Intermediaries and OGD

Within the practical and theoretical gap between OGD and social impact, academics have started to identify the role of a data intermediary (Carter 2016, Chattapadhyay 2014, Magalhaes et al. 2013, Ubaldi 2013, Davies 2010, Evans and Campos 2012, Jansen et al. 2012, Robinson et al. 2009). Ubaldi (2013) finds the role of intermediation to be particularly important in facilitating reuse of OGD by marginalized groups. In a list of commonly held myths of open data, Janssen et al. (2012) claimed that not every constituent can make use of open data and therefore the assistance of a data intermediary is necessary. The Information Communication Technology for Development (ICT4D) field offers a more robust documentation on data intermediation for marginalized users. In a study of intermediaries in government telecenters in India, Oreglia and Srinivasan (2015) described intermediation as a role that emerges when "the primary user is not capable of using a device entirely on their own." Sein (2011) explains why citizens need intermediation to connect to e-government services. He described data intermediaries as entities that bridge the gap between unconnected, low-tech populations and information by facilitating physical access, technical capacity, and value for use of information. He found that beyond skills and competencies, citizens may trust intermediaries more than the government officials who traditionally provision public services. An intermediary may better respond to local needs and can

act as a champion or catalyst for e-government or open data initiatives at the community level. Oreglia and Srinivasan (2015) echoed this finding in their study of women's empowerment through use of telecenters in India. They call practitioners to contextualize use of ICTs, e-government services, and data within the lives of the poor

Overwhelmingly and somewhat surprisingly, the OGD literature focuses on the role of governments as not only the suppliers of data, but as the primary curators of civic reuse of open data (Mitrovic 2015, Harrison et al. 2012, Kumar and Best 2006, Evans and Campos 2013, Sandoval-Almazan 2011, Robinson et al. 2009). Harrison et al. (2012) referred to the process of civic reuse of OGD as an ecosystem. To them the term ecosystem is a metaphor for an "interdependent social systems of actors, organizations, material infrastructures, and symbolic resources that must be created in technology-enabled, information-intensive social systems, among them, open government" (Harrison et al. 2004, 904). They conceptualized policy makers as data intermediaries by arguing that they should be the architects of the OGD ecosystem, cultivating synergies between data and innovators. In their discussion of challenges to citizen participation through the use of open data, Evans and Campos (2013) narrowly focused on the role of government and stress the importance of maintaining consistent formatting data across government agencies. Public officials play a vital role in provisioning open data; however, the conclusion that policy makers drive the civic reuse of OGD ignores the research that finds a third party may play this role better. Robinson et al. (2009) investigated various agencies and government-wide OGD initiatives in the US to reach the conclusion that non-state actors present data to citizens in a more user-friendly format than government.

Magalhaes et al. (2013) attempted to provide a terminology framework for OGD researchers and practitioners to cogently discuss and describe data intermediaries and the services they provide. The authors categorize intermediaries as civic startups, open data services, and infomediaries. These categories are depicted in a Venn-diagram like "framework" (Magalhaes et

al. 2013, 332). While their analysis is a start, the broad spectrum of intermediaries and overlapping categories creates too much ambiguity. Categorizing websites, business, and issue-oriented civil society group as intermediaries results in a description too vague to be useful.

Researchers have also cataloged the types of activities performed by data intermediaries. Chattapadhyay (2014) provided a concrete list of expectations of data intermediaries that included sanitizing, organizing, compiling, formatting, and documenting available OGD datasets. In Davies' 2010 study of UK open data portal users. His findings revealed a set of activities data users perform: fact checking, information visualization, data exploration, data merging, data reformatting, and information services. This gives us an idea of the tasks data intermediaries could perform for untrained groups or individuals. Davies also asked what motivated data use. Interestingly, very few of the users identified themselves as 'problem solvers' who visit the portal with a predefined goal in mind. Instead users tended to take up a project based on what data was available. Davies also reported that the users of the British open data portal were predominantly white, male "geeks" and therefore any examples of use of OGD for political advocacy were dominated by issue-oriented technologists interested in data-related policies. This begins to identify why evidence for the social impact of open data is elusive. The primary users of data are civic technologists reusing government data simply because they can, not because there is a specific need or goal to support social or political change. Davies calls for further research to understand the civic value chain of OGD.

To understand the expectations and tasks of actors within the process of social impact of OGD, it is useful to place them within the broader context like the ecosystem metaphor employed by Harrison et al. (2012). While the term "data intermediary" is not explicitly mentioned by the authors, they do describe an interdisciplinary team that includes actors with expertise in information, computer science, and public policy. They borrow an ecological metaphor and claim some actors represent a "keystone species." Within the OGD ecosystem a keystone species serves

as mediators providing links across disciplines of advocacy, civic technology, and public policy. However, it is not clear from the article who these individuals might be or how they emerge and connect with other players. Harrison et al. outline three interacting concerns that actors must prioritize to sustain the OGD ecosystem. These concerns are intentionality, value creation, and sustainability. The ecosystem should have leaders that intentionally drive and maintain the system. Innovators, evaluators, and outside users of open data should understand the value creation of open data. And finally, a dynamic open data system integrates continuous evaluation and revision of inputs like policies and user activities to help ensure its sustainability. Harrison et al. assume that public officials are the most likely and best suited to lead and drive the intentions and values of open data reuse and sustain the open data movement. The article concludes with suggested inquiries into the ecosystem, including user ability to consume and create data, as well as the social and material infrastructures for creating, managing, and sharing data. This is where the role of data intermediary emerges and what this paper will further elucidate.

The existing literature on OGD and data intermediation provides both tools to investigate the social impact of OGD and puzzles. Harrison et al.'s concept of an interdisciplinary team of actors demands a set of actors with equally important roles be investigated. Data intermediaries serve as technical facilitators. Public officials provide data and make policy decisions. In the context of social impact, the other set of actors that are missing in this supposed interdisciplinary team are the marginalized groups who are supposedly using data to achieve increased inclusion in policy making. There is still a gap in understanding how these three actor groups connect and interact to achieve social change. I used social movements as an event in time to explore how these actors connect and make use of data to make claims on government.

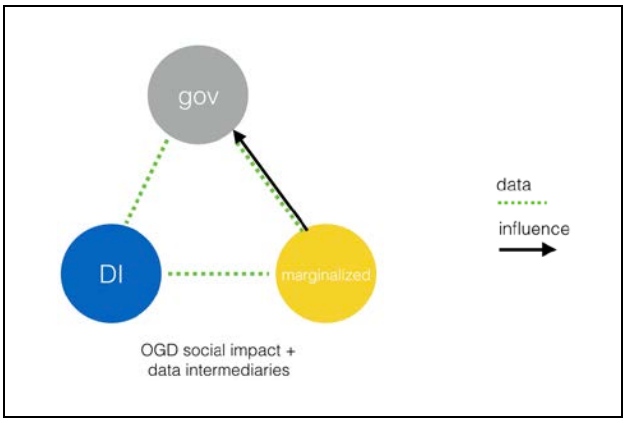


Figure 6 - Visualization of social impact with data intermediaries

2.2 Democratic Theory

Putting a process to the social impact claim requires conceptualizing some political mechanism that allows marginalized groups to take part in some political process whereby an oppressed social group influences government decision makers. In order to understand how open government data supports this practice of participatory governance, I consulted the literature from democratic theory and ICTs and democracy theory. Within democratic theory there are three theoretical perspectives on civic participation. There is the classical school of democracy which claims that all or most important decisions should be made by the public as directly as possible through venues like citizen councils (Rousseau 1762, Bentham 1843, J. Mill 1861, J.S. Mill 1948, Pateman 1970). The elitist school of democracy argues that rule by the people is impossible and chaotic (Landemore 2013, Cohen 2009, Habermas 1991, Schumpeter 1976). Instead, competitive elections between elites are the cornerstone of a desirable democracy. The third school finds that representative democracy does allow for popular influence of the polity on policy making in what is called dialectic (or deliberative or discursive) democracy (Dahl 1956, Pitkin 1967). I am focusing on representative democracy because the social impact of inclusion in policy making implicitly adopts or assumes representative democracy. There is great variation among scholars on how inclusion in a representative democracy occurs. The interpretations are so different that

depending on the theory you might not reach the same conclusion about the social impact of OGD.

Democracy and social justice scholar Iris Marion Young (1990) further builds on the concept of representative democracy with theory on substantive democracy. She explores substantive representation of social groups, including marginalized populations with democratic policy making. Young argues that the political relationship between citizen and representative must involve more than just distribution of material interests. She critiques theories that focus on material interests, saying the dominant distributive paradigm is a product of institutionalized injustice and ignores social marginalization and powerlessness. However, within these depoliticized and marginalized spaces, citizens possess situated knowledge, giving them sensitivity and insights into different social experiences. Young identifies this differentiation in social positioning as a valuable resource for democracy. According to her, if the democratic process is to identify and implement the best legislative solutions, it requires collective problem-solving. Collective problem-solving involves discussion, debate, and criticism across group-differentiated perspectives.

The value of Young's perspective in conceptualizing OGD's social impact is the notion of collective problem solving. This notion of problem solving is markedly different from the Habermasian position that values an objective and disciplined debate because Young advocates inclusive yet partial (subjective) politics. Young explains that social movements arise in response to experiences of oppression and disadvantage. While elite democratic theory warns against mass participation (Weber 1968, Habermas 1984), Young advocates inclusive yet partial (subjective) politics. She posits that democracy should engage a plurality of social groups because there are shared problems to be solved that require a lived perspective and insight. With this in mind the question now is do social groups combine OGD with their situated knowledge to impact policy outcomes?

In a collection of essays called, *The Democratic Paradox* (2000), Chantal Mouffe critiques the model and theory of deliberative democracy and collective problem solving. She offers the alternative of 'agonistic pluralism.' Mouffe calls for the abandonment of the rational consensus advocated by many democracy and social justice scholars (Rawls 1971, Habermas 1984, Benhabib 1986, Cohen 2009). Not only is rational consensus achieved through practical rationality a fanciful notion, it ignores a valuable social and political friction provided by pluralism. Mouffe insists that the current practice of democracy is in fact hegemony, as hegemony lies between objectivity (as advocated by deliberative democracy models) and power (inherent to the political system) (99). Her alternative to deliberative democracy is agonistic pluralism. The model of agonistic pluralism does not require political adversaries to reach rational consensus. Instead, adversaries share a common ground of ethical and political principles in which to disagree and persuade from very distinct and different standpoints (102). This concept of pluralism is relevant because the inclusion of marginalized may in fact be contentious and adversarial, and the OGD field may be narrowly conceiving of inclusion by implicitly adopting the model of deliberative democracy.

I included political scientist Sidney Tarrow in this discussion of democratic theory because while he writes on social movements, for him, political opportunities are essential to a social movements. In his book, *Power in Movement* (1994) he describes how individuals and organizations of social movements use political opportunities to advocate for new and unaccepted claims. Tarrow defines social movements as coalitions of mediated and informal networks of organizations, intermediate groups, members, sympathizers, and crowds (15). While there is often no hierarchical structure, leaders within the movement provide the important role of shaping grievances into well framed, enunciated claims. This framing is important to the cohesion of a potentially widespread, diverse coalition. Central to Tarrow's understanding of social movements and their outcomes is how social movements take advantage of political opportunities and

navigate the political sphere. He identifies the crucial shift from the streets to the halls of government. Within the halls of politics, a movement's strategies or "repertoires of contention" change. However, claims can and should be tamed or integrated into the political process. Therefore an essential aspect to the outcome of a movement is how the coalition of collective action inserts itself into complex policy networks. Tarrow seems to advise social movements that even though they see themselves as adversarial, set apart, and outside political institutions, in order for social movements to be successful, they must learn to conceive of an identity that public officials can understand and support. Tarrow's theory now provides opportunities for both adversarial pluralism and tamed rational dialogue because according to him even though they see themselves as adversarial, set apart, and outside political institutions, social movement organizations must learn to conceive of an identity that includes the reach and participation of the state. Overall, these theories on democracy offer different conceptual frameworks for how open data moves through the social and political spaces and what political realities are more conducive to the use of OGD for inclusion.

2.3 Information Communication Technologies and Democracy

The Information Communication Technologies (ICTs) and democracy literature offers a body of research on how new technologies impact democratic outcomes. On one side is Larry Diamond's (2010) idea of "liberation technology." Diamond views ICTs to be a catalyst for expansion of political, social, and economic freedom. Other scholars (Bertot et al. 2010, Hofheinz 2011, Wade 2002, Longo 2011, Saco 2002) are skeptical of ICT's positive impact on democratic outcomes. Hofheinz (2011) calls it this generation's "nextopia" or mythical fix to democracy (Hofheinz 2011). Others contend that ICTs favor the privileged (Castells 1998, Ciborra 2002, Dagron 2001). Castells (1998) sees ICTs as reinforcing culturally dominant social networks and as both a cause and effect of social marginalization. Castells investigates ICTs as a networking tool for social movements, but does not investigate the use of OGD.

In a recent World Bank Report (Gigler and Bailur 2014), contributing authors examine how to close the feedback loop between citizen and government using ICTs. The report includes case studies of ICT and civic engagement. One practitioner observed government initiatives to be "ticking the box" exercises and echoed Hofheinz's critique that ICT for democracy is a fad (Gigler and Bailur 2014, 250). One of the case studies investigates the link between the theories and practice of ICT and democracy. However, it only considers a narrow scope of ICT-facilitated feedback systems. The limitation of civic engagement to interaction with very structured platforms like interactive maps or text messaging services excludes the reuse of OGD for civic engagement outside of pre-existing government-built platforms.

Through an empirical investigation, Best and Wade (2009) ask whether internet penetration is in fact a catalyst or dud for democratic deepening. Their longitudinal regression analysis shows that only in more recent years do we see a positive and significant correlation between internet prevalence and Freedom House's measure of democracy. They support academic findings that the internet effect varies by regime type (Corrales 2002) and regional context (Scheufele and Nisbet 2002, George 2005, Best and Wade 2009). Best and Wade (2009) are most optimistic about the correlation between internet access and democracy in Africa, Latin America, and Western Europe. With the finding that internet access can support democratic processes like transparency and accountability, they, along with other scholars (Steel and Stein 2002, Margolis and Moreno-Riaño 2013), advocate internet regulation and infrastructure development that recognizes the link between connectivity and civil and political rights. Here we have this scholarly call to contextualize ICTs within the political context.

Carl DiSalvo, civic design theorist and practitioner, would perhaps not be classified in the ICTs and democracy research community; however, he offers an important design perspective on the use of digital media in the democratic context. In his book *Adversarial Design* (2014) he theorizes that 'designing for politics' focuses on how to improve the mechanisms of democracy

by improving citizens' access to information and procedures. Alternatively, 'political design' provokes political discourse through the articulation of social conditions. This articulation often involves a critical investigation of information including OGD. DiSalvo gives Chicago's Million Dollar Blocks, a project that maps the costs of incarceration by census block, as an example of agonistic 'political design.' Cartographers and social justice advocates, Cooper and Lugalia-Hollon, built the Million Dollar Blocks map to criticize and contest the inefficient and racist United States' justice system. DiSalvo follows Mouffe's democratic theory, agreeing that contestation is necessary for democracy.

DiSalvo plots 'political design' and 'design for politics' along an axis of protest-informed citizen and an axis of government mechanisms-critical contestation. Figure 2 (below) represents these quadrants. This plot is useful in categorizing the civic reuse of OGD to understand the difference between uses for social impact (increased inclusion) versus political impact (transparency accountability and government efficiency). Many open government data platforms and smartphone applications fall into the lower left quadrant and aim to provide citizens with greater information to improve decision making. Governments are most interested in these digital tools because they can improve efficiency in provisioning government services and create economic impact. This plot challenges the social impact claim because it removes critical contestation from government mechanisms. Accordingly, social groups cannot use OGD to both critically contest and influence policy making at the same time. However, DiSalvo's plot does provide a design space where protest/rights claiming intersect with government mechanisms. This is the design space where marginalized groups use of OGD for inclusion in policy making could fall.

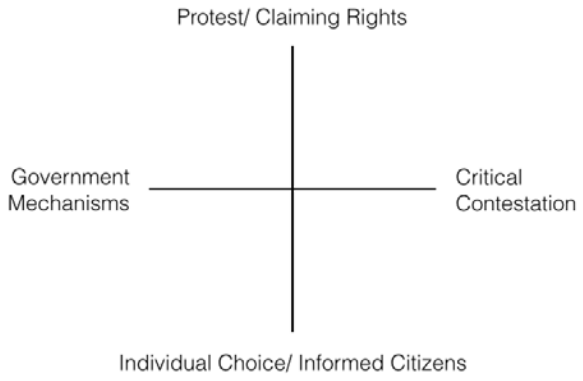


Figure 7 Designing for ICT and democracy (DiSalvo, 2015)

2.4 Marginalization and Social Movement Theory

The social impact of OGD requires one essential quality of its users - marginalization. The only defining characteristic of these marginalized users is their exclusion from policy making. Third world feminist scholar Asma Mansoor (2016) finds a binary notion of marginalization as inclusion/exclusion or outside/inside to be problematic. Indeed, a social condition of marginalization is a complex construction and conceptualizing it requires consulting theoretical perspectives. A social position of "marginalized" can be conceptualized like any other social position. Iris Marion Young discusses social groups and personal identity and postures that "we find ourselves positioned in relations of class, gender, race, nationality, religion, and so on, which are sources of both possibilities of action and constraint" (Young 2000, 100). Social groups are formed when individuals take part in positioning themselves in relation to others who belong to a shared social field. A social field is made through given meanings (e.g. what it means to be indigenous, poor, rich, etc.), expected activities (e.g. profession, hobbies, cultural practices), or institutional rules (e.g. reproductive rights, voting rights, etc.,) (Ibid). Accordingly, the experience or situation of marginalization varies extensively. I do not use this research to improve the scholarly distinction between marginal and center; however, I do recognize that this gap exists

and that the OGD social impact claim assumes that this gap can and should be bridged through political opportunities and open government data. I identify marginality in this text as a social position that is a source of constraint, particularly in policy making. Yes, this is problematic but I find it appropriate to keep this assumption intact in order to investigate the claim.

In times of collective mobilization, social groups coalesce as a social movement to make claims on government. I used this event as an opportunity to study the use of OGD for social impact. In his article, "Towards a Policy Framework for the Empowerment of Social Movements," Philippe Villeval (2008) argues that movements are a network of strongly linked central groups with weak links to other stakeholders. In building this argument he cites the work of Lilian Mathieu (2004). According to Villeval, Mathieu defines social movements as "a collective form of protest action, a way for people who are not in positions of strength to express themselves" (Villeval 2008, 248). This combination of strong and weak links gives access to resources including "information, skills, material resources, and critical mass" (Ibid., 248). My research does not focus specifically on the social movement network, but how actors within the social movement interact with data intermediaries and public officials to access and reuse OGD in their advocacy efforts. I rely on and assume Villeval and Mathieu's observations of a dynamic cohesion between central social movement organizations and the 'voiceless' others. I offer no theoretical perspective on social movements or social groups, nor do I use this research to test existing theories on social movement tactics.

2.5 From Literature Review to Research Question

The expectations and standards set forth by the OGD research allowed me to analyze how groups access and reuse OGD. In addition to the OGD research, the ICT4D and ICT for democracy literature informed the investigation of sociotechnical constraints to social impact, particularly the role of data intermediaries in overcoming these barriers. Democratic theory,

related theory on adversarial politics, and social movement theory demonstrated divergent paths to making claims on government in order to affect policy outcomes.

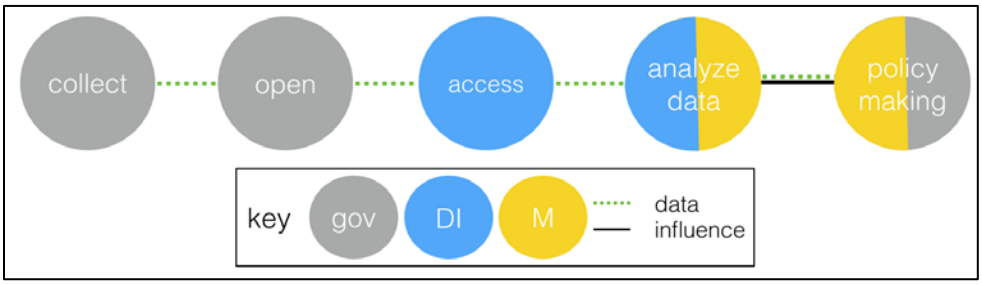


Figure 8 Process Map of the Social Impact of OGD

Through these theoretical lenses I explored a myriad of conceptually linked questions: Does open government data allow social movements to make more legitimate claims to government? How does OGD allow social movement organizations to move from the streets to the halls of government? What is the role of data intermediaries in the use of OGD in times of social movement? What is the role of marginalized in the use of OGD in times of social movement? This research intended to conceptualize, link, and sequence these dense and complex questions about the relationships among social movement, technology, and democratic responsiveness.

2.6 From Literature Review to Analytical Framework

From the conceptual foundation of OGD practice and theory, democratic theory, and ICT and democracy practice and theory, I built an analytical framework to conceptualize the social impact of OGD. I used this analytical framework to piece together a process of how social movements make use of OGD for social impact and political change. The process I identify is as follows: government produces legislation, social programming, and datasets while engaging in policy making, monitoring, and evaluation. Open government data and legislative texts are published to online portals. Social movement organizations and marginalized groups work with

data intermediaries to access OGD and facilitate marginalized groups in using OGD to translate movement grievances into well-articulated claims to government. An interdisciplinary team of social movement organizations and marginalized groups and data intermediaries access, analyze, synthesize, and communicate demands to public officials. Social movement organizations and marginalized groups possess the advocacy know-how and situated knowledge needed to affect policy-making process. Data intermediaries have the skill set and technological tools to access and analyze OGD. According to the social movement theory, I identified two main uses of OGD in times of social movement. First, OGD can help leaders organize a disparate and diffuse network around a particular framing of the social issue for collective action. Second, appropriating and representing the government's own data can provide a common dialect in which to effectively engage public officials as the movement seeks legitimacy in the halls of government.

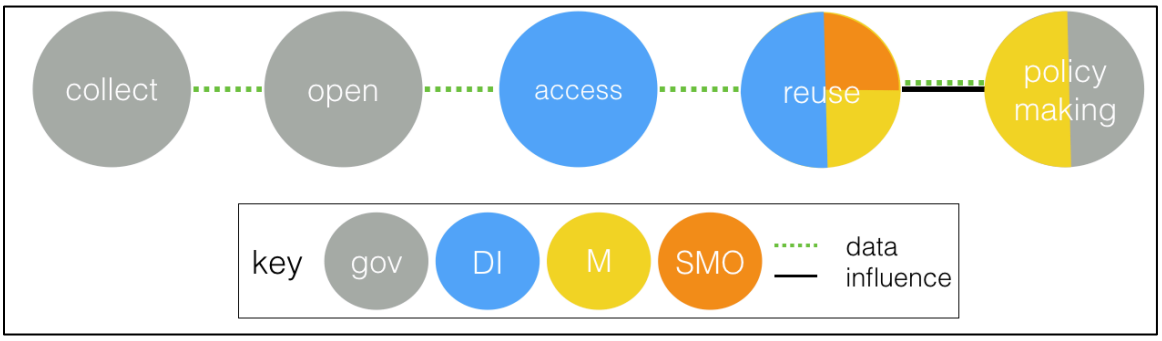


Figure 9 Process Map of Social Impact of OGD for Comparative Study

2.7 Relevant Conceptual Frameworks Discovered During Field Work

During the fieldwork, three theoretical frameworks were found to be missing from the OGD conceptual model of how social impact of OGD is to be achieved. The first framework comes from empowerment theory, the second is from theories on technocracy, and the third is on neoliberalism. These three theoretical frameworks are included here to prime the reader on what

is to be discovered in the case studies; however, concepts of empowerment and technocracy, and neoliberalism were not included in the initial research design. Their significance was revealed by informants and through thematic coding. I discuss these findings in depth in the final chapter.

2.7.1 Empowerment Theory

Academics interpret empowerment in a variety contexts and levels of analyses. In "Empowerment Examined," Jo Rowlands (1995) takes a critical look into the implications of varying interpretations of empowerment on how international development is practiced. She starts with an explanation of conventional notions of empowerment, which focus primarily on acquiring 'power from' and 'power over'. This 'power from' is theorized as a zero-sum acquisition of power where power is displaced from elite actors to marginalized groups. Rowlands explains how this zero-sum acquisition of 'power over' is an incomplete understanding of power and empowerment dynamics within a society. The focus on overt demonstrations of 'power over' misses the subtle, systematic ordering of power. Drawing on feminist literature, she explains how 'power over' is generated through a process where marginalized individuals internalize messages of oppression, come to believe these messages to be true, and act according to these truths.

The generative interpretation of power as internalized experiences in powerlessness allows for a broadened concept of empowerment. Generative empowerment begins with an intangible and inward process that precedes any tangible act of claiming power. Individuals come to understand the outward sources of internalized oppression and recreate an identity as "able and entitled to occupy a decision-making space" (Rowlands 1995, 102). Generative empowerment removes the notion of zero-sum. Developing a desire to achieve and a belief that one is capable of achieving does not diminish another person's ability to do the same (Rowlands 1995, 102). In fact, feminist theorist Audre Lorde (2007) emphasizes that exposure to others' internal empowerment processes inspires others to pursue empowerment. Rowlands explains how the

theme of understanding is common in generative empowerment. She cites Brazilian educator Paulo Freire's concept of concientization, a process where individuals develop a 'critical consciousness' of their circumstances and the social environment. Becoming a subject in ones own life is critical to taking action according to Freire. He does still require a facilitator role, as political action is learned. Facilitators accompany the oppressed through this process, but critical reflection cannot be done for the oppressed. In the generative empowerment model there are opportunities for dialogue and understanding that could be prompted by OGD, but this is not included in the social impact claim.

2.7.2 Technocracy

In *Seeing like a State* (1998), Scott writes that modern statecraft through technocracy is only achieved by making society legible through maps, census, naming, and standardizing (Scott 1998, 2). He calls this high-modernist ideology (Ibid., 94). Followers are devoted to the rational design of social order through scientific and technical understanding (Ibid.). Scott argues that authoritarian states are the most fertile political sites for social-engineering as negotiation with organized citizens does not limit the pursuit of high-modernism. Scott's book is a critique of government schemes that are formulated with a blindness to local realities. He calls for planning and policymaking through knowledge that comes from practical experience and mutuality which comes from coordination of social order without hierarchy.

Political theorist Timothy Mitchell examined the transformation of politics, society, and geography under Britain's technocratic and colonial occupation of Egypt in his book, *Rule of Experts* (2002). Britain's occupation started in 1882. With Cairo-based administrative counterparts, the British established a system of estates to produce crops that grew best in Northern Africa's semitropical climate (Mitchell 2002). Mitchell explains that the British sought to weed out arbitrary decision making within government and implant a "modern" governing

structure based on unrelenting calculation. Similar to Scott's analysis of modern statecraft, Mitchell documents how the British began to survey the land and its inhabitants through census and mapmaking. Mitchell calls this exercise in data collection a wielding of new political power based on knowledge and command of space (Ibid., 90). According to him, the data and maps redistributed forms of knowledge and expertise. The maps moved knowledge from local inhabitants to Cairo's planners. Mitchell also found that technocracy is most easily practiced under authoritarian regimes (Ibid., 60). In writing about Chile's technocracy, Dávila Avendaño (2010) asserts that technocracy is fundamentally at odds with democracy. Citizens are not to be trusted as voters and must be protected from their worst political instincts (Avendaño 2010, 205). Trust instead goes to experts in the field of economics, engineering, finance, etc. whose trained expertise and analyses guarantees rational policy making.

The sociopolitical context of technocracy is significant to the civic reuse of OGD for social impact. The OGD social impact claim is a product of the high-modern ideology — modernized marginalized use data to hold politicians accountable with rational arguments. While the OGD field imagines marginalized using the tools of technocracy to achieve social change it is unclear whether the state would really view them as experts. With this theoretical perspective, the use of opened government data to achieve greater inclusion in policymaking becomes either more uncertain or perhaps ever more alluring as the only way for marginalized to be included in policy making is to create technical solutions to their social problems.

2.7.3 Neoliberalism

According to Vela et al (2014) technocratic practices were particularly dominant during the time of neoliberal reform in Latin America. This reform period was born of economic and political crises, after which citizens and elites lost trust in the governing capacity of politicians (Vela et al. 2014, 89). During the economic crises of the 1970s and 1980s, the IMF and World

Bank mandated a set of monetary and fiscal policies to release the domestic economy from state control to the invisible forces of the global free market. In his most recent book, Joseph Stiglitz (2016) described neoliberalism as a set of ideas that convince the individual of the efficiency and stability of free and unfettered markets. Neoliberalism is quite different from technocracy, but intimately related in that technical experts in the field of economics were tasked with prescribing and implementing policy and both share an affinity for efficiency and optimization.

Anthropologists use ethnographic methods to contextualize neoliberal reforms and investigate what challenges they bring to social life. Anthropologists Ong (2006) theorizes that "neoliberalism creates a new relationship between government and knowledge […] where governing activities are recast as nonpolitical problems that need technical solutions" (Ong 2006,3). Anthropologist Elizabeth Povinelli (2011) argues that neoliberalism is not just a set of policies; it is an evolving restructuring and restricting of social power and social conscience over time. She also explains that neoliberalism privatizes suffering as an experience of the individual, not of society as a whole (Povinelli 2011, 183). Accordingly, a neoliberal society holds individuals accountable for their suffering as an outcome of their own poor decision making. Writing in the context of neoliberal Argentina, Abal Medina and Ortega Breña (2011) observe that neoliberalism requires exclusion, and that embodied marginality and oppression is required to encourage if not threaten those inside the productive neoliberal order to stay at the risk of poverty and exclusion (9).

While the OGD field imagines marginalized using the tools of technocracy to achieve social change in their neoliberal landscapes, due to their marginality, oppressed populations are forced to mobilize quite differently in protest of the neoliberal social order (Schild 2015, Abal Medina and Ortega Breña 2011). Abal Medina and Ortega Breña emphasize the originality of symbolic politics that challenged the "visual forms of neoliberal domination" (90). Instead of data analysis, they observe physical protests against the "invisibilizing visibility" of the capitalist state,

with its data-enabled Panopticon gaze designed for social domination. This muddies the expectation of social impact of OGD, as it suggests that marginalized are restricted, not empowered by government's practice of data collection.

It is also problematic to assume that empowerment occurs through inclusion in policy making. Verónica Schild calls this paradoxical in her article, "Emancipation as Moral Regulation: Latin American Feminisms and Neoliberalism." She writes on feminist projects in neoliberal Chile and argues that "liberation" through increased inclusion in neoliberal political order is really a form of moral regulation (Schild 2015, 550). Accordingly, the OGD social impact is an exercise in regulation or assimilation and not empowerment. Much like the naïve concept of marginalization, this is problematic; however, I maintain this neoliberal interpretation of empowerment in my research design in order to test the claim.

The social projects investigated in this comparative study were carried out by groups and social movement organizations with distinct contexts of neoliberalism. The use or avoidance of OGD as a tactic for advocacy can only be understood in the context of each site's neoliberal reform experience.

Hong Kong's neoliberal experience is part of a British colonial legacy which favored the free flow of capital and goods (Woo 2014, 39). Free market policies and economic optimization was institutionalized in the Basic Law in 1997 (Ma 2011, 689-690). According to Chung and Pun (2007), neoliberal ideology and policy has become part of the discourse around Hong Kong-Beijing relations. Hong Kong provides an important link for the mainland to global capital markets. While Beijing is interested in maintaining this access to free market capital, the mainland still exercises significant control over the region. Chung and Pun's argument that political commitments to neoliberal reforms draw on a deeper discourse of Beijing's intervention in Hong Kong points to how the neoliberal paradigm reinforces local political ideologies. The

British colonial legacy is also apparent in Hong Kong's highly bureaucratic technocracy. Hong Kong politics thrives on a compartmentalized and results-driven policy making by highly trained professionals (Hung 2007, 245). More on the political background of Hong Kong can be found in the Hong Kong case chapter.

Dominican neoliberal reform was prescribed and mandated by the International Monetary Fund and the World Bank as part of the Washington Consensus. Economists Hausmann et al. (2004) describe the Dominican Republic's reforms to liberalize the economy in the late 1980s and 1990s as unimpressive and modest in comparison to other Latin American countries (Hausmann et al. 2004, 29). They explain that the free market was protected from government regulation by private sector actors who had significant influence in the political sphere (Ibid., 30). Neoliberalism is the predominant economic ideology in the Dominican Republic; however, the reform package in the Dominican Republic was much less comprehensive than reform in Chile.

Chile's neoliberal reform experience is set apart from the Dominican Republic and Hong Kong by the degree of reform and the drivers of the reform. Chile's neoliberal reform was aggressive and profoundly impacted the economy, politics, and the Chilean society (Silva 1991, 385). The Chicago Boys, Chilean technocrats that designed the neoliberal reform, were first trained in the United States and later took professorships at the University of Chile to teach Chilean economists. Under the Pinochet dictatorship, these technocrats instituted a full battery of reform through state mechanisms. In 1974, one year following the coup leading to Pinochet's installation as dictator, the Chicago Boys began liberalizing the economic and monetary policy of the country (Silva 1991, 392). With power consolidated under a dictator, neoliberal policies were applied without restraint. The Chilean economy grew rapidly. The government repealed social programming and labor protection causing impressive economic development to occur in parallel with extreme income inequality. Silva argues the technocratic character of decision making used

during the Pinochet dictatorship and particularly in neoliberal reforms has carried over despite the transition to democracy (Ibid., 409).

The concepts of empowerment, technocracy, and neoliberalism are not explored again until the final discussion chapter. The analytical framework built from the OGD, democracy, and ICT and democracy fields provides a conceptual guide to test the claim for social impact. I describe the methods and the overall research design in the next chapter. Following the justifications and explanation of research methods, I will take you through the research and findings from fieldwork in Hong Kong, the Dominican Republic, and Chile.

CHAPTER 3. RESEARCH DESIGN AND METHEDOLOGY

3.1 Methodological Justification

The comparative method and inductive reasoning formed the foundational base of this research design. These methods were chosen with the anticipation that the traditional method of generating hypotheses from theoretical models would fail in a reality of rapid social change and pluralization of life. The logic and design of the comparative method offered the most appropriate framework to investigate a process as complicated as social change.

Understanding puzzles, like the use of open data for social impact, requires narratives and theories induced from specific, delimited, local, historical situations (Denzin and Lincoln 2005). Comparative qualitative research constructs a locally oriented context of interaction (Flick 2009). Cases are interpreted as configurations of interacting characteristics instead of in terms of variables (Ragin 1987). Latin American comparativist Kirk Bowman demonstrated the utility of comparative logic and inductive reasoning in two separate decade long studies of militarization and democracy (2002) and state capacity and the tourism industry (2013). He sorts through relationships between institutions, regimes, development, and globalization not to find evidence of ex ante hypotheses, but to gain insights into complex systems within specific domains. Through the comparative process Bowman uncovers the alignment of system inputs that result in outcomes of democratic deepening and economic development.

Through qualitative methods and inductive reasoning, this research uncovered the knowledge people use to act and interpret actions with respect to OGD and social change (Spradley and McCurdy 1972). Instead of asking, “What do I see the people doing?”, this research asked, “What do these people see themselves doing?” (Spradley and McCurdy 1972, 9). This process of discovery was structured by the analytical framework set forth in Chapter One.

The framework provided both a set of actors to interview and a set of technical and political processes included in the interview instruments.

Inductive reasoning also informed the data analysis phase. I analyzed interview data using open thematic coding, a technique that relies on informant reporting to organize and interpret meaning. The informants' knowledge and insight provided a ground-truthed set of themes and categories that brought greater clarity to the OGD social impact claim. As part of my research proposal, I intended to turn the analytical framework and informant identified conditions for social impact into a predictive model using Boolean logic. A predictive model could test generalizability of findings on a larger sample. I built this model using quantitative indicators to proxy the conditions necessary for social impact of OGD. However, the results from thematic coding (found in the Annex) revealed holes in the existing analytical framework. And building a predictive model, based on this framework, further demonstrated the holes in the analytical framework. In the final chapter the holes that emerged as cross-cutting themes are explored and discussed as causal mechanisms missing from the analytical framework that better establish sequence and agency to the process of social impact.

3.2 Case Selection

I investigated the phenomenon of OGD's social impact in Hong Kong, the Dominican Republic, and Chile with social movements as the unit of analysis. I chose the event of a social movement to explore OGDs social impact because a social movement provides a collection of formal and informal organizations advocating for social change at a national level. It makes sense to use the nation-state as the level of analysis because the OGD supply is maintained and provisioned by the federal government. Additionally, commitments to OGD are made by governments and the existing research on OGD is predominantly evaluated at the national level. Purposive sampling was used to select the two primary cases of the Dominican Republic and

Chile based on the preliminary evidence that the social movements successfully achieved social impact and made use of open data to make claims on government. The selection bias towards primary cases where a certain outcome was present allowed me to study the functioning and realization of social impact through use of OGD (Flick 2009). While social campaigns for continued accountability were ongoing, the analysis of the use of open government data in social movements in Chile and the Dominican Republic was retrospective. Participants were asked to recount experiences and strategies during a movement's most active months.

Comparison of these two cases employs a Most Similar Systems design. Chile and the Dominican Republic are similar in several ways. Both are Latin American countries with Spanish colonial legacies. Both are electoral democracies where social movements report achieving impact in tandem with national elections. In both countries, a coalition of social groups mobilized at a national level to effect change in public education policy. In Chile, the 2011 Student Movement was organized by a group of university students and part of a persistent push back against the privatization of education dating to the 1980s. In the Dominican Republic, teachers, students, and a coalition of civil society organizations united to demand that the government fulfill its constitutional mandate to spend 4 percent of national gross domestic product on public education.

The selection of Hong Kong was not based on evidence of use of OGD nor was there any evidence of social impact. This case was chosen to provide a most dissimilar case to compare to the Dominican Republic and Chile. Hong Kong is not a nation state, nor is it an electoral democracy. Hong Kong ranks even higher than Chile in the human development index and the income per capita in Hong Kong is double that of Chile’s. While students are leaders in the pro-democracy Umbrella Movement, their focus is not educational spending. Finally, the outcome of the Umbrella Movement is yet to be determined. By comparison, the Hong Kong case allowed me to test how sequencing and agency of OGD’s social impact is different in the absence of

democratic mechanisms. At the time of case selection, Hong Kong's Umbrella Movement presented a very active social campaign to probe OGD and social change. It was also evident that some government data was made public on government portals for civic use. The Georgia Tech Institutional Review Board prohibited requesting interviews with Umbrella Movement leaders and participants. Advocates involved in other social campaigns were instead interviewed; however, because the Umbrella Movement was a coalition of groups, many research participants participated in the occupation and reflected on these experiences. Funding to conduct the research and connections to the Hong Kong research network also informed the selection of this case.

3.3 Data Collection Methods

3.3.1 Secondary Data

In addition to the collection of primary data, I collected and analyzed documents and artifacts produced by participants of the movement that communicated the advocacy goals of the social movements. Sociologist Lindsay Prior (2003) encourages qualitative researchers to consider text documents as networks of action. Organizations comprising the coalition of leaders within the social movement published documents of analysis of government datasets to frame and advocate for specific political outcomes. These documents are openly accessed from online platforms used by social groups to advocate and educate through their internet presence. The documents not only revealed the purpose and perspective of the social movement publishing the document, but also identified the particular conditions of their production. Analyzing social movement organization produced documents provided preliminary evidence of access and reuse of open government datasets. These documents began the discovery of what kinds of datasets were useful, where datasets came from, and the kind of analysis or reuse applied to the datasets by the social movement organizations. The corpus of documents gathered for this analysis

included all public domain advocacy publications. This document analysis also provided greater context and familiarity with the movement's goals.

The bulk of documents and artifacts were discovered prior to field work from the movements' online presence on online platforms including organizational websites, Twitter, youtube, vimeo and Facebook. Some of the secondary data was collected during field research when participants would mention or recommend review of certain media or reports produced by movement participants. Secondary data from the Chilean and Dominican movements were interpreted in Spanish. When an English version of documents and media pertaining to the Hong Kong case was not available, the Google translation plugin was used to translate and interpret.

3.3.2 Primary Data

Research participants came from three primary groups: (1) leaders of the social movement involved in framing of movement goals and practices, participants of the social movement's mobilization or activism activities (2) data intermediaries, and (3) political officials. During field work, social movement participants as well as leaders were included in the first group in order to broaden the sample as well as collect perspectives from marginalized groups since leaders were often members of a socially and economically privileged class. Qualitative methods are constrained more by time than statistical validity (Fetterman 1989, Spradley and McCurdy 1972). I conducted 19 weeks of field work across the three cases. With Hong Kong being a secondary case, this research was conducted over a 5 week period. Because I lived in the Dominican Republic for over 2 years and I am familiar with the social and political context, field work in the Dominican Republic lasted 6 weeks. To allow appropriate time to build connections, identify, and interview informants, I spent 8 weeks in Santiago, Chile. I intended to interview at least ten key informants from each group. In the case of Hong Kong, this goal was not met, primarily due to IRB restrictions. In Chile and the Dominican Republic, the majority of

informants were from the capital cities. Participants from outside of the capital cities were less responsive to my requests for interviews; however, a small sample of respondents from outside of the capital participated in both cases.

Table 1 Research Participant by Country and Group

	Public Officials	Data Intermediaries	Social Group	totals
Chile	14	16	10	40
Dominican Republic	15	13	12	40
Hong Kong	6	9	5	20
totals	35	38	27	100

Prior to fieldwork, interview questions were sent to in-country academics to validate or correct for appropriate word choice and cultural phrasing. Phrasing and terminology was also revised based on confusion or preferred terminology as demonstrated by informants during field work. Interviews in the Dominican Republic and Chile were conducted in Spanish. Interviews in Hong Kong were conducted in English. Some Hong Kong participants spoke English as their mother tongue, many spoke English proficiently as a second language. In the Dominican Republic a Dominican research assistant attended interviews and was directed to take specific notes of informant reporting. These notes were taken in Spanish. I also took notes in Spanglish. My research assistant sent me his interview notes and reflections, and I translated them into English. Some of the interviews in the Dominican Republic were recorded, which I later transcribed and translated. In Chile, I recorded all of the interviews and took notes in Spanglish. Notes were translated to English. A Chilean university student transcribed the interview audio recordings to Spanish. I then translated the transcriptions to English for coding analysis. I coded interview audio and text documents according to their research participant group and numbered each to distinguish between respondents within a group. The code SG corresponds to social movement leaders and participants or civil society activists in the case of Hong Kong. The code

PO corresponds to public official. The code DI corresponds to data intermediary. In addition to interview notes and audio transcripts, I maintained a research diary. This diary was kept with "cloistered rigor," meaning thoughts were processed immediately following interviews (Lofland et al. 1995, 64). For the purpose of reporting results in this document, a D was added to the code of research participants from the Dominican field work and a C was added to the code of research participants from the Chilean field work. According to IRB protocol, all interviews from the Hong Kong case are reported as anonymous.

3.3.3 Interview Methods

I conducted interviews to collect three different perspectives on OGD and use of OGD for social impact: (1) subjective individual meaning (2) interactions, and organizations of interactions and (3) implicit or unconscious rules and structures that govern activities (Flick 2009). The methods chosen for this case study are intended to create a triangulation of these three perspectives in order to construct the most complete narrative of how social movements (or CSOs in the case of Hong Kong) used open data for social and political change.

3.3.3.1 Episodic Interviews with Social Movement Leaders

Episodic interviews are a form of the narrative interview; however, episodic interviews give greater structure to the interviewee than the traditional narrative interview. Interviewees narrate their experience of a situation or chain of situations through prompts given by the interviewer. For example, I would start with the prompt, "Tell me about how you got involved in the movement." In addition to prompts building a timeline narrative, the interviewer can probe expected or feared change and question subjective definitions and abstractions (Flick 2009). This method provides data to examine primary perspective of subjective meaning as well as implicit or unconscious rules. These interviews provided an in depth account of the social movement leaders' positioned knowledge, their subjective understanding of the role of positioned knowledge

and difference in the democratic process, and their subjective description of social impact. Episodic interviews were particularly useful for comparison of social movements from case to case, which is necessary for the comparative structure of this research design. In the event that a research participant did not respond to this interview format, I used a semi-structured interview method found in the annex.

3.3.3.2 Semi-Structured Interviews and Structure Layering Technique

Semi-structured interviews break down the question of "how did this social movement achieve social impact using open data" into concepts of open data access and re-use; opportunities to interact with democratic procedures for impact, and descriptions of social impact. Interviews were held with key informants, or experts, who have a wealth of knowledge and nuanced understanding of everyday activities (Fetterman 1989). Key informants often identified other actors of interest to be interviewed. Semi-structured interviews were conducted with key informants from all three participant groups, including public servants, additional representatives from the social movement, technologists, and OGD advocates.

I intended to conduct a second round of interviews with some key informants once content from the first interviews had been analyzed. This technique helps to ensure that interpretation and later analysis through coding correctly represents the informants' knowledge and experience. Due to IRB protocol in Hong Kong, a participant's contact information was destroyed post-interview. For this reason informants could not be contacted again to employ structure layering. To still employ the technique, concepts brought up by participants were presented to subsequent research participants. This technique was used in both the Dominican Republic and Chile.

3.4 Data Analysis – Thematic Open Coding

I analyzed interview notes and audio transcriptions using the thematic open coding technique. This method of analysis combines inductive and deductive processes. Thematic open coding employs the methods of the grounded theory approach where themes emerge from interview content; however, as proper to open coding, substantive categories are identified from the literature as a guide to observing and structuring meaning (Flick 2009). Coding categories were first designed based on the analytical framework constructed from the open government data, participatory democracy, and internet and democracy literature. After successive readings of transcripts, I revised the coding categories (also called nodes) to reflect commonly mentioned topics and themes that emerged from interviews with research participants. This iterative process of node construction ensures that the findings and derived meanings significant to the social impact of OGD are grounded in real-world practice. Coding categories for OGD-relevant topics included accessibility, format, legal framework, quality, value for open data, and the use of OGD for advocacy. Data intermediation topics include intermediary types, skill set, and data activities. Topics related to sociopolitical context are grouped into challenges to political participation and the neoliberal experience. Another coding category relates to the strategies of social movement organizations and CSOs for advocacy, communication, and mobilization.

In comparison to the OGD and data intermediation nodes, the construction of nodes under the sociopolitical and social movement categories was heavily informed by the explanations of movement strategies and challenges to political participation of research participants. These are the themes that were unexplored in existing literatures used to construct the analytical framework. The results from this thematic category presented an important missing piece in the academic understanding and real-world practice of making use of OGD for social impact. A table of all parent and child nodes can be found in the Appendix.

I used the content-analysis software Nvivo to query the interview texts for mentions of important thematic nodes. I then reviewed the query results and their surrounding content and

coded relevant results to the appropriate thematic category. To insure completeness of coding, I also read through each interview to code content missed using the query method. The third step in thematic coding involves selective coding, where results from axial coding are compared across groups. To achieve this cross-group comparison I explored the coded data using matrix tables and hierarchy charts to observe collocation and comparative prevalence of nodes. Specifically, links were established between data, actors, strategies, and sociopolitical context within the phenomenon of social impact. In total I coded 1,146 references to thematic categories. The order of parent nodes according to aggregate number of references across cases is as follows: Strategies of the Movement (574 coded references), Data (391 coded references), Data Intermediation (168 coded references), and Sociopolitical Context (144 coded references). A table of statistics on coding results can be found in the Appendix along with a complete report of findings by thematic category.

3.5 Boolean Logic and Predictive Modeling

Following the fieldwork and analysis of primary and secondary data, I conducted an exercise in Boolean logic to construct a predictive model to probe the generalizability of my findings on a larger sample. The model proved to be quite inaccurate, but I will explain the method. In a predictive model, Boolean logic is used to create an empirical typology from combinations of characteristics that produce social scientific shorthand of values that represent a phenomenon (Ragin 1987). I used a dependent binary indicator for the presence or absence of OGD's social impact based on reports from research participants on whether or not the movements achieved the desired impact and made use of OGD to do so. I then turned the assumptions from the analytical framework of what conditions are conducive to social impact into a set of variable-oriented indicators. To create the typology of explanatory variables I classified each case's indicator as high, average, or low presence. I also used these classifications to cross-tabulate each condition against presence of social impact. Truth tables are useful to

assess the strength and symmetry of correlation between a single independent condition and the presence of social impact.

I anticipated transforming the analytical framework into a predictive model first in the original sample of Hong Kong, the DR, and Chile and that the model could then be applied to a larger sample of cases. This modeling would have employed the method of Most Similar Systems or Mill's Method of Difference, which allows the comparison and contrast of cases with the same attributes but different outcomes. Accordingly, cases were to be chosen based on scores of readiness and implementation from the Open Data Barometer. All cases would be at a similar level of open data readiness and implementation, but score differently in indicators of social impact. A recent variable-oriented qualitative analysis of open data determinants in a set of eight Latin American countries proved to be a fitting and valuable analysis (Meng 2014). However, because the predictive model failed, the sample was not expanded. While the predictive model was not expanded to a larger sample, the exercise in predictive modeling can be found in the Annex and Chapter Seven provides a discussion of results, findings, and lessons learned from the incomplete OGD-based conceptualization and failed model.

CHAPTER 4. THE HONG KONG CASE

This chapter provides a real world introduction to the practice of OGD and a first test of the conceptual framework from Chapter One. Hong Kong stood out from the start as a place to also evaluate the social impact of OGD in the absence of democratic governance and OGD-related legal frameworks. Tracing government data through political, technical, and civic spaces identified strengths as well as weaknesses in Hong Kong's OGD social impact process. While Hong Kong lacked legal frameworks to ensure proper records management and access to public records, this was surprisingly not the greatest hindrance to social impact. The findings in Hong Kong presented two primary obstacles to social impact -- weak ties between data intermediaries and those taking up social causes and limited mechanisms for political engagement. Through this case I reached the conclusion that if open data is to have a significant social impact there needs to be both a greater opportunities for engagement with public officials and stronger connections between data intermediaries and existing social projects.

In Section 4.1 I provide a background on the Hong Kong political context, practice of OGD, and active civil society campaigns. Section 4.2 reports results from interviews by research participant group. In Section 4.3 I discuss the cross-cutting findings that emerged across research participant groups. I conclude in Section 4.4 with the most salient themes for social impact of OGD

4.1 Background

4.1.1 Political Background

Before considering the use of government data for advocacy, it is important to understand the political context of Hong Kong. In 1984 the British and Chinese announced a joint declaration

to begin the transition of Hong Kong from a British colonial trusteeship to a Special Administrative Region (SAR) of the People's Republic of China (PRC) (Poon 2008). After years of negotiation the PRC's National People's Congress adopted a Basic Law which not only outlines rights of citizens, governance, and rule of law, but also describes a process for continued democratic deepening (Ibid.). Article 45 of the Basic Law includes a timeline for the direct election of Hong Kong's Chief Executive (CE) by universal suffrage beginning in 2015 (Hong Kong Basic Law, Chapter 4).

Public demands to adhere to the Basic Law's timeline gained international attention when the Umbrella Movement occupied the streets of Hong Kong from late September to December 2014. The massive 2014 public mobilization was rooted in a contentious political debate on the interpretation of "accountability" (Poon, 2007). This term was discussed at length during the adoption of the Basic Law in 1990 (Ibid.). The term appears several times in the Basic Law. Chinese democratic scholar, Kit Poon describes the gap between the theoretical liberal democratic concept of accountability and Hong Kong's practice of accountability. She explains that the chief executive of Hong Kong is largely modeled after the former British colonial governor. Accordingly, the Legislative Council (LegCo) has very limited capacity to check the power of the Hong Kong chief executive.

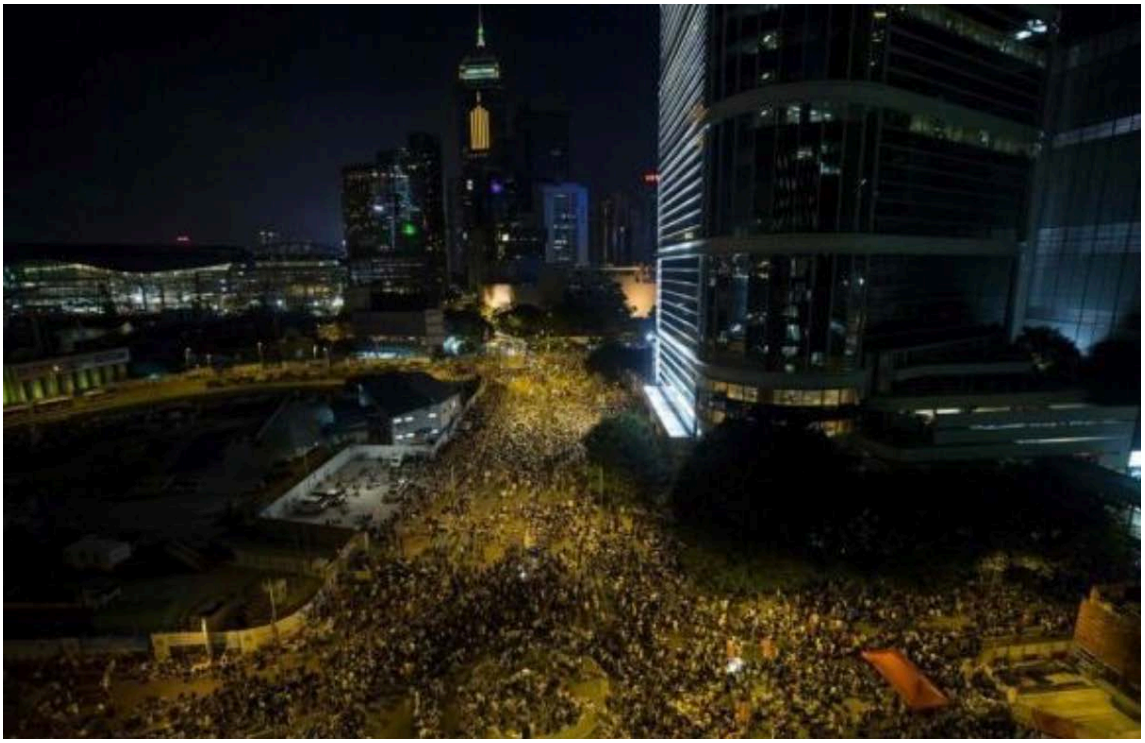


Figure 10 Umbrella Movement Occupation in Hong Kong (source: Reuters/Tyrone Siu)

As a colonial legacy, Hong Kong's seventy-member Legislative Council is broken up into functional constituency and district constituency representatives. District constituency representatives are voted from geographic boundaries by residents of that district. Functional constituency representatives represent a certain industry or professional group such as the real estate, accounting, information technology, banking, etc. These representatives are supposedly most accountable to the industry. However, interview participants from functional constituency reported feeling a sense of responsiveness and accountability to the broader public. The legislative body is not considered part of government. The Basic Law explicitly states that the government is exclusively made up of executive authorities (Zhang 2009). LegCo elected officials do not make policy, rather government bureaucrats design and implement government policies and programs. LegCo is afforded some checks over the CE and the Hong Kong government. For example, LegCo may initiate the impeachment of a CE. The Chief Executive

drafts the SAR's yearly budget, but LegCo can delay adoption through filibusters and can recommend reductions in spending but cannot increase spending (anonymous interview). LegCo members cannot introduce any bill or amendment that affects the spending of Hong Kong government. For this reason all bills originate from the bureaucracy bodies, not elected officials.

Hong Kong has a highly bureaucratic government. The Chief Executive has an Executive Council or "proto-cabinet" of twenty-two members, and nine permanent secretaries overseeing sixty-nine bureaus, departments, and agencies (Loh and Cullen 2003). While the executive council serves the CE in an advisory role, the nine permanent secretaries are in charge of policy making and garnering support for policies from LegCo and the general public. According to research participants, when departments or bureaus develop new policies or large-scale projects, they go through a public consultation phase. These consultations are to be sufficiently publicized and open to anyone who wants to ask questions or offer feedback on policy drafts. Government contracts private consulting firms to implement and synthesize findings gleaned from public consultations. This phase also includes production of commissioned research reports, often prepared by local academics. Civil society organizations can and do engage in the public consultation process; however, Hong Kong political scientist Ian Scott (2010) remarks in *The Public Sector in Hong Kong* that the public consultation process broke down after the transition. Scott explains that following the 1997 handover, civil society organizations began to take to the streets, advocating outside of formal political structures.

LegCo members do have some mechanisms to make government more accountable to the residents of Hong Kong. Legislative members may make what is called a "member's request." A LegCo member may ask any question or to request information from government, and government is required to provide an answer or corresponding information, although members are not always satisfied with the completeness of a response (anonymous interview). LegCo members can also volunteer to serve on committees to review the government's policy making

process. Certain government projects and laws require a public consultation process where citizens can participate in government decision making by giving feedback (Tsang et al. 2009, 104). Once government agencies have completed public consultation and drafted their bill, LegCo committees review the public consultation records and pass or fail to pass legislation. They can also propose amendments to the bill. Passage of amendments or bills that originate from members requires simple majorities of both the functional and geographic constituencies (Cheung 2011, 115). If the bill or amendment originates from the government, it requires a simple majority from the full council and does not go through the constituencies separately. LegCo members use filibustering as another tool to affect policy outcomes and to participate in the legislative process.

The mechanisms for accountability and responsiveness are weak in Hong Kong. Elected officials only serve to "scrutinize" policies created by civil servant professionals with the oversight of chief executive-appointed secretaries. Policy-making is not the job of elected officials. As advocacy is an important part of OGD's social impact, this "politics without democracy" weakens the capacity for social impact (Loh and Cullen 2003).

4.1.2 The Practice of OGD

In Hong Kong, the supply of open data suffers without a supporting legal framework. Two of the most important legal inputs to the practice of open data are archival laws and right to information (RTI) laws. There is no archival law in Hong Kong. In 2014, the Hong Kong Office of the Ombudsman conducted a direct investigation into the RTI regime in Hong Kong. According to the report, the Government Records Service (GRS) administers government bodies' archival practices. While the GRS puts forth policy documents of "required" recommendations, the agency's recommendations carry no legal force. Government departments implement the recommendations at will. For example, the Office of the Ombudsman investigation (2014)

reported that only three of seventy-six departments established business rules for records creation and collection at the request of the GRS.

To request data, Hong Kong citizens invoke the government's Code on Access to Information (ATI Code), a colonial leftover put in place prior to 1995. The code requires that bureaus and departments release public sector information but includes a set of exemption provisions that allow withholding of data. A department may refuse to disclose information for the following reasons: risk related to defense and security, relations with external governments or organizations, prejudice to nationality or immigration matters, public safety, damage to the natural environment, monetary and financial stability, harm to public service operations, prejudicing public employment and appointments, leading to improper gain or advantage, misleading or incomplete analysis and research, violating individual privacy, harming competitive or financial position of commercial entities, publishing government data prematurely, breaching any legal obligation (Hong Kong Code on Access to Information 1995, Part 2). This list is exhaustive, and individuals requesting data find that some information officers liberally and subjectively apply exemptions (Office of the Ombudsman, 2014). To go through formal mechanism for accessing data, individuals contact specific bureaus or departments within the Hong Kong government. Each government body employs an information officer who processes these requests. In practice, these requests may go to a general inquiry e-mail. Experienced data users knew exactly who to contact in each department and may even have relationships with these officers. Still this knowledge varies by data user and government department.

The Hong Kong Office of the Ombudsman 2014 report begins with the statement that freedom of information is a fundamental right of Hong Kong citizens and goes on to list inadequacies in the law, enforcement, and practice under the current legal framework. In addition to the report, the Ombudsman issued fifteen recommendations to the Constitutional and Mainland Affairs Bureau, which sits under one of the nine secretaries of the Chief Executive's cabinet. The

investigative report focuses on the ATI Code as well as archival practices. As alluded to earlier, one of the recommendations is to set proper mechanisms in place to ensure consistency in interpretation of the exemptions provisions. Participants in this study echoed a need for consistent, standard interpretation and application of restrictions. Additionally, the ATI Code allows for access to information, but not by statutory law. Without an implementable RTI law, disclosure of public sector information is not actively and uniformly carried out across government departments. Unfortunately, it is not likely that any of the Ombudsman's recommendations will become law. There are proponents within the Legislative Council; however, as noted above, changes to law are drafted by the executive and not by LegCo members. Because LegCo members admittedly have little power within the political system, they may seek to protect their unique privilege to request information from government and be less inclined to share this power to the general public. A dedicated group of OGD advocates are actively advocating passage of archival and RTI laws; however, these same advocates voice concern that they are a weak minority because the general public does not recognize the value of archival and RTI legal frameworks and is much more focused on other public issues such as housing and minimum wage.

4.1.3 Advocacy and Social Movement

The politics of difference has ignited social movements around the world, sometimes to the point of disruption and destabilization of civil society. The Umbrella Movement in Hong Kong is illustrative of social and political contention taken to the streets. Advocates of democratic deepening transformed space and disrupted the life of Hong Kong in order to demand direct democratic election of the Chief Executive (Tremlett 2015). There are various motivating factors behind their discontent. Texts and communiqués from the Occupy Central with Love and Peace[2] website call for an end to social inequality and corrupt officials (Occupy Central with Love and

[2] The group that framed the demands and organized the Umbrella Movement

Peace Basic Tenets 2014). The Umbrella Movement is just one example of an on-going advocacy project in Hong Kong, albeit on a very large scale. There are many issue-oriented formal social groups in Hong Kong that advocate for minimum wage, public housing, rights of domestic workers, environmental issues, copyright laws, etc. These social groups meet with LegCo members to express grievances and articulate requests for political action. They also attend government's public consultations or contact government departments to advocate for policy change. However, as previously explained, there is no mechanism of accountability that allows citizens to evaluate whether or not government is responsive to their interests. Hong Kong is therefore an opportunity to explore whether social groups can use open government data to influence government decision making in the absence of instituted democracy.

4.2 Results

4.2.1 Data Intermediaries

Hong Kong data intermediaries (DI) made their livings as academics, IT professionals, or as members of the press. They were well educated, middle to upper middle class and predominantly male. Nearly all of the data intermediaries were active in OGD civic organizations. These organizations held meetings and plan to learn about projects and tools to reuse OGD, to build applications or information visualizations with OGD, or to organize advocacy efforts to improve OGD policy in Hong Kong. DIs used a variety of skills and software to access and analyze data. Some examples included Excel for statistical analysis, google charts for simple information visualization, python scripts to scrape and reformat government budget reports; ESRI, leaflet.js, mapbox, open street map, josm and ushahidi for mapping projects.

DIs did not describe government data in Hong Kong as open. They qualified this by referencing international standards established by Open Knowledge, Sunlight Foundation, etc. Every DI involved in the study reported that the data available through the government portal was

inadequate (anonymous interviews). Representatives from academia and technologists explained that the Hong Kong open data portal is not helpful for conducting the kind of analysis they wanted because the portal's datasets lack sufficient metadata, are in unfriendly formats, and the Hong Kong government restricts reuse and redistribution of data. Census data was reported as one of the most easily accessible and reusable datasets. Many data intermediaries were interested in using this dataset, but to complement or supplement other data that is not easily accessible. They needed government data not available online or data better formatted for reuse.

To access government data not on the portal some DIs used their technical skills to scrape[3] data, but most went through formal access to information channels. Through this experience, DIs developed an expertise in information access. DIs who were academics had more privileges when requesting data because government departments are more likely to share data for a specific research use. Academic DIs also reported using grant funds to purchase government datasets, particularly map data, although government agencies stipulate that academics who purchase datasets are restricted from sharing data with users outside of their academic department. DIs developed relationships with government agency officials and access to information officers. These relationships did not provide added access, but DIs learned what to expect when making requests from different departments. There was a notable difference in the success of experienced DIs who understood how the Access to Information Code works and can be enforced and novice DIs. For example, one informant, a novice DI, told of an attempt to access government maps for a web-based entrepreneurial venture. The department responded saying they needed a paper document filled out for the request. There were several back and forth e-mails, and the request was eventually denied. The informant reported not being well informed about what could legitimately be requested and was not interested in "too much trouble from government" (anonymous interview).

[3] To scrape data is to extract it off of a website.

In contrast, a more experienced DI reported being acquainted with individuals at government departments, familiar with the reasons a department may legitimately refuse data, and has a set of strategies to access datasets outside of the Code. Some DIs formed relationships with members of Legislative Council as a strategy to access government data, making use of LegCo members' legal privilege to "ask questions" of government, including requesting datasets. In an attempt to use networked technology to overcome challenges in requesting data, one data intermediary decided to launch an instance of "What do they know," a website where users can make requests for government data. The site sends the request to the appropriate government authority and tracks the progress of the request. This site is intended not only to be a tool to access datasets, but to make more transparent the process for requesting data, build community around open data, and create public awareness of why the process should be improved.

DIs reused government data with a range of intentions including academic research, analysis of government policies, tracking government activities, improving livelihoods of specific communities, and building applications for general civic reuse. Examples of academic research included investigations into public health, air quality, transportation access, and internet privacy. One project that came out of the civic technologists' community was a timeline and map of the government's land development plans. DIs who worked in traditional media reported building information visualizations of zoning data, or data on members of LegCo. Many DIs said that they wanted to build applications or implement projects with OGD, but could not due to lack of access to free, high quality data. Upon finding the government's data collection methods to be unacceptable for a research project, one academic partnered with government officials to improve their data collection method. Both the academic DI and the government officials achieved access to better quality data.

4.2.1.1 Data Intermediaries and Social Impact of OGD

One project led by an academic data intermediary provided evidence of linkages between Hong Kong data intermediaries and marginalized groups. An expat academic interested in community mapping brought some colleagues in from Indonesia to deploy an emergency mapping platform[4] to build an interactive map with residents of a historic fishing village (anonymous interview). The village was often plagued by flooding, and a colleague had developed and deployed an emergency mapping platform in another country to map flooding by verifying and mapping resident reports over social media. The community would not only benefit from real-time crowdsourced data on flooding incidents, but could also develop a dataset of flood-prone areas and take this data to government officials for infrastructure improvements. If social impact occurs when "marginalized groups have greater access to government services and government decision making," this project would have been a good example. However, when the team went to deploy the application, they quickly realized that there were no maps of the village, no base layer on which to geo-tag flooding. The village housing structures and roadways were largely informal, and the Survey and Mapping Office of Hong Kong's Lands Department had no map of the area. The academic data intermediary brought a team of technologists and students to trace streets and structures on a mapping software with residents of the historic village. Through this process they were able to construct a map as well as learn of another challenge specific to the community. Being unmapped has a number of implications in terms of government services. With a map of roads and lots, the team could not only deploy their project, but public emergency service vehicles could better navigate the community. The project began to earn local media attention and was featured on a nightly Cantonese news show. With the media attention, the Lands Department's interest peaked. Several employees showed up to support the project, offering to build a 3D map and fly drones over the village. The DI suspected that public officials showed up to save face, and were essentially embarrassed to be called out and not have data

[4] Emergency mapping platforms use crowdsourced data to map dangerous incidents and is openly accessible online.

(anonymous interview). The project was intended to be handed over to the community to map instances of flooding. However, the platform was in English, which is not spoken by the village residents and a timeline for handover to the community is uncertain. This recount of a project using data in a marginalized community began to reveal the disconnect between the intentions and outcomes of data intermediation projects and benefit or inclusion of marginalized groups.

4.2.2 Public Officials

A total of six public officials including members of LegCo, legislative aides, and government bureaucrats participated in interviews designed to help me understand their views regarding open government data, their experience engaging with social groups, and how these perceptions and experiences overlap. All of the participants interviewed expressed support and value for opening up government datasets. When describing this value of OGD, public officials linked it to transparency, civic participation, and accountability. Public officials agreed with DIs that the Hong Kong government falls short of meeting international OGD standards. A LegCo member remarked that many datasets are available to the public, but appropriately formatted and complete datasets required for critical analysis of a specific topic are not made available (anonymous interview). Another member echoed this sentiment, saying government will not provide “the important things” (anonymous interview).

Interviewees provided evidence of linkages between public officials and data intermediaries in Hong Kong. By using the privilege of the member’s request, LegCo representatives acted as secondary data intermediaries because government data is not open. These LegCo members were essential actors in securing government data for civic reuse. One member was integral to opening up data from the Finance Secretary. The Finance Secretary published the budget data in pdf format, but from the documents it was clear the data was once in a more machine-readable format. Civic hacker data intermediaries wanted access to the raw data

and went to a LegCo representative to make the request. The LegCo representative not only made the request, but also educated the government employee within the Finance Secretary on what a machine-readable format is. The conversation continued, and eventually the Finance Secretary not only released Excel files, but provided greater detail on sub-categories of spending (anonymous interview). Even with the right to make a "member's request" for government data, legislators were dissatisfied with the level of access to government data and reports. This lack of access further reveals the power asymmetry between government and LegCo.

An anonymous interview with a bureaucrat from a government department provided an interesting perspective on why government officials might be motivated to release datasets. The participant favored opening up government datasets to broaden participation in the public consultation process. However, he was interested in broadening participation of experts not marginalized groups. The public official found the residents most affected by his projects to be the loudest and often angriest during the public consultation process. For this public official, broadening participation was aimed at tempering the "loud minority" with more reasoned comments by experts who could access and analyze government data. This contrasts greatly with the concept of social impact where minority and marginalized groups access government datasets in order to influence policy-making. This public official was not interested in OGD supplementing and strengthening the potentially displaced group's situated knowledge.

4.2.2.1 Representative Democracy

Legislative Council members were well aware that Hong Kong is not a democracy. Still, many members who belong to the pan-democratic coalition hold democratic values of transparency, accountability, and participation. These members were most likely to advocate for open data and aid in opening up data sets for civic reuse. Despite being supportive of more robust open data laws and archival law, members thought this legislation would have to originate from

the executive in order to pass. LegCo members reported that civic groups and individual citizens are active in communicating with representatives to advocate for desired policy or social services. While LegCo members desired to be responsive to citizens, their role is limited in policy making. As mentioned, when it comes to policy, they do not draft legislation but can scrutinize legislation or amendments written by public officials from government departments and bureaus. Amendments first go to LegCo committees. In a legislative session where government representatives presented a policy amendment, LegCo members not only offered their analysis and opinions but also encouraged the government officials to more adequately respond to questions raised by civic groups during the public consultation process. LegCo members reported identifying with a role of watchdogs, holding the executive accountable to the residents of Hong Kong.

4.2.3 Civil Society Organizations

While Hong Kong may not be a democracy in terms of political design, its civil society was active in mobilizing and exercising freedom of speech and assembly. Five key informants from civil society organizations participated in episodic interviews to describe their advocacy campaigns, strategies, and use of data. Respondents also made reference to their participation or outside perspective of the Umbrella Movement. When asked what strategies for advocacy were most successful in Hong Kong, respondents listed traditional strategies like sit-ins, signature campaigns, rallies, and marches. This resonates with the scholarly analyses that find that Hong Kong's crisis of legitimacy causes citizens turn to the streets instead of engaging with public officials of government or LegCo (Ma 2011, Cheung 2011). One informant found that while these street tactics are most common, they are outdated and ineffective (anonymous interview). Accordingly, his group started to engage with LegCo members in more direct and innovative ways. For example, the group developed its own text-messaging platform to communicate with LegCo members during committee meetings with government officials to discuss legislation.

Informants from lobby groups and think-tanks were less interested in LegCo. They reported that public officials from government departments and bureaus are the most important stakeholders for policy change. These elite advocacy groups described access to government officials in more exclusive settings than general public consultations. Marginalized groups and the broader public were predominately incorporated into advocacy campaigns via signature campaigns and tabling at busy metro stations. All CSOs informants described campaigns for social and political change as long-term and slow. They were often uncertain as to whether their groups would ever achieve desired outcomes.

Very few informants from civil society organizations reported use of government data in their advocacy efforts. Groups made claims based on ideological values. Some informants were aware of how to access open government datasets, but did not find them useful to their cause. The more elite advocacy groups reported using government data, but described this as "pulling useful statistics from published government reports" (anonymous interview). One outlier to these observations was a member of a group that used OGD to advocate for public housing. This group used census data and map data from online portals of the Housing Authority, the Audit department, and the Legislative Council. He described use of government data as valuable for building public awareness on an issue, disproving commonly held beliefs, and critiquing government reports and policies. The informant saw these datasets as a tool for describing a social issue to the public to build support as opposed to bolstering advocacy with government officials or LegCo.

4.3 Findings

4.3.1 Social Impact of OGD in a Non-democratic Context

The OGD field implicitly relies on access to political mechanisms of accountability for marginalized groups to achieve social impact. Accordingly, if open data is to have a social

impact, access to datasets as well as spaces of decision making will be required. Decision making happens through a set of procedures and mechanisms. However, Hong Kong lacks these mechanisms. Without these political mechanisms, use of OGD to achieve increased access to decision making or increased access to government services is highly uncertain. Because LegCo members have no legislative drafting capabilities, and only half of LegCo members are elected at the polls, public consultation with government departments and bureaus becomes the sole mechanism for affecting government decisions. LegCo members and grassroots civil society organizations see this as a form of passive inclusion. Citizens may be invited to the decision-making space, but government officials do not have to take their contributions seriously in the policy-making process.

One informant described innovative methods to engage with public officials, including gamifying[5] online petitions and setting up text-messaging systems that allow LegCo members to converse in real time with members of the CSO during committee hearings. One informant who also participated in the Umbrella Movement could not think of any example of the Movement's making use of OGD. Former Movement leaders and participants are now running for legislative office in local district councils as a new strategy to push forward the Movement's agenda. Reflecting on this new strategy and the potential use of OGD, the informant complained about voter data. All that is available to him on government portals, he said is a dataset of registered voters by name. Ideally he could have access to voter demographics, particularly age and class. Certainly, Movement participants see the value in using government datasets. Here there is evidence that data can be useful for operating the limited mechanisms for democratic participation like district elections and LegCo committee meetings.

4.3.2 The Importance of Data Intermediaries

[5] The advocacy website used an interactive digital slot machine for users to construct a message to send to public officials.

Data intermediaries are pushing forward the agenda of OGD for social impact despite barriers. They are technically savvy, able to access and scrape datasets that average citizens would not know even exist behind a map interface or source file directory. Not only do data intermediaries possess the technical skills, but they scrape data at the risk of potential recourse from government officials who do not intend for their data to be accessed or reused. Similar to Davies' findings in the UK, DIs in Hong Kong also perform the "data to data" function; for example, writing scripts to read pdfs into csv. Data Intermediaries also place their datasets in the public domain on blogs, github, searchable by google, and even directly in the hands of LegCo members for further analysis (anonymous interviews). As a result, data intermediaries have built relationships with public officials in both LegCo and government agencies, increasing their political capital. As mentioned, DIs are often dissatisfied with the quality or amount of data available from government and collect missing data. In some instances they partner with government to build better systems to monitor and collect data. In addition to freeing and improving datasets, data intermediaries build things. They build interactive maps, reports, and information visualizations. Hong Kong data intermediaries also perform the "catalyst role" described by Sein as they advocate for opening more government datasets. Open data groups form relationships with LegCo members to support RTI and archival laws. They teach officials the value of a legal framework that supports civic use of government datasets.

4.3.3 The Data Intermediary-Social Project Disconnect

Interviews with data intermediaries, civil society organizations, and public officials demonstrate that many of the necessary actors are present for social impact of OGD. However, important links and mechanisms for data access, civic collaboration, and political engagement are missing. It also appears that there is also a significant disconnect between data intermediaries and social groups. Data projects without users seem to be common in Hong Kong. A representative of a CSO that advocates for public housing was not aware of a web-based interactive map and

timeline of the government's land development project. A data intermediary very active in performing data to data transformations laments that no one has used the data or requested more information about it. There is an obvious disconnect between these two important networks. Formal social groups possess information on local context, can ground-truth datasets and government reports, and are more familiar with advocacy strategies. Many projects produced by civic technologists that go unnoticed or unused. These include the untranslated village map, the unused land development map and census map, the unrequested formatted budget data, and the scant use of an information request portal. Data intermediaries possess valuable technical skills, but are unfamiliar with the life of the community and the political advocacy process.

There is evidence that data intermediaries support the advocacy goals of the Umbrella Movement. Tech savvy members of the Movement made very effective use of technology during the massive demonstrations. Participants organized the logistics of running a makeshift society using google sheets and maps. They pulled the live traffic camera feeds from an online government portal to a web dashboard so that anyone could remotely observe the Umbrella Movement occupied locations, creating an accountability mechanism for how occupiers were treated by security forces. Umbrella activists also made use of the government dataset of public restrooms and trash cans, plotting these locations on an online map for Occupiers. In its new phase, Umbrella occupiers are running for elected office. As mentioned, candidates would be interested in learning more about district demographics. This map exists. In an interview, a data intermediary opened an already built interactive map that did just this. The term intermediary implies a facilitator role that connects social groups to useful data. Social groups are not likely to make use of OGD without the skills of data intermediaries. And without activist participation, DIs do not achieve their desired intention of creating a data tool that provides a civic benefit.

4.3.4 OGD and Civic Participation

Despite a lack of mechanisms for accountability in Hong Kong, this case still provides insights into how open government data can affect participation. There are four axes through which participation and OGD can be evaluated. Participation can be considered inclusive or exclusive. In inclusive participation, citizens are part of the decision making process. They are invited to analyze, interpret, and help construct legislation or government programming; and their involvement is valued by government officials and legislators. In an exclusive participation system, government decision making happens in a closed space. Technocrats and elites have the authority to make decisions without consulting the public. Inclusion can be active or passive. In active inclusion, information for decision making is bi-directional. Citizens share their knowledge, analyses, and professional expertise, and government officials provide public sector information, contracted reports, and programmatic/legislative expertise. Inclusion is passive when citizens are invited to participate, but they are not invited to speak. They may attend consultation meetings, but they are not invited to speak. They are not valued as sources of information for policy making. Civic participation is co-opted by officials who can report that citizens participated in the process without this participation actually shaping policy outcomes. In active exclusion, citizens are never considered part of the process and not invited to participate. Passive exclusion occurs when citizens are not actively excluded but are invisible to the state.

Collection of government data and access to this data provides evidence of how a government includes or excludes citizens in the policy-making process. How data is collected and what populations are included in collection provides opportunities for the government to practice passive exclusion. For example, government may choose to not collect data on a certain population, like the historic fishing village. They may also measure in places that do not properly reflect public realities. An example is placement of air pollutant sensors where they conveniently fail to capture data on certain pollutants. Refusing access to datasets is an example of active exclusion. In Hong Kong, government entities cite privacy or national security statutes to justify

denial of access. It is very hard for citizens to question or counter these claims. The Hong Kong government also publishes data in formats that are not easily reusable, requiring tedious data transformation activities for reuse. Civic technologists, civil society organizations, and elected officials all criticized the lack of disaggregated data. This is a new form of exclusion for those concerned with accountability. As OGD becomes a greater tool for advocacy and holding the government accountable, government may continue to limit the detail of datasets. Government's insufficient collection and supply of datasets impacts a social group's strategy for participating in policy-making. Civic technologists who are not motivated by a particular cause pursue projects based on what data is available. This may work for technologists and developers who want to make an application solely for the challenge of it. However, issue-oriented advocacy groups need specific datasets.

Table 2 OGD and Active/Passive Inclusion/Exclusion

	Active	**Passive**
Inclusion	citizen involvement in collection of data publishing data collected by citizens	data published in formats that are not reusable
Exclusion	denial of access to data (without explanation) government collects, uses and publishes data that is not representative of a population	use of privacy or national security statutes to deny access to data when they are not applicable

Based on the findings, the social impact sequence looks different from the conceptual model. Tech savvy civic technologists use OGD to develop projects of interest that are either unknown or unused by marginalized groups. Elite CSOs are well connected to government and use OGD to conduct analysis for policy makers. The Umbrella Movement occupiers did make use of OGD to facilitate their protest, but could not affect policy making or hold their chief executive accountable through elections.

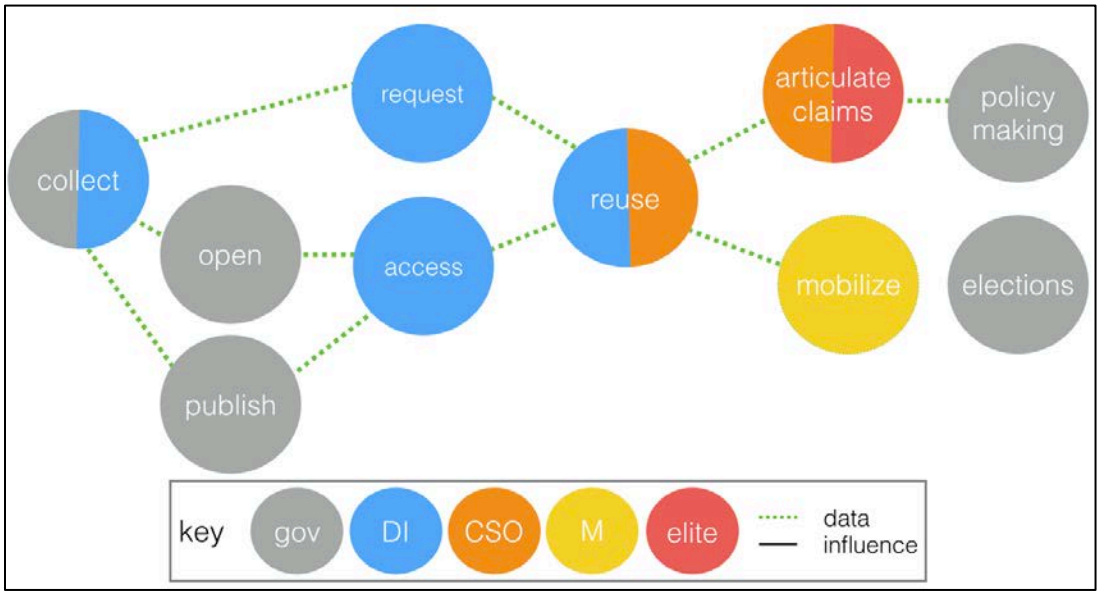


Figure 11 – Social Impact of OGD Process in Hong Kong

4.4 Conclusion

This case failed to provide evidence for social impact of OGD, as conceptualized by the field. Social groups did not reuse open data to participate in policy making. Instead, the practice of OGD in Hong Kong was an extension of the government's practice of exclusion. According to political theorists Young a social group's situated knowledge is an important input to the policy process. If the goal is social impact, their knowledge and motivation for problem-solving is as valuable as government datasets, the technical skills of data intermediaries, and the legislative

powers of public officials. In addition to the lack of mechanisms for political participation, the expected social impact of policy change and empowerment did not manifest because there were weak links between data intermediaries and marginalized social groups. Harrison et al. (2012) use the ecosystem metaphor to describe open data. This ecosystem provides theorists and practitioners of OGD with an ideal dynamic system that includes a symbiotic relationship between actors with a shared strategic intention. This metaphor can be used to understand the lack of social impact in Hong Kong. DIs in Hong Kong claimed datasets from closed power spaces and produced analyses, interactive maps, and information visualizations with the intent to inform the public on government decision making. However, this reuse was not motivated by a shared strategic intention with marginalized social groups

OGD academics and practitioners claim social groups can greatly benefit from OGD to advocate for policy change through political mechanisms. Their conceptualization of social impact only through political mechanisms misses the Umbrella Movement's innovative use of OGD to facilitate traditional mobilization strategies. Here DiSalvo's graphing of design for politics and political design is helpful (Figure Below). The OGD field expects use of OGD in exercises of design for politics. According to them, citizens, particularly the marginalized, use OGD to influence government through existing mechanisms of political participation. In Hong Kong, these mechanisms do not exist. The Umbrella Movement used OGD for critical contestation and protest, the top right quadrant of DiSalvo's Design-Politics graph. This use case that facilitated mobilization for social change is missing in the OGD conceptual framework.

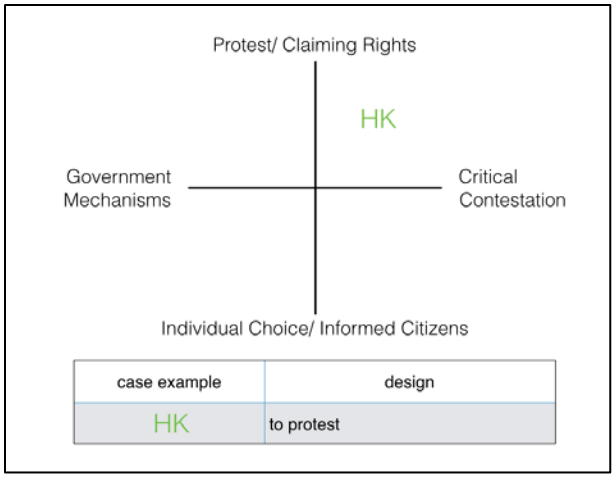


Figure 12 OGD for Social Impact Plot in Hong Kong

CHAPTER 5. THE DOMINICAN CASE

The Dominican 4% Movement, a social movement that advocated for increased government spending on public education, challenged long-standing public resignation in the face of corruption and unfulfilled political commitments. Decades of clientelism, neoliberalism, and democratic stagnation had stifled both government responsiveness and civic advocacy campaigns. The 4% Movement's strategy in overcoming these obstacles included the use of open government data. Reuse of public information datasets allowed the Movement to articulate, legitimize, and demand the right to quality education. This case study investigated how social movement organizations, marginalized groups, elites, data intermediaries, and public officials interacted to mobilize, advocate, and create social and political change, and what role OGD played in this interaction.

Building on the Hong Kong findings, this case further developed my understanding of the role of data intermediaries in advocating for social change as well as how opportunities for political participation impact use of OGD. Interviews revealed that it was not the link between data intermediaries and the marginalized that made it possible to reuse OGD for social impact, but the link between data intermediaries and other movement activists engaged in political advocacy. Similar to Hong Kong, I continued to observe elite actors in the social impact process. Not only did the 4% Movement demonstrate that use of OGD to articulate a social justice claim on government is more likely in an electoral democracy, this case showed how data is most useful for engaging elites who influence political outcomes. Marginalized groups were not the primary audience for OGD-infused articulations for change. Accordingly, the Dominican case again provided evidence that data is not used by the marginalized.

Section 5.1 provides a background on Dominican politics, the practice of open government data in the Dominican Republic, and the 4% Movement. In Section 5.2 report the results from interviews and artifacts produced by the 4% Movement. In Section 5.3 I identify the cross-cutting findings that emerged from each participant group, and a conclusion to this study is found in Section 5.4.

5.1 Background

5.1.1 Political Background

The Dominican Republic makes up the eastern two-thirds of *Hispañola*, a Caribbean island first colonized by the Spanish in the 15th century. The state that emerged in the wake of colonial rule and a period of war against Haiti was an authoritarian and centralized government with a strong military (Betances and Spalding 1995, 23). A political regime did not take form until forty years after independence with the dictatorship of Ulises Heureaux from 1886 - 1899 (Ibid., 25). During this time economic elites developed considerable political influence and used government as a tool to protect their economic interests (Kearney 1986). Following Heureaux there were two decades of instability and eight years of US military occupation (1916-1924). During the occupation, the US military instituted agrarian reforms and tax policies which were met with mass resistance by rural populations (Miguel 1995). This resistance along with a nationalist movement eventually led to the withdrawal of US troops (Ibid., 56). Before withdrawing, the US military established a non-military police force in attempts to de-politicize the Dominican military (Espinal and Hartlyn 1999). What resulted was the opposite effect. The paramilitary became the national military and the military head, Rafael Trujillo was elected president in 1930 and remained in power as dictator until his assassination in 1961 (Ibid., 476). During his dictatorship, Trujillo dominated the economic, political, and social sphere through

monopolistic control of the sugar industry, a single-party political system, nationalist ideology, and violent ethnic cleansing (Ibid.).

After Trujillo's assassination, the clandestine rebel movement that had maintained a network of resistance during the dictatorship emerged to build democracy under the leadership of Juan Bosch (Moreno 1970). Bosch helped establish a leftist democratic movement and spent seven months as president before a coup removed him from office (Ibid., 21). This marked a return back towards authoritative rule with the installment of Joaquín Balaguer, the former puppet president of Trujillo (Ibid., 26). Balaguer pursued a development model that included job creation by expanding the public sector, imposing price controls, and implementing wage increases (Espinal 1995, 65). These policies allowed the emerging Dominican Revolutionary Party (PRD) to significantly consolidate power, specifically with organized labor (Espinal and Hartlyn 1999). The economy grew and a business sector autonomous to the state began to emerge (Ibid., 488). The PRD continued to govern as the ruling party, but domestic, international, and economic forces degraded the party's political strength (Ibid.). In 1978, PRD candidate and successful businessman and rancher Guzmán took office and began to break down the military's stronghold on the executive power by bringing in technocrats (Quiterio-Cedeño 1983, 16). In 1982, the Blanco administration turned to foreign loans from the International Monetary Fund (Espinal and Hartlyn 1999, 485). Adjustment policies included eliminating industry subsidies, reducing price subsidies and unpegging the Dominican peso from the US dollar (Haussmann et al 2004). These adjustments caused deterioration in living standards and Dominicans across the country mobilized in the form of strikes and riots (Cassá 1995, 87). Dominican sociologist Roberto Cassá characterized the participants as powerless poor who can resist, but not negotiate with the state (Ibid.). Accordingly, government did not intervene and instead continued the neoliberal laissez-faire policies.

Balaguer was re-elected in 1986 and again in 1990. His presidential terms were marked by high inflation and political tension with domestic business elites and the IMF, who were both in favor of decreased government spending and marketization. The continued cutbacks in social spending and adoption of free-market monetary policy marked the beginning of "uneven" neoliberal reform (Mitchell 2009). Uneven in the sense that compared to neighboring Latin American countries, the Dominican executives never implemented the full scale of neoliberal reforms. Still popular movement continued to protest and leftist organizations took up a coordination role, but never with enough pressure to force an end to adjustment policies (Cassá 1995, 92). Economic elites began to see democratization and neoliberal restructuring as opportunities to shape policy (Conaghan and Espinal, 1990). Despite the uneven adoption, a prominent strategist within the 4% Movement considered neoliberalism to be the dominant paradigm in the Dominican Republic (Corporán, 2014) The Dominican Republic never developed a neoliberal technocratic bureaucracy like that of Chile (Mitchell 2009, 213). However, the political and social power of the business class combined with a powerful executive created organized and intentional exclusion of the public from government decision making and economic elites wield considerable power during election time in an unregulated campaign financing system (Ibid., 211).

Instead of a politik dominated by neoliberal and technocratic tendencies, scholars identify Dominican politics as party-centric, clientelistic, and presidential. Dominican political parties are powerful political actors, but citizens do not participate in shaping a party's policy agenda. Instead, party politics are centered on the president, and party agendas are controlled by elites. Citizens interact with elites through mechanisms of clientelism. Clientelistic politics limit citizens' power to negotiate (Powell, 1970). Political elites who gain support and votes through handouts of money or jobs are often uninterested in democratic consultation with citizens, and society fails to achieve democratic deepening through expansion of social citizenship (Heller

2000). While Dominicans have been quite active in social movement and protest, as citizens, Dominicans have a political history of receiving favors, not voice. Dominican political scientist Betances (2008) argues that Dominican citizens join political parties as a means to receive economic favors or state employment from presidentialists at national down to local levels of government. Dominican presidents have consistently maintained clientelistic practices in regards to social programming (Mitchell 2009, 215). While the 4% Movement was actively campaigning for social change, the 2012 presidential campaign slogan of former PRD president Hipólito Mejía (2000-2004) was "Llegó Papa!" or "Dad is back." Mejía's use of this slogan demonstrates the deliberate attempt to define the president as patron-in-chief. When a patron-client analogy best describes the power structure between government and citizens, government's accountability to its citizens suffers. This is why the achievement of the 4% Movement is celebrated as historic and noteworthy. Within this setting of significant external influence from the United States, clientelism, presidentialism, and a powerful economic elite, the 4% Movement made strategic use of OGD to achieve policy change and catalyze social change.

5.1.2 The Practice of ODG

As explained in the Hong Kong case study, a country's practice of open data is usually preceded by an Archival Law and Access to Information law. An Archival Law was first introduced to the Dominican Republic as a decree of then dictator Rafael Trujillo in 1935. This law was modified and expanded to include statutes on types of data, entities responsible for maintaining data, digitization of files, and public access to these records (Ley de Libre Acceso a la Información 2004). In 2004 Dominican citizens gained access to public data through the Access to Information Law, which required the establishment of an Office of Access to Information in each government entity. A public official with the title, "Manager of Access to Information" heads each office. This office is also responsible for maintaining an online transparency portal so citizens can download datasets. President Medina established the Office of

Government Ethics and Integrity (DIGEIG) to support the implementation of these laws in 2012. The DIGEIG penned the country's first open data regulation in 2015. The creation of this norm is part of the Dominican Republic's commitment to the Open Government Partnership (OGP), a multilateral international organization that facilitates federal open data initiatives. OGP member states develop country commitments. These commitments outline open data or open gov projects to be implemented by governments.

There is much to improve in the implementation of open data standards. The DIGEIG and OPTIC (Presidential Office of Information Communication Technology) report that there are currently 48 government portals to access data with a total of 7,528 documents (Department of Government Transparency 2015). Of these documents, 73 percent are in pdf, 18 percent in Excel, 8 percent are in Word, and 1 percent is in PowerPoint format. According to this evaluation, only 18 percent of government data is machine-readable, one of the main open data standards. In November of 2015, OPTIC and the DIGEIG launched a single government data portal designed to be a clearinghouse for all government data. Instead of visiting all 48 portals to find datasets, citizens could go to one government portal. This unified data portal is one example of the Dominican Republic's commitments to the Open Government Partnership.

In partnership with World Bank consultants, the DIGEIG and OPTIC conducted an evaluation of the state of open government data. According to their report, the legislative framework provides a good foundation for open data practices, but the country must continue to develop the leadership, administrative organization, and actual datasets (de los Rios and Ortiz de Zarate 2014). The Dominican Republic scored poorly in the areas of financing, technology, and demand for government data. The lowest scores go to the ecosystem of reuse and community of users. According to the evaluators, the ecosystem suffers from a lack of data intermediaries, particularly in the professional fields of journalists and software developers (Ibid., 42). The report's recommendations to the Dominican Republic for appropriate next steps include greater

civic participation in OGD planning; improvement in quality of data and protection of personally identifiable information; specifying the government entity in charge of OGD initiatives; identifying a line of funding for initiatives; increasing availability of developer-friendly data formats; fostering the user community; and increasing the government's financing and technical capacity. The Dominican Republic is in its second phase of open data. The legal framework is in place, but the political will to fund and enforce the publishing of timely, machine-readable data for any reuse is not.

5.1.3 The 4% Movement

5.1.3.1 Important Predecessors to the 4% Movement

On October 26, 2010, a coalition of civil society organizations formally petitioned the Dominican government to invest 4% of gross domestic product (GDP) in public education. For three years the coalition led a movement called the 4% Movement to mobilize the public and influence the government. In its most active phase, members of the movement gathered outside government buildings of Santo Domingo nearly every day of the week. Mondays were for the Presidential Palace, Tuesdays and Wednesdays for the Senate and House of Deputies, and Fridays for the Ministry of the Interior (DSG-3, DSG-4, DSG-9). Three years and two months after the coalition formed, the Movement succeeded. Finally, the national budget included the legally stipulated 4% for pre-university public education. A leader of the 4% Movement evoked French philosopher Alain Badiou to describe a social movement as "an event that interrupts the status quo and proposes a path to equality" (Corporán 2012, 8). The steps towards equality did not start with the first demonstrations of the 4% Movement. The Movement was preceded by two decades of advocacy for better education policy and by the work of civil society organizations in 2008 to improve transparency and timeliness in the creation of the national budget.

The 4% Movement's demand for increased spending was legally stipulated in legislation passed by the Dominican congress in 1997 (Giliberti 2013). This law was the result of the coordinated effort by the Dominican Teacher's Association (ADP) and members of the business sector greatly concerned about the quality of Dominican education (DSG-9). These two groups worked in the 1990s to conduct evaluations and analyses of the education system and of the quality of education (Ibid.). The group used this research to successfully lobby for three new policies: the *General Education Law* (1997) passed by Congress, a Strategic Plan for Education for 2002-2001, and the Ministry of Education's Ten-Year Education Plan for 2008-2018 (Giliberti 2013). The *General Education Law* passed in 1997 stipulated that the government spend either 4% of gross national income (GNI) or 16% of the national budget, whichever is higher (Ibid.).

The Dominican Teacher's Association (ADP) continued to lobby for the 4% through the early 2000s (DSG-9). In 2008 its president presented to the ADP national assembly a petition to the government to implement the 4% investment in public education (Ibid.). Under her leadership, the ADP began a campaign to collect 1,000 signatures for this petition to the government. In 2010 the Dominican Republic codified the 4% education spending requirement as a constitutional mandate. The successful advocacy of the ADP and the business sector provided an important legal foundation to the advocacy goals of the Movement (Ibid.). By 2010, the Dominican Republic had good education policies. The legal mandates served as the main foundation for the movement in making its claim on government. The coalition claimed the problem was inadequate implementation and enforcement of laws and regulations. Ignoring all other reasons to invest in public education, the Movement's most basic insistence was for the application of the law.

Direct advocacy for the 4% was limited to the teachers union, but in 2010 important civic campaigns pulled together to form a united coalition. One of the key civic campaigns, "*¿Dónde*

están mis cuartos?,"[6] led by Foro Ciudadano, involved the monitoring of the national budget (DSG-11). Foro Ciudadano began to use the 2004 Access to Information Law to bring transparency to the preparation of the annual budget and to advocate for increased social spending. Members of this campaign met with the bureaucrats and elected officials involved in creating the national budget. Their initial goal was to ensure that the budget would be submitted to Congress in time for an appropriate review. In years past, Congress had only a day to approve the budget (DSG-4, DSG-6). According to concerned civil society organizations, the budget would not receive appropriate scrutiny. Playing the watchdog role over the budget timeline would give time not just to Congress, but also to civil society for analyzing proposed government spending. At first the group advocated more generally for increased social spending in the areas of health, education, and social security. After prominent groups like the ADP and representatives of the business sector again began to take up the call for 4%, the budget group joined in and focused exclusively on the assignation of 4% to pre-university education. On October 26, 2010, the budget watchdog group, the ADP, and the business sector announced the formation of the *Coalición Educación Digna* (CED) and its intention to claim the promised 4% of GNI for education.

[6] Translates in English to "Where is my money?"

Figure 13 4% Movement protestors in yellow holding the symbolic yellow umbrella (source:acento.com.do)

5.1.4 Strategies of the Movement

The coalition is seen by its participants as the broadest cross-sectoral collection of membership to make up a movement in Dominican history (Dotel C. et al. 2015, 3). The CED started by announcing a series of demonstrations to be staged each day of the week in front of various public institutions that had an assigned role in the creation and approval of the national budget. To protect themselves against the hot Caribbean sun and a rainy tropical climate, rally participants decided they would use yellow umbrellas with the 4% painted in black. This yellow umbrella with the 4% became a uniting symbol of the movement. Across the country, communities celebrated “yellow Mondays” or “yellow Fridays,” wearing yellow to work or school and attending rallies (DSG-3, DSG-4). Hong Kong research participants were delighted to share the symbol of the umbrella with Dominicans. However, Hong Kongers not only used umbrellas to keep dry and show solidarity, they used umbrellas to protect against tear gas and as an extra buffer when forming a barrier of human shields.

In addition to mobilizing the grassroots, coalition leaders conducted an analysis to understand who the important decision makers were for the national budget. The analysis identified six different opportunities for political intervention, including the Supreme Court, the president, the Ministry of the Interior, the Ministry of Education, the Congress, and the 2012 Presidential candidates. To reach these loci of power the coalition filed suits, wrote letters, met in person with individuals, and maintained a constant stream of press releases. The Supreme Court denied the legal claim to the 4%. President Leonel Fernández refused to send a budget to Congress with 4% dedicated to education, arguing that the quality of education is not correlated with investment. During Fernández' presidency from 2004 - 2012, the executive actively opposed 4% assignation of GDP to education. The Ministry of the Interior collects the budgets from all of the public institutions, compiles it into one national budget, and sends it to the Congress for approval. The Ministry of the Interior claimed the government could not afford a 4% investment and that furthermore the Ministry of Education would not know how to spend all of that money and called the coalition "a bunch of crazy people" (DSG-4).

In tandem with protests and meetings with current public officials, the coalition began meeting with the political parties and their candidates for the 2012 election. As many scholars and political activists have noted, the Dominican Republic is a "highly presidential regime" (Betances 1995, Espinal and Hartlyn 1999) (DSG-1, DSG-3, DSG-11). Knowing this, the coalition not only protested in front of the presidential palace, they also began to target the next president. This strategy demonstrated the long-term vision of the movement and its ability to take advantage of opportunities to bring the 4% into national discourse. On September 7th of 2011, all six presidential candidates signed a pact indicating their commitment to assigning 4% of the GNI to education. This meeting was held in the presence of civil society leaders and members of the press.

Each government ministry writes its own annual budget. After an analysis of the budget process, the coalition realized that the Ministry of Education had never sent a budget of 4% to the Ministry of the Interior, even though the 10-year education plan created in 2008 included a steady increase in budget that exceeded 4%. Each ministry in the Dominican Republic has an advisory council made of public officials and civil society members that creates and approves this budget. The MINERD's advisory council was made up 30 individuals. The coalition determined who among the 30 might be persuaded to advocate for an education budget equal to 4% (DSG-3, DSG-4). This effort was successful, and on September 14, 2011, the council approved an education budget requesting 4% of GNI.

That year the coalition again began to focus on the National Congress. They held rallies outside the Senate and Chamber of Deputies, called meetings with individual Congressional representatives, and began lobbying Congressional commissions. Despite these efforts, the national budget was approved with less than 4% assigned to education.[7] The coalition convinced the communications team within the Chamber of Deputies to publish a video of the forty-five minute voting process that, according to the coalition, had been manipulated by loyalists to the president (DSG-4). The coalition edited the footage into a video to share on social media. This evidence that the executive power could control the decision making of the legislative branch fed the discourse of how corrupt and centralized government power was within the executive office. Despite two years of protest without responsiveness from Congressional representatives, the coalition continued its activities, moving physically across Santo Domingo and back to the presidential palace with monthly rallies.

In 2012, the country was in full election swing. The coalition continued to use elections as a political mechanism to maintain the 4% agenda as prominent public discourse. In March, a four-part series on education aired on two broadcast stations. The CED's efforts resulted in each

[7] 1.98% of GDP was assigned to education in the 2011 national budget

candidate committing to 4% spending on education (Beltre 2011). Their efforts did not stop there. The coalition requested that each candidate present a plan on how to spend the 4% (DSG-4). Candidates and their technical teams proposed these plans on national television. In April the coalition continued this discussion by convoking a debate during which political parties provided teams of technical representatives to debate the 4% spending.

In May, the country elected Danilo Medina as president. The mobilization continued with rallies every 4th day of the month. On December 4th, 2012, the new president met with his cabinet to approve the national budget (Noticias SIN 2012). For the first time, and 15 years after the law mandated it, the national budget assigned 4% to pre-university education. On December 17 and 18 the Senate and Chamber of Deputies approved the 4%. Since this victory, the coalition has continued to monitor the spending of the 4% through reports and presentations to the general public and with a specific invitation to the Ministry of Education to attend. While continued observation is as important to the mission of a higher quality education as achieving the 4%, the topic has lost its urgency and grassroots support. However, the reuse of government data remains a significant tool for the coalition to stay engaged in the mission of quality education.

5.2 Results

To trace the process of the social impact of OGD I conducted thirty-eight interviews with members of the 4% Movement, data intermediaries, and public officials. Members of the 4% Movement included the coalition organizers, NGOs, policy think-tanks, or grassroots participants like teachers or principals who participated in meetings and rallies. Audio recordings were then transcribed for content analysis and coded into categories of relevance to OGD, advocacy, politics, and intermediation. Topics related to Dominican political mechanisms include references made to the National Education Advisory Council as well as to opportunities for participation through the Ministry of Education, the presidential election, and the process of approving the

national budget. The final coding was then used to build the narrative of findings discussed in each case study chapter.

5.2.1 Data Intermediaries

Thirteen data intermediaries (DIs) participated in our semi-structured interviews. We discussed access, use, and advocacy as they relate to open government datasets. Data intermediary participants were middle class professionals who worked as journalists, economists, NGO staff, or technologists. Technologists reported little experience working with government data. This is not due to disinterest in working with public sector information but because of difficulty of access, the undesirable formatting, and, in truth, because of a distaste for bureaucracy. The technologists I interviewed were interested in civic projects but were much more active in building their own developer community than in working on civic projects. Technologists did not play an active role in the 4% Movement and are currently missing from the open data social impact network of actors.

5.2.1.1 Profile Type: Economists

The economists and journalists who were interviewed have much more experience accessing and manipulating OGD than did the technologists. The economists were either academics or worked for think-tanks or issue-oriented advocacy groups. Economists also reported being hired for contract work by government, CSOs, and the media. Government agencies contract Dominican economists to write reports that require analysis of public sector information. Civil society organizations employ economists to report on issues pertinent to their missions. These issues often include the monitoring and evaluation of government spending and public services. Finally, economists write directly for national news outlets on the same themes: national budget, government corruption, and economic performance. To analyze government spending, data intermediaries used annual budget data, quarterly spending datasets, or government contract

data. Analyses may be publicized in reports by a civil society organization or channeled through the national press.

Economists were primarily proficient in Excel, but some possessed skills in other statistical analysis software. Steeped in data, they often quoted public sector statistics. Their statistical skills were matched by their knowledge and experience in accessing datasets. On the topic of the government data supply, DIs reported dissatisfaction with the lack of timeliness with which data is updated and with the level of disaggregation. For example, one data intermediary said, “I can’t do an analysis on the spending on hospital construction by region because I don’t have that level of breakdown” (DDI-5). Another intermediary involved in monitoring the 4% lamented that his reports on spending were three months out of date due to the delays in reporting by the Ministry of Education (DDI-6). While economists often downloaded datasets from online government portals, they also formed relationships with data suppliers within government or rely on international organizations to acquire data from government. These interview participants mentioned dissatisfaction with the government's choice of format. PDFs are not machine-readable and require that the DI transform the data into a format that a software program can read in order to conduct analysis. Some PDFs can be automatically scraped for data and converted to a machine-readable file format with a programming script; however, Dominican DIs did not mention writing such scripts. Although economists did not always like the way data were presented, they said they were always willing to complete the necessary data transformations to conduct analysis. This willingness to transform datasets separated economists from the technologists. Several interviewees who identified themselves as developers reported a greater propensity to drop an OGD project if the format is not easily reusable (DDI-2, DDI-4).

5.2.1.2 Profile Type: Journalists

According to Dominican civil society leaders, journalists are also important data intermediaries in the Dominican Republic. They not only access and use government data, they aim to shape public opinion. However, journalists reported most often being interested in specific data points. While they wanted access to systems of data and large datasets, they stated that their intention is to find specific data points. For example, journalists wanted to report on who received a government contract and for how much, or to uncover a public official's salary information. This distinguished journalists from economists in two ways. First, they did not often perform statistical analyses. Second, they accessed information differently. While the economists predominantly used datasets made public on government portals, journalists often used the Law of Access to Information to make specific requests. Journalists first went to portals to find data to avoid the paperwork involved with an official request, but they described these portals as outdated or with insufficient metadata (DDI-1, DDI-7, DDI-14).

When discussing access to information, several journalists pulled out stacks of back-and-forth communications with Office of Information officials. Journalists eagerly read aloud specific letters recounting information requests and the kinds of excuses government would give. One journalist expressed the opinion that the officials responsible for information requests frequently dragged out requests with the intent of tiring the requester and forcing them to give up (DDI-7). According to DDI-7, officials picked apart specific language in the request and ask for further clarification in order to delay fulfilling a request. Journalists exhibited fewer skills in statistical analyses than the economists and less familiar with government data portals; however, journalists served a valuable role as the DIs most persistent in making information requests.

5.2.1.3 Profile Type: Developers

While the technologists were less active in using OGD as the other two groups of DIs, they did collaborate with government on OGD projects. The developer community was small but

active in Santo Domingo and was organized into smaller "user groups" based on preferred programming language or device, such as smartphone or web. One of the main organizers owns his own technology firm. He started the first user group in order to network with existing skilled technologists, and he trained additional people to program using Python. The group grew quickly, and more user groups popped up one for the Ruby programming language, another for software development for mobile phones, and one for women Python programmers. Because government was interested in the development of this sector of the economy, user group meetings and activities were occasionally sponsored by government institutions.

There was some evidence that technologists interact with bureaucrats. Some technologists interviewed could name the officials who work on the government's open data and open gov agendas within government. These same officials reach out to the Dominican developer network when planning hackathons[8] with government data. However, the occasional interaction between technologists and public officials was much less frequent than the interaction between public officials and economists or journalists. While the economists and journalists actively requested and access data or perform analyses for government, technologists provided only an occasional service to the government.

One developer described attending a hackathon that used government education datasets. He showed up ready to build a map showing the relationship between poverty and national standardized test scores. He expected to see low-income areas performing lower on test scores. Upon arrival at the event, the organizers had pre-developed the projects and had failed to deliver the promised access to an application program interface (API)[9] with Ministry of Education data. An API allows programmers to directly pull rows of data from government databases. Data

[8] A hackathon is a short period of time, usually between 8 and 48 hours where participants compete to develop applications based on a specific request or pitch made by organizations or businesses with a particular technology need that they cannot meet in house.

[9] An API allows developers to create applications that can communicate with government data portals.

updates are automatically integrated into the programmer's' application. APIs meet the highest standards of access and reusability for open government data. Compared to downloading an Excel file from an online portal, accessing an API is a much more technical process that requires coding knowledge. For example, DDI-11 could build a map application that automatically pulled in test scores and demographic data without having to manually upload updated datasets. The hackathon organizers expected to have the API for education and census data available, but they did not. Without the creative freedom or the desired access to government data, the participant left after a few hours. He did not build this application. He would still like to (DDI-11).

Another technologist described a plan for a startup business based on a mobile phone application that would tell users the safest driving route to take to a desired location. The application wanted to use a mix of crowd-sourced reports of crime and government datasets of per capita crime in certain neighborhoods. This aspiring technology entrepreneur did not know how to begin to access or request data. He reported his strategy would be to go in person and explain the project to a government official at the Office of National Statistics. When asked if any of the data was disaggregated at the level he desired or publicly available, he did not know. He was also unaware of the launch of the new open data portal that the government had built to be a one-stop shop for government datasets. I found that the technologists demonstrated novel and challenging projects, but also revealed a significant unfamiliarity with OGD.

5.2.1.4 Access to OGD

As conceptualized by the OGD research and theory, Dominican intermediaries reported providing the service of accessing information. Within the Dominican context, this access varied greatly. As mentioned, journalists may be interested in very specific data points; on the other hand, economists access larger datasets. Both types of intermediaries preferred to access data through online portals. However, the DIs reported that all online portals do not have sufficient

data, thus requiring a formal access to information request. When formal procedures for requesting information failed, some data intermediaries resorted to using contacts within ministries to acquire data through inside, informal mechanisms, a process which was often used by journalists or analysts in civil society organizations. Technologists, on the other hand were much less connected to bureaucratic insiders. As one participant stated, “Technologists don’t like bureaucracy” (DDI-2). Economists and journalists similarly did not report an affinity for bureaucracy. However, their motivations to acquire data were different from that of the technologists. Economists and journalists had to make repeated requests over long time periods from specific ministries. For example, DI’s from civil society groups used datasets on budget spending each quarter. However, journalists worked on a shorter timeline, making frequent requests across ministries as stories would arise. Needing frequent access to government data required journalists to develop relationships with individuals within government institutions. DIs’ reports indicated that software developers would rather not communicate with anyone inside government. They would prefer to develop a program with a line of code that communicates with government servers. It is understandable that the most technology-savvy DIs had not developed personal connections to bureaucrats, because most bureaucrats have no understanding of how to set up a web service for developers. This is not only evidenced from their interviews, but from the lack of reuse of government data by developers.

5.2.1.5 Format and Quality of OGD

Dominican DIs lamented that the government publishes data in unfriendly formats. The least “friendly” data formats are PDF or Microsoft Word. For the purpose of social impact, data intermediaries performed statistical analyses of government data with Excel, a commonly used software. A DI could also use a more advanced statistical software package, geographic information systems, or program an analysis script in languages like R or Python; however, analysis for the 4% Movement was done almost exclusively with Microsoft Excel. This software

is easily acquired and taught at universities in the Dominican Republic. However, only 18% percent of published government datasets were published using Excel. With a hint of frustration, DDI-6 reported receiving a screenshot of an Excel table from one Access to Information officer and, as a result, having to transform the screenshot into his own spreadsheets. OGD researcher, Tim Davies finds data transformation to be a common activity of DIs (Davies 2010). This is a heavy- touch, low-tech method of data transformation. While some data intermediaries are deterred by "unfriendly" format, many Dominican data intermediaries were quite accustomed to it. One even commented, "…as long as I get the data, I don't care. I can get it in the format I want. I just want the data" (DDI-11). In a country where PDF files are the predominant OGD format, data transformation is a necessary and expected step in the set of procedures for the reuse of open data.

Another contribution made by data intermediaries to the open data social impact system is supplemental data collection. One intermediary explained a research project evaluating the impact of the government's community technology centers (CTCs). The goal of this project was to increase access to information and government services by placing a computer lab in communities across the country. The DI was interested in indicators of internet access and use. One of the most commonly used indicators came from a survey curated by the United Nation's International Telecommunications Union. A survey question asks, "Have you used the internet in the past year?" The DI was not satisfied with the accuracy of this indicator and so conducted his own research with a more exact measure. Once this dataset was collected, the National Statistics Office (ONE) added the dataset to its collection of population indicators (DDI-12).

5.2.2 Public Officials

Fifteen public officials were interviewed as key actors in the Dominican open data social impact system. This interview group included elected officials, program directors within

ministries, ministers, and ministry office staff. Elected officials reflected on their engagement with the coalition in data-driven discussions for policy change. These elected representatives are also users of government data who support access to information because they value results-based decision making and participatory democracy. Public officials take part in several upstream data tasks, which include data collection, data management, data provisioning, and reuse of data. Staff oversee the collection of data accessed by DIs. Other senior officials are key in designing open data systems and creating a culture that supports open data. This leadership greatly affects openness, but staff carry out the day-to-day responsibilities of implementing systems, collecting data, provisioning data, conducting analysis, and interfacing with citizens in regards to open data. Elected officials, ministry staff, and public officials participated in interviews to provide a complete picture of the public officials' roles in the practice of open data and its social impact.

5.2.2.1 The Institutional Design of OGD Initiatives

One of the main institutional weaknesses of access to information and open data was the absence of a single entity to regulate and enforce open access to government data. Two government entities work to develop and implement open data projects. The Department of Governmental Ethics and Integrity (DIGEIG) claimed to be the institution responsible for access to information, open data, and open gov initiatives. In addition, the President's Office for Information Communication Technologies (OPTIC) also claimed responsibility for implementation. As mentioned, the Law of Access to Information requires each government institution to mount a transparency portal on its web site. The staff in each institution's Office of Access to Information maintained this portal and upload public sector information datasets and documents. OPTIC chose the technology platforms used by the government and provides the technical expertise and training for open data and open gov initiatives.

Ideally these two government bodies would work together in building institutional and technical capacity; however, the absence of a clear mandate has caused the initiatives to suffer, as each institution can remain inactive and point a finger at the other. Additionally, the DIGIEG lacked public credibility because the appointed director is known to have been involved in a corruption scandal. Several data intermediaries expressed the desire for an independent agency to regulate and implement open data and open gov. These institutions were tied to the agenda of President Medina, who has not prioritized open data or open gov.

The DIGEIG took time during the presentation to discuss challenges and strengths of open data in the Dominican Republic. One of their main foci was the developer community and private sector. According to the DIGEIG presenter, the lack of private sector demand for government data is one of the most significant impediments to realizing impact of open data in the Dominican Republic. It is not surprising that these public officials focused most on private sector users who derive economic benefits from open data, as opposed to focusing on potential political or social impacts.

5.2.2.2 OGD and Political Will

During participant interviews DIGIEG officials explained that political will is indeed a barrier. One participant stated, "[Public officials] say they are afraid that the public will manipulate the data. That's the whole point! We want them to manipulate the data" (DPO-4). This sentiment is echoed by staff and directors of access to information offices. Each government institution is required to establish and staff an Access to Information Office to handle and respond to requests for information and to manage the institution's transparency portal. When asked about the greatest challenge to their job, both staff and directors identified the political culture, but they described the challenge differently. One participant said her department heads were resistant to providing data and often made her explain to them the Law of Access to Information (DPO-1).

Another participant described the task of building public awareness by saying, “They try and place the discussion of open data in a political agenda. I say to them, I am not here as part of a party. I work for you” (DPO-12). Still another director of Access to Information demonstrated a distrust in the motivations behind the public requests. DPO-8 used the words “attack” and” bother” to describe public requests for data. One representative from the Ministry of Education spoke of the importance of citizens monitoring of public resources, but oddly refused to comment specifically on the 4% Movement (DPO-1). All of the representatives of Access to Information Offices conveyed a sense of satisfaction in providing citizens with information and playing a role of link between the public and the government demonstrating that at the level of day-to-day implementation, there is a will to provide open access to information (DPO-1, DPO-8, DPO-12).

5.2.2.3 Prioritization of High Tech Formatting and Reuse of OGD

In addition to interviews, I observed a meeting hosted by the DEGIEG to present the new norm for OGD and the new unified open data portal. Attendance was by invitation only and extended to individuals identified as potential users of OGD. Following the DEGIEG’s presentation of the new norm for OGD, the main project manager from OPTIC conducted a live demonstration of the new open data portal. At the beginning of the portal demonstration he explained to the user group, “This [open data] regulation is technical not political” (Department of Government Transparency 2015). This statement strategically dismissed the political implications of implementing these systems and promoted OPTIC as the more essential institution in open data initiatives because of its technical expertise. He proceeded to focus on the highly technical aspects of the portal and OGD. During the demonstration he navigated through the portal to pull up its only two XML files. He described the challenge in getting ministries to submit this “user-friendly” format and explained that OPTIC had transformed the datasets into XML format for the ministries. His focus on the technical prioritized OPTIC over the DEGIEG as the more important government agency in the practice of OGD.

5.2.2.4 How the 4% Movement Impacted Government's OGD Practices

According to public officials, the 4% Movement changed the demand for and use of government data (DPO-11, DPO-8, DPO-13, DPO-9). Since the 4% was apportioned to education, the number of requests for data on education spending has increased greatly (DPO-1, DPO-8). The coalition no longer organizes rallies and petitions, but as of 2015 the NGO, Foro Socioeducativo, was still active in monitoring the 4% spending and evaluating the quality of educational investment. Foro Socioeducativo uses government data as well as qualitative field studies to assess education spending (Foro Socioeducativo 2015). These assessments are presented with an open invitation to the public and a specific invitation to a representative from the Ministry of Education. A research participant from the Ministry of Education reported his appreciation for the analysis and said it improved the work of MINERD (DPO-11). DPO-11 provides data directly from the ministry to the researchers. In discussing how this research impacts MINERD, DPO-11 explained it improves their own evaluation because he wants to ensure that he produces better evaluations. These isolated pockets of willingness and value for open data and reuse of open data stand out in an overall culture of political apathy.

5.2.2.5 The Role of International Organizations in Dominican OGD

International organizations were pivotal to incentivizing the supply of OGD in the Dominican Republic. When asked if the current government's open data initiatives would survive a change in the presidency, DIGIEG officials responded with silence and slide glances. Finally they responded, "Let me put it this way, the country has a commitment to these initiatives" (DPO-4). The interviewee was referring to the country's commitments made to the Open Gov Partnership (OGP). The DIGIEG represents the Dominican government at the OGP global summits and regional meetings. The Dominican Republic was in its second-action cycle with 25 commitments to open data and open gov projects. Commitments included the unified open data

portal, a portal to access and bid on government contracts, and more internal-facing system improvements like centralizing public funds into one national treasury account (Open Government Partnership 2012). Responding to a question of political will with an explanation of the Dominican Republic's membership in an international initiative invites discussion of the role of International organizations in collection and reuse of data, particularly in developing countries.

International aid agencies are mandated to monitor and evaluate their interventions. To evaluate funding and monitoring of International Monetary Fund policies, World Bank programming, and the United Nation's Millennium Development Goals requires host countries to adopt indicators to track achievement (or failure). Because these international agencies partner with host country governments, part of development programming includes establishing systems to collect data. During interviews, public officials and data intermediaries often mentioned international agencies and their data-based projects. For example, the European Union has worked at the municipal and federal level to set up information systems for public services. These international agencies have the opportunity to gain financially by setting up these ICT systems. They are also users of the data. Open data and open gov initiatives are programmatic priorities of important development agencies, the World Bank in particular. The Bank promotes transparency and good governance as essential practices for governments of developing countries. When asked about timelines for OGD projects, several public officials mentioned waiting on the World Bank consultants for next steps or funding (DPO-3, DPO-4, DPO-6).

5.2.3 Social Movement Organizations, Leaders, and Participants

Twelve leaders and participants of the 4% Movement informed my understanding of principal strategies of the Movement and how the Movement made use of OGD. Many of these participants were members of the CED. The 4% Movement gained traction in public places of power after the CED formed to organize and direct the Movement's mobilization strategy. While

the coalition remained agile and responsive to any opportunity, a small committee called the *petite comité* met weekly to plan out the communication, mobilization, lobbying, and analysis efforts. Several *petite comité* members participated in interviews. These strategists were well educated members of the middle class. P*etite comité* interview participants were trained as academics, economists, or lawyers. They exhibited commitment to ideals of transparency, equality, and social justice. One member of the *petite comité* represented the coalition's analysis team. The use of government data was central to the overall strategy of the coalition. Indeed, members of the social movement revealed several insights into the value of government data for achieving social impact. They saw government data as necessary but not sufficient to achieve social change. They exemplified the articulation of a social justice claim with government data, and revealed how data was used strategically to integrate society's most privileged strata into a campaign for a policy that most affected the country's marginalized.

5.2.3.1 4% Movement's use of OGD

Seated across from the head lobbyist for the 4% Movement, DSG-4 explained, "You have to have it…You can't go without it." She was talking about open government data and the lobbying efforts of the coalition. DSG-4 was responsible for implementing the coalition's' advocacy strategies, specifically in lobbying Congress and advocating presidential candidates commit to 4% spending on education. Public officials were an important group of decision makers who required data-driven arguments. The coalition had to respond to the protests of public officials, primarily the president, that the government could not afford to invest 4% and that the Ministry of Education (MINERD) was not well equipped to administer a budget of 2 billion (USD). The CED used government data sets to present evidence that the claims were false (Torres 2011). To falsify the public officials' claim that the MINERD could not manage a 4% GNI budget, the coalition worked with the National Education Council to create a budget that would make use of 4% GNI. To contest the next claim that the government could simply not

afford to assign 4% of GNI, the CED analysis team used the most recent national budget data to show how funding could be reapportioned so as not to increase national debt. This analysis was brought to the National Education Council, the National Congress, to the Ministry of the Interior, and printed in the national press.

In addition to the budget discourse, the coalition continued to use Ministry of Education datasets to describe the need for investment in public education. This data included the statistics on the number of schools per student of school age, of teachers per student, of schools without bathrooms, etc. The data helped describe the need to construct more schools and classrooms, and to provide more appropriate amenities for teachers and students. The coalition also used the national standardized test scores and regional education indicators to show the lack of educational achievement domestically and in comparison to the Latin American region. Clearly the coalition made use of OGD to legitimize and articulate their claims. According to the several coalition members, use of data was necessary (DSG-1, DSG-4, DSG-6, DSG-9).

5.2.3.2 The Limits of OGD and the Importance of the Human Rights Argument

It is also important to understand what data does not do. What its limits are. Why it is "necessary, but not sufficient." One key member of the coalition who helped organize the movement as part of the *petite comité* described two of the most important strategies of the movement - reflection and rallies in the street. Neither made use of government data, instead they related to the tangible reality and physical spaces of the marginalized. The first phase of national mobilization targeted teachers, students, and their parents in every school district. For this "reflection phase," principals, teachers, and parents led discussions on education to address why investment in public education was necessary. Seated in classrooms, students, teachers, and parents were asked to reflect on their own experiences and imagine how their school could be different and their education improved with greater government investment. Participants were

requested to consider the current standards and quality of education as they experienced it. Some OGD-based statistics were used to prompt discussion on the number of desertion (DSG-9). Once the grassroots participated in this reflection curated by local ADP representatives, they answered the call to action. Physical protest of yellow Friday's, rallies, and marches were observed around the country. Dominicans are not strangers to strikes and rallies, but strikes are often violent or dangerous. Participants light tires on fire and barricade streets. Children and parents stay indoors, but not for the 4% rallies. These rallies included grandparents and children. Members of the coalition note the importance of peaceful assembly to achieving broad participation (DSG-1, DSG-3, DSG-4, DSG-9, DSG-11). Reaching and mobilizing the grassroots was as important to the coalition as the use of data to reach and mobilize the middle and upper class. Prioritizing the grassroots participation through reflection and rallies demonstrates this notion of necessary but not sufficient.

The coalition strategist most involved in integrating teachers, students, and parents explained, “We went to them with [the message of] right to education and the Dominican reality of exclusion from this right” (DSG-9). Data was part of this message. The interview participant proceeded to describe this exclusion with a statistic, “50% of the population aged 14-17 who should have been in school were not” (DSG-9). According to DSG-9, Dominicans had grown accustomed to school desertion. Using OGD to describe the day-to-day experience of the marginalized as systematic exclusion caused by lack of government investment proved to be an effective call to action. The data was part of a strategy of reflection on reality, and it empowered people to act. One public school principal from a rural area of the country recalled seeing a youtube video presenting the statistical argument for 4%. She said, “It described so well what I already knew” (DSG-2). DSG-9 described this as a heating up of data. She stated, “Cold data doesn’t tell you anything. What you need is the people to feel this and feel empowered.” This

suggests that in order for data to be useful for marginalized groups it must be made relevant to their lived experience.

5.2.3.3 OGD Strategies by Audience

The CED's *petite comité* designed a mobilization and advocacy strategy that would appeal to a variety of different social and political actors. A member of the CED's analysis team explained how the messages articulated by the coalition were tailored to different sectors of the population (DSG-6). To reach the poorest and least internet-connected, organizations close to the grassroots distributed pamphlets that included an explanation of the need for 4% with statistics on construction, teacher salaries, and the investments needed to extend the Dominican school day from 5 hours to 8 hours. Reaching the poorest sectors reinforced the goal of connecting the reality of what they were living with the budget argument. DDI-6 stated, "The people could connect with this demand because it was their reality."

To reach the more internet-connected populations, the communications team used Facebook, Twitter, and YouTube to disseminate information. The coalition described this group as members of the middle and upper class. They presented them with a largely data-driven messages and made use of the "data-bomb" technique. The 4% topics for this sector of society focused on corruption and mismanagement of funds as they related to public education spending. Because this class stratus overlapped with the business sector, the coalition reported statistics on the relationship between education and the competitiveness of the Dominican workforce on the international labor market and innovation potential.

The coalition handed analysis documents to video editors. Several interview participants described one of these videos as the tipping point that mobilized a broader population particularly the middle class (DSG-1, DSG-2, DSG-6). A non-profit organization crafted a nine-minute video comprised completely of statistics. In the video, a young Dominican woman stands and recites a

series of statistics, laying out a detailed data argument recounting the current education failure and lack of investment. The video explained how education indicators are correlated with a number of important socioeconomic measures like adolescent pregnancy, crime, and wages. She stands in the frame, straight faced, while animations of the statistics pop-up beside her, bringing together the basic claim for education and the technical argument for why.

The coalition produced another video to garner support. The under-four-minute video shows clips of police aggressively disrupting 4% rallies followed by shots of dirt-floor, overcrowded classrooms, interviews with teachers, and global and local 4% rallies. No mention of data was made. The video told a story of injustice and social mobilization. It did not present technical calculations but makes a purely emotional appeal for solidarity in response to depravity. These two movies demonstrate the parallel strategy of the coalition to engage in reasonable, data-driven debate while igniting an impassioned response to injustice. These artifacts of the movement again demonstrated the perspective that data is necessary, but not sufficient.

5.3 Findings

5.3.1 OGD Access and Political Will

Within the Dominican government there existed both supporters and antagonists of open government data. Neither side was very outspoken. Data intermediaries and members of the 4% Movement suspected that members of Congress did not realize the impact access to information legislation would have on transparency when they passed the Access to Information Act in 2004. The bill was introduced in the Senate and was passed through both houses unanimously. The author of the bill was a prominent public official within the Democratic Liberation Party, one of the two major political parties. He had previously served as a director of several public institutions. The Senator advocated the bill as a way to promote transparency, insisting that as the administrator of a public institution he administered public funds for public services. In an

interview the Senator stated, "You work for the public, so you should be under public scrutiny" (Mera 2004).

Since the establishment of this law, many legislators and public officials were subject to significant scrutiny through access to information. At this point, the law's adversaries emerged. In a political culture of clientelism and favors, exposing information to the public can be career ending. One data intermediary believed public officials had evolved less-traceable corruption tactics to avoid exposure through right to information (DDI-3). It is illegal for public officials to hire family members to public office. Access to government data on personnel and payroll information has revealed corruption and removed corrupt officials from office. However, as a result some appointed ministers have become sneakier. According to a DDI-3, ministers began to hire the family members of other appointed ministers, revealing that legislators and powerful bureaucrats pay attention to how access to information impacts their public reputation and their ability to benefit personally from public office. Many data intermediaries and members of the Movement wished the Access to Information law could be improved, but they preferred not to advocate for this in fearing that Congress would take the opportunity to weaken citizen's right to access information (DDI-1, DDI-3). Many public officials agreed that the law could be more robust, but did not advocate introducing new legislation.

Every data intermediary interviewed had a story to tell about how challenging it is to access data. Two participants pulled out stacks of back and forth communications with government officials. One opened up the Ministry of Health website to demonstrate how hard it was to search for salaries. The obstacle impeding access to open data and the role of political will are best portrayed by one civic technologist's experience in organizing a hackathon. In June 2013, while the 4% Movement pushed their agenda during the presidential election campaign, DDI-12 planned and organized a hackathon to use Ministry of Education data exclusively. He contacted the Ministry four months prior to the event, made an appointment and, visited the Minister to

explain-the event and request that APIs to build applications on top of the datasets. The Minister reacted positively to the concept of the event and the request for data. DDI-12 said, “They said we could have anything we want.” The Minister even asked for a mapping application that could show the relationship between the number of teacher strikes and the scores on standardized tests. After this the Ministry did not respond to follow-up requests for data. The organizer was forced to go to the Ministry the night before the event and transfer data sets onto an external hard drive. DDI-12 said, “I basically had to go with a knife like a thief in the night to get the data.” A partner from OPTIC then uploaded the data and created a web service for hackathon participants to build applications on top of the data. When asked why the Minister expressed willingness in the face-to-face meeting but would not deliver on the promise of sharing data, DDI-12 explained it as a lack of the Minister’s seeing the benefit. He said public officials have to be convinced that opening up datasets will either save them money or get them votes (Ibid.).

DDI-12 offered even further insight into the government’s aversion to open data. Recently an international economic development organization funded a research trip to Santiago, the second largest city in the Dominican Republic. The researchers were asked to assess the city's readiness for a smart city program. The smart city concept uses data and applications to increase efficiency in the provision of government services. A team of technologists went to interview city officials in departments that manage health, water, transportation, and sanitary services. These departments do generate datasets, a practice set in place and funded by international aid agencies. However, Santiago’s mayor worried that opening up this data could reflect poorly on the public administration and management of the city. This would have a negative impact not just on the city administration, but also on the elected officials’ political party. Without the mayor's mark of approval, each and every department head visited said no to providing access to datasets. DDI-12 used this story to describe the lack of political will for opening up government data to the public. The data was there, the systems for collection and data storage was in place, but the willingness

of public officials to open up access and reuse was not. Within a political culture of favors, public officials were not interested in more civic tools for accountability, nor were they motivated by the social impact. And with the smart cities example, the threat of transparency outweighed the promise for increased efficiency.

Public officials demonstrated a value for OGD driven by the potential economic impact. This economic impact comes from profit ventures of developers and entrepreneurs that OGD to offer information services. To build the ICT tools for startups for promised efficiency gains and economic impact, a monthly Excel sheet on budget data is not sufficient. These economic ventures require timely, well-structured data formatted for software developers to communicate with and pull into applications. Public officials in the OPTIC and DIGEIG offices are focused on this gold standard of open data. However, this open data gold standard is not necessary for social impact. Machine-readable formats are desirable, but members of the coalition were motivated enough to hand enter data from PDFs into statistical analysis software, row by row. Focusing on publishing datasets for developers could limit the potential social impact of civil society organizations more interested in analysis that can be done with a link to download an Excel spreadsheet. It was clear that the low-tech reuse of government data is not the priority of the Dominican government. In Section One, a World Bank report provided background on the status of open data in the Dominican Republic. In this report, the World Bank consultant and her government partners reported little evidence of civic reuse of data (de los Rios and Ortiz de Zarate 2014). They looked for evidence in the press, the developer community, startup businesses, but missed a social movement. In a presentation of the newly launched government portal, the presenter from OPTIC focused primarily on showing the crowd the XML formatted data. The presenter prioritized XML, JSON, and API as the ultimate data formats. All of the data intermediaries active in using government data for social impact are interested in XLS or CSV for statistical analysis. Prioritizing formats like JSON, while 73 percent of government data is in PDF

format ignores the community of users in between that are most likely to generate social impact of OGD. Data intermediaries who identified with a social cause used tech-light solutions but were highly motivated to make use of government data for social impact. The tech-savvy developers interested in XML and API formats may build information services for public use, but they were unlikely to connect datasets back to the halls of government with a call for social change.

5.3.2 Dominican Data Intermediation

In the case of the 4% Movement, the greatest strength of the Dominican Republic's open data social impact system was the embeddedness of data intermediaries within the coalition. I interviewed three different participant groups - data intermediaries, members of the social movement, and public officials, but several interview participants placed themselves in both the categories of data intermediary and member of the social movement. These individuals served the coalition on the analysis team, which regularly accessed government data, produced reports, constructed "data bombs," and performed specific analysis tasks for other coalition teams. Communication strategists published articles, press releases, pamphlets, and videos using statistics from a continually updated report maintained by the analysis team. The coalition's team of lobbyists also partnered with a data intermediary from the analysis team. DSG-4 reported the value of having a DI from the analysis team present to engage in the technical discussions. In a study of data intermediaries in the UK, open data researcher Tim Davies (2010) found that data intermediaries are motivated to use OGD by a desire to achieve recognition or create a brand new technological artifact (23). This motivation is very different from the desire to achieve social impact or social change. Davies' survey respondents were least motivated by using governed data to solves problems or overcome a challenge. This was not the case of the 4% Movement's data intermediaries. Their goal was to legitimize an argument for policy change with the goal of achieving a social impact. Data intermediaries who served as core analysts to the movement were

committed to the goals of the movement. They not only transformed datasets and conducted analyses, they dressed in yellow and marched the streets with the coalition.

The role of intermediaries in the information communication technologies for development literature is primarily described as technical assistance. When primary users are unable to make full use of an ICT tool, they need the support of a more skilled individual. In the case of open data, data intermediaries acquired datasets, reformatted datasets, analyzed datasets or built platforms that displayed data. Within the open data social impact system it is theorized that a data intermediary would provide technical assistance to marginalized populations attempting to influence government decision-making. The 4% Movement's strategist used government datasets to craft a technical and rational argument for audiences that would not be persuaded by the human rights argument and did not know the lived experience of overcrowded classrooms and overworked and underpaid teachers. What is clear from this case study is that the data intermediaries did not bring datasets to the most affected or most marginalized for their consideration and use in advocacy efforts. Data intermediaries brought datasets to the decision-makers. So the claim that open data increases marginalized groups' access to decision-making was not accurate. Open data provides the language to engage elites, upper and middle classes, and technocrats. Open data arguments may have resonated with the marginalized and were useful for stimulating critical reflection with marginalized groups, but it was not a tool for marginalized to influence policy making. The use of OGD by 4% Movement did not change the political or social power structure. For the marginalized, data did not translate to influence. However, the coalition strategists made use of OGD to work within the power structure and engage the social and political elite.

Among journalists, economists, and technologists, the skills and uses of OGD varied, and therefore they provided different inputs to the open data social impact process. While their roles were very different, the DIs were all members of the same social class. DIs were all middle or

upper-middle class. The importance of this is distinction is that public officials and coalition strategists were also of this same class stratus, and therefore DIs could more easily network with public officials in the event that they need to make data requests. Additionally, coalition strategists used class ties to integrate the DIs into the movement as members of the analysis team. As educated members of the middle class, DIs were comfortable navigating online government portals. They possessed not only civic awareness but a sense of entitlement to make requests of government and an expectation that requests would be fulfilled. The DIs possessed the skills to produce technical reports, and in addition valued an analytical, reasoned argument. Several data intermediaries spoke to the importance of including the analysis of the national budget and the anti-corruption discourse into the movement's demand for 4% education spending. While the quality of education was important to the middle class, they also needed to be made aware that the government could afford 4% spending on education and that a corrupt government was spending inefficiently. As members of the middle class, DIs had the poise to play an important role in the open data social impact system.

Data intermediaries not only brought legitimacy by representing a more privileged class, but also by projecting a civic voice. When questioned on the trustworthiness of government datasets, the DIs interviewed stated that who reported the data mattered as much as the source of the data (DDI-3, DPO-11, DDI-5). As DDI-5 said, “It’s not just where it comes from, but who says it.” For example, the MINERD reports data on spending and construction of schools. Participants believed that the general Dominican public is unlikely to trust government institutions to report truthfully on their own spending and programming. However, participants believed that when certain well-respected civil society organization evaluate the MINERD using a ministry dataset, they are more likely to be seen as trustworthy findings. Even though the data source is the same, the filter of the data intermediary offers greater legitimacy.

Coalition strategists and data intermediaries knew that rational argument was important in part because they are members of the upper middle class. DIs themselves valued rational public debate. These strategists, analysts, and economists served more as class intermediaries than as data intermediaries. They were of the same class as the bureaucrats they requested data from, the same class as the legislators and public officials they requested meetings with, and they shared social networks with the business elite who fund many of the politicians. They brought the reality of the most marginalized to the political and social elite, in so far as they can, with legitimacy. The marginalized played important roles in mobilization at the base and voting for candidates committed to spending on public education, but they were not involved in data collection and analysis activities. Open government data was a strategy to speak truth power and to make the reality of the most affected visible to the powerful. It was used on behalf of the marginalized, but not by the marginalized.

The most tech-savvy DIs did not report being active in the 4% Movement. They were all very familiar with the Movement, but did not use their tech skills to support the coalition. However, two DIs from the tech community mentioned the hackathon that exclusively used education data for its projects. The public officials also brought the event up in their interviews, eager to give an example of their engagement with the developer community to build applications using OGD. However, not a single member of the coalition mentioned the event. Coalition members could have brought valuable insight to an event that intended to build technology applications with open government data to improve the quality of Dominican education. That not a single member of the coalition mentioned the education hackathon was evidence of the disconnect between civic technologists and those most engaged in advocating for social impact.

Again the process map from the conceptual framework looks different in the reality of the Dominican Republic (Figure 12, below). Marginalized were not involved in reusing OGD for policy making. SMOs primarily used OGD to present convincing data-driven arguments to elites

and political officials while in the process of policy making as well as during the presidential campaign. The secondary use of OGD was as a prompt for critical reflection with marginalized groups.

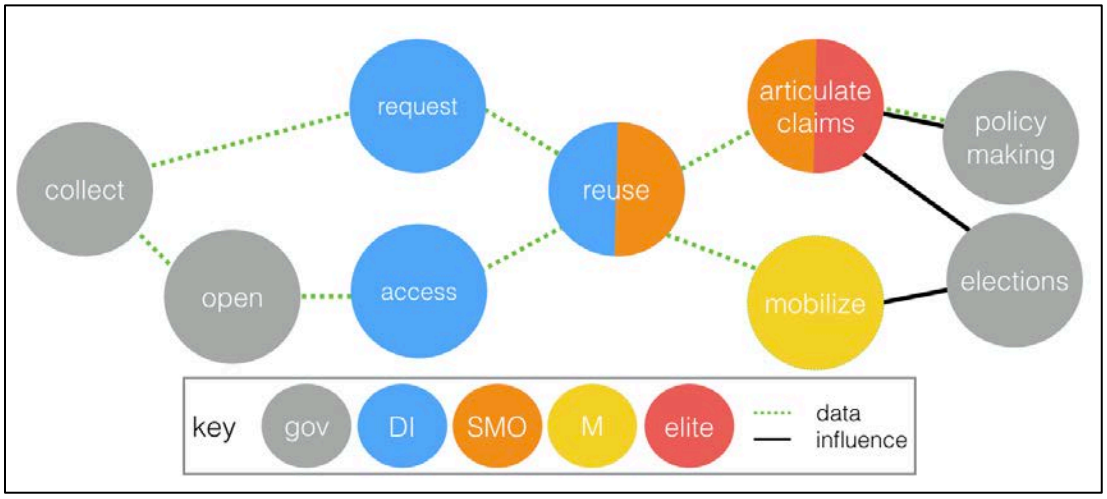


Figure 14 Social Impact of OGD Process Map – Dominican Republic

5.3.3 Data and the Neoliberal Discourse

This case study brought to light the importance of the sociopolitical context for social impact of OGD, particularly a society's experience of neoliberalism. The *Coalición Educación Digna* was cognizant of the neoliberal paradigm that shaped Dominican politics and society. In order to achieve the desired change without disrupting power systems, its members strategized within the existing neoliberal framework. Operating within a neoliberal system provided two particular advantages for using OGD. First, neoliberals are often technocrats who value rational and reasoned debate by experts. The coalition recognized that engaging the elites and government technocrats required technical analysis with government datasets. They knew a human rights based claim for quality education was not sufficient. The call to improve education had to be buttressed with messages about combating political corruption, enforcing administrative accountability, and promoting transparency as well as affordability. They used the "rule of

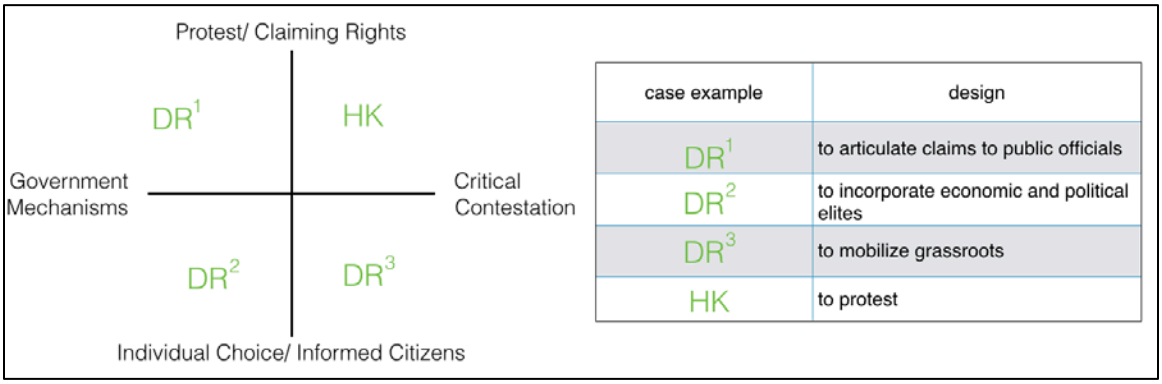
experts" norm to require presidential candidates to produce their own technical reports showing how public funds would be invested to improve the quality of education. Second, neoliberalism not only entailed an appreciation for the civic and political use of government data, it also contributed to the production of open government data. Developing countries are funded by multinational institutions like the International Monetary Fund and the World Bank. These institutions require indicators to measure performance, success, and impact. So these organizations help support the collection of government data as well as funding the data storage systems and portals. Many public officials mentioned the World Bank and the European Union as key actors in implementing open data projects (DDI-5, DDI6, DDI-8, DDI-10, DDI-12, DPO-6, DSG-8).

5.4 Conclusion

If social impact of open government data means increased access to government services and increased influence over government decision making by "marginalized" groups, the 4% Movement had social impact. It did make use of government data to successfully advocate for increased spending on public education, a policy decision designed to improve the quality of life of the country's marginalized. However, this case study demonstrates that the marginalized were not involved in the reuse of government data to achieve social impact. Instead of OGD being a tool of the marginalized, it is a strategy for a neoliberal paradigm. The neoliberal, democratic paradigm supports a rational public debate. Government datasets provide the language and numbers with which to advocate policy change in a way that political and social elites find legitimate. In the Dominican Republic, government data did not filter down for reuse by the most marginalized, most affected groups. And data intermediaries did not provide technical assistance to the marginalized. However, for the Dominican 4% Movement, government data was an important strategy for achieving social change. Data allowed the movement to articulate a human rights issue in a way that resonated with the middle and upper classes. What was inherently a

social justice and human rights claim became a conversation about transparency, corruption, and efficient use of the national budget. Inside the halls of government, open government data allowed the coalition to speak the technical language of lawmakers and public officials. With this strategy the coalition leading the 4% Movement made use of government data to engage elites and provide technical justifications for policy change, which ultimately resulted in a doubling of government investment in public education.

Compared to the Hong Kong social movement, the Dominicans were much more strategic in their use of OGD. There are several points to place on the OGD for Politics plot; however, none of the examples fall into the quadrant of using OGD to protest



case example	design
DR1	to articulate claims to public officials
DR2	to incorporate economic and political elites
DR3	to mobilize grassroots
HK	to protest

Figure 15 OGD Design for Politics – Dominican Republic and Hong Kong

CHAPTER 6. THE CHILEAN CASE

In 2011, Chile outperformed the Dominican Republic in OGD implementation, democracy rankings, and economic indicators.[10] In 2008, Chile institutionalized a robust policy for government transparency that included online access to government data. It's a policy Dominican participants cited as exemplary. From the onset, it was evident that Chilean Student Movement leaders had access to OGD and to technically trained data intermediaries. In terms of the analytical framework of OGD's social impact, the Chilean university students had all the necessary inputs to strategically make use of OGD to negotiate with political and economic elites and advocate for social change. Accordingly, I expected to find Chilean students to make strategic use of OGD, and perhaps even more strategic than in the Dominican Republic. Counterintuitively, I found that the Chilean Student Movement made minimal use of OGD. In contrast, the Dominican 4% Movement was much more strategic in its use of government data. This begs the question -- If access to data, skilled data intermediaries, and a well ranked democracy do not provide the necessary preconditions to social impact of OGD, what intervenient factors are missing? The counterintuitive findings in Chile identified a missing piece in the OGD field's framing of social impact: the sociopolitical context. Interviews with Chilean Student Movement participants, public officials, and data intermediaries revealed how despite access to data, training in data reuse, and a political value for rational policy making, a certain sociopolitical context can subvert the use of OGD for social change.

In Chile the historical legacies significant to OGD reuse included the nation's turn to neoliberalism and institutionalization of technocracy during the Pinochet era and a lack of opportunities for civic accountability in politics. While Chile is celebrated as one of the strongest democracies in Latin America, the legacy of Pinochet's dictatorship continues to influence

[10] ODB Implementation as scored by Open Data Index; democracy rankings as scored by Freedom House; World Bank economic indicator of GDP per capita

sociopolitical practices in Chile. During the dictatorship the state outlawed and violently repressed social mobilization and most forms of political participation. Pinochet relied on technocrats to design and implement state policy, privileging expert opinion over civic voice in decision making.

Figure 16 2011 Chilean Student Movement March (source: Reuters/Elisio Fernandez)

The nationwide demonstrations of the Student Movement from May to December of 2011 constituted the country's largest social mobilization since the return to democracy in 1990 (Lechner, Nunez, Somma 2012). Chilean university students mobilized for seven months in the form of protests, marches, rallies, marathons, flash-mobs, strikes, and sit-ins with the goal of removing profiteering from higher education and achieving high quality university education for all Chileans. Activists in the movement claimed that since the marketization of the educational system by Pinochet, universities had become profit-making ventures that only benefited an economic elite (Federación de Estudiantes Universidad de Chile 2011). While their demands

were tied to specific policy changes, the Movement called out the failure of the neoliberal model and sought to delegitimize the neoliberal ideology that had become so deeply rooted in Chilean society and politics (Ibid.) This case study explains why Chile's experience with technocracy and the neoliberal reform caused the 2011 Chilean Student Movement leaders, particularly the Confederation of Chilean Students (Confech), to strategically avoid the use of data as a vehicle for articulating their concerns or as a means to influence government decision making.

Section 6.1 provides a background on the Chilean political setting, the practice of OGD in Chile, and the 2011 Student Movement. Section 6.2 presents findings obtained from interviews with different participant groups and artifacts produced by the Movement. Section 6.3 discusses the cross-cutting themes that emerged from each participant group and explain why OGD was not an important strategy for the Student Movement. In Section 6.4 I conclude with the implications of these findings on the concept and practice of OGD's social impact.

6.1 Background

6.1.1 Political Background

Chilean political history is marked by extremes. In 1970 President Salvador Allende was the first democratically elected head of state in the world (Roberts 1999). Three years later, a military coup would replace Allende with a right wing dictator, General Augusto Pinochet. President Allende ran on a platform that called for transitioning Chile from democracy to socialism and began this with a set of reforms that were more progressive than any in the region (Ibid., 83). The expansion of social programs first galvanized and polarized the Chilean political and economic elite (Ibid.). The discontent spread to the middle class and mass mobilization ensued. US President, Richard Nixon, ordered the CIA to remove Allende by any means possible

but short of the Dominican occupation[11] (Whitehouse Audio Tape, 1972). The United States did take action to destabilize the Allende government and lent its support to the military coup. The violent coup was successful and in 1973, General Pinochet was installed as dictator. Pinochet then pursued the most aggressive neoliberal reform to privatize and marketize the Chilean economy and insulate the regime from social or economic demands (Silva 1991). Pinochet's Chicago Boys, a group of economists trained at the University of Chicago led by Milton Friedman, helped the regime to dismantle state-led development efforts like land reform (Ibid., 390). In addition to technocratic neoliberal reform, the Pinochet regime violently repressed any opposition. Both the communist and socialist parties had their leaders decapitated three times in the first three years (Roberts 1999, 95). Marxist parties were outlawed and nationwide curfews were put into place to prevent opposition organizing and undo social ties (Ibid, 130). The media was under complete control of the dictator (Wiley 2006). For 15 years Pinochet not only censored the press, but used the media to broadcast pro-Pinochet propaganda (Ibid., 671). Despite violent and stifling repression, isolated and sporadic incidences of social protest did occur and demands were made for social safety nets (Roberts 1999). Catholic clergy lent legitimacy to campaigns for human rights and social wellbeing (Garretón 1988, 2).

Political Scientist Kenneth Roberts (1998) compared the disparate trajectory of leftist parties in Chile during this time in his book, *Deepening Democracy? The Modern Left and Social Movements in Chile and Peru*. In the mid-1980s the Communist Party led a rebellion and the Socialist Party worked towards a plebiscite to remove Pinochet by popular vote (Roberts 1998). The Communist Party and the Socialist Party took up distinct but parallel opposition forces to remove Pinochet. The Communist party organized the grassroots in rebellion tactics along the spectrum of violent rebellion to nonviolent resistance. Meanwhile the Socialist Party focused on government mechanisms to oust Pinochet. Roberts argues that Pinochet's regime was

[11] Nixon refers to when the US intervened to remove democratically elected president, Juan Bosch in 1965.

characterized not just by repression but an obsession with institutional strength. His 1980 constitution provisioned a path to democracy with a plebiscite that would allow Chilean voters to vote yes or no for a presidential candidate chosen by the military junta. The Socialist Party effectively negotiated within the Pinochet administration for this plebiscite to occur in 1988, and along with a fourteen-party coalition launched the "No" campaign to vote Pinochet out of office. The campaign included voter registration, training for civic electoral observation, and setting up a parallel computer system for vote tabulation (Roberts 1998). The Socialist Party circumvented the ban on Marxist parties by creating a new political party called the Party for Democracy (Ibid.). This strategy co-opted Pinochet's constitution and allowed socialists to be politically active. According to Roberts, the "No" campaign was effective in part because it was less focused on the grassroots and more focused on multi-class support with a pragmatic, moderate appeal to individuals, not collectives.

In 1990 Patricio Aylwin became the first elected head of state after almost seventeen years of Pinochet's harsh military dictatorship. Aylwin belonged to the center Christian Democratic Party and his party governed in coalition with Socialist Party. The political and economic right maintained significant power and influence over government. Fifty constitutional reforms were voted on and approved in the 1989 plebiscite (Roberts 1998, 143). Some reforms did increase political participation and competition. After the return to democracy, the leftist parties were not aggressive in pursuing socialist policies or advancing democratic deepening. This was in part because of the still authoritative structure of government and a continued focus on moderation and consensus through elite-negotiated social and political pacts (Ibid., 141). The transition was done within the rules established by Pinochet, and these rules remained intact and were not challenged in fear of a return to authoritarian rule (Ibid.). The executive was still insulated from legislative and civic checks on decision making and economic elites were still committed to the neoliberal model (Ibid.).

Prior to the transition the left had been loudly critical of the neoliberal paradigm, but backed away from economic reform in order to placate the business elites who required continuity in the neoliberal model in order cooperate politically (Ibid.). Chilean political scientists Patricio Silva also argues that even leftist circles came to accept and publically support free market policy (Silva 1991, 399). Silva also argues that after the breakdown of democracy, not only was the authoritarian government ruled by experts, political opposition became highly professionalized (Ibid., 400). Silva explains that the expert approach to politics provided a common ground for the left and center opposition to come together and successfully architect and implement the "No" campaign. A "no" to Pinochet was not a "no" to technocracy. The new technocrats did not reverse neoliberal reforms of privatization and land reform and even accepted further privatization and marketization. However, they did achieve an increase in taxes that allowed them to funnel money into social spending on healthcare, pensions, and public works (Roberts, 148). Socialist and communist labor organizations grew more and more discontented with the lack of change in economic policy. The United Workers Central (CUT) of which a majority of unionized workers belonged to, was a major player in demanding more progressive economic policy. In 1994, the CUT ended negotiations with Ministry of Labor, refused to participate in government technical studies, and began to march. They were particularly critical of the government's technocratic style of governance (Ibid., 150). Contrary to the Socialist Party, the Communist Party has remained active in grassroots mobilization and played an organizing role with students during the Penguin Movement (Ibid., 116). They however lack the political capital to create policy change. Two of the former 2011 Student Movement leaders are now elected officials and members of the Communist Party. Understanding the history of the Communist Party in Chile provides important context to the strategies implemented by the Student Movement leaders.

Democracy is an ongoing transition in Chile. Despite reform, the emerging Chilean democracy would be quite limited in important civil and political ways. For example, media censorship was left in place for nearly a decade. Not until 2001 could the Chilean media openly critique the Chilean government when the Free Press law finally revoked a Pinochet era statute that prohibited "defame, libel, or slander the President, government ministers, members of Congress, superior court judges, and the commanders in chief of the armed forces" (Bresnahan 2003, 45). During Piñera's government and the 2011 Student Movement, Chile received the highest rankings from Freedom House in civil liberties and political rights. Despite this top score, research participants reported significant centralization of power in the office of the President (CDI-9, CSG-10, CSG-11, CPO-7). These rankings were in fact downgraded in the wake of the Student Movement.

6.1.2 The Practice of OGD

Chileans' right to information was institutionalized as law in 2008 by the first government of Michelle Bachelet as part of the Law of Transparency. Chile's Law of Transparency was born in response to corruption scandals and was made a legislative priority only after the Inter-American Court of Human Rights found the state to be illegally withholding public information (Claude v Reyes 2009). The Law of Transparency included a provision called "Active Transparency" which stipulated that government's administrative institutions should publish certain data, including budget data, on their institutional websites. One important feature of Chile's Right to Information Law was the creation of an autonomous organization to facilitate and enforce information requests (Camacho Cépeda 2015). This organization is not subject to governmental directives and can offer unbiased defense of citizens and of public institutions according to the law.

In 2008, the open data and open government initiatives were housed in the Ministry of Economics and focused much more on projects that improved internal e-government practices as opposed to increasing civic participation through networked technologies or open data. In 2010, a Chilean public opinion firm, Adimark GfK published a report called the Access to Information Barometer (Adimark GfK 2010). The firm conducted surveys with 347 journalists to evaluate access to and quality of government information two years after the passage of the Law of Transparency. Respondents reported an improvement in access to information as well as an increase in the use of online portals to access data. However, journalists also reported incomplete data and that they most often requested information from government officials rather than downloading datasets from online data portals.

Open data government initiatives became a larger part of the presidential agenda in 2011 when Piñera was president. Piñera moved the responsibilities and personnel related to open data and open government initiatives to the Secretary of the President (Secretary of the President 2013). Projects expanded to include the mission of improving government-citizen relationships through networked technologies. The team developed an open data portal, an open government portal, and a document request portal (Open Government Partnership Plan de Acción Chile 2012). In 2011, Chile joined the Open Government Partnership (OGP), a global initiative calling for firm commitments to OGD and open gov. As members of the OGP, Chile committed to data transparency action plans and new unified government data portal. In the first ever cross-national ranking of open data practices, the *Open Data Barometer* ranked Chile as 25th among the world's nations, ahead of all Latin American countries. Consequently, the 2011 Student Movement enjoyed legal access to data, including available datasets on the national budget, the Ministry of Education budget as well as planning and census data. Data had been made available to the Social Movement to make use of for policy advocacy. Since 2011, Chile has continued to advance in open data practices, moving on to a second commitment cycle with the OGP and moving up 10

rankings in the *Open Data Barometer* (Davies et al. 2015). Clearly, in the region, Chile is considered to be advanced in open data practices.

6.1.3 The 2011 Student Movement

6.1.3.1 The Chilean Tertiary Education System

There are two main types of universities in Chile: traditional and private. The traditional universities are made up of sixteen public universities plus nine private universities. These universities are distinguished as traditional based on their representation on the Council of Chilean University Rectors (CRUCH), which was formed in 1981 (OECD 2012, 17). Traditional universities are more prestigious, higher quality faculty, and are eligible to receive direct funding from the state. Prior to Pinochet's pro-marketization reforms, only eight publicly funded, traditional universities existed (Ibid.,18). Since the reforms there has been a proliferation of private universities as well as leap in the percent of the population with a university education. At the time of the student movement 147 private, post-secondary institutions were accredited by the state.

The main changes to the university system under Pinochet involved cuts in federal spending, introduction of a market structure to higher education, and decentralization of the administration of higher education. Before the 1981 education reform, eighty percent of university budgets were financed by the federal government (Fech 2011). The marketization of the education system shifted payments from the state to the individual. Every year the state would apportion higher education funding from the national budget to the twenty-five traditional universities. Ninety-five percent of funding was calculated based on what each institution had been given the year before, and the other five percent was determined from a set of indicators on enrollment, post-graduate degree candidates, research funding, and publications from the year

prior. The five percent assignation was meant to promote academic excellence (Sepúlveda 2000, 5).

The state also provided what is called Indirect Financial Aid (AFI) to any higher education institute that enrolled 27,500 students scoring in the highest percentile on standardized tests. In 2009, 77 percent of AFI went to the 25 traditional universities (Fech 2011, 8). Tuition was set for the traditional universities by the state and varied by academic program. To help students finance tuition, the state created the University Loan System which was to offer long-term, low-interest loans to needy students.

At the time of the Student Movement in 2011 there were two additional loan systems. The Solidarity Loan was available only for students in traditional universities. These loans were administered by the universities based on student enrollment and students' scores on standardized tests.. Private financial institutions manage the loans. Repayment would start after a two-year grace period, and annual payments were based on a student's income. After fifteen years the state-backed loan would be forgiven. In addition to this loan there was a need-based credit system for students attending any accredited university. Like the Solidarity Loan, this state-backed credit system, CAE, also required a certain level of academic performance. The university paid back a certain percentage of the loan in the event of a student dropping out. The state also guaranteed repayment in the event of default.

The 1981 reform also included a restructuring of the higher education system that introduced two new types of post-secondary educational institutions: professional learning institutes and technical training centers both of which are private and may be non-profit of for-profit ventures. The reform created competition of applicants by capping enrollment at each institution for each professional degree program. This in turn encouraged the establishment of private universities for students seeking who had not been accepted to the degree programs of

their choice at the traditional universities. Admission to traditional universities was based on a new rigorous standardized test, but private institutions could set their own admission criteria. Separate from Pinochet's reform but essential to the institutional structure of university education in 2011, was the National Accreditation Commission, an autonomous public body established by law in 2006 that oversaw the accreditation process of private universities. During the Student Movement, the Council for Higher Education came under scrutiny for corruption stemming from accusations that the council had served the interests of private investors (Torres et al. 2011).

6.1.3.2 Demands of the 2011 Student Movement

As previously mentioned, the specific demands of the Student Movement centered on three main issues: tuition fees, quality of education, and access to education. Removing profit-making from the educational system was essential to the students' message. Over the seven-month protest period, Student Movement leaders rejected a series of government proposals that increased government spending but failed to address the ascendancy of for-profit education.

In 2011, Confech estimated that on average, state funding covered 11.5 percent of traditional university budgets. Prior to Pinochet, state subsidies amounted to 80 percent of university budgets. This drastic decrease combined with an increase in the number of privately owned and funded universities shifted financial responsibility for higher education to Chilean families. The students also compared the cost of a university degree in Chile to other OECD countries. According to their analysis of OECD data, Chile's public spending in tertiary education is the lowest of all member countries (Fech 2011).

The Student Movement also claimed that the institutional reforms and privatization of education affected the quality of university education. The students contested the accreditation system as well as the variation in quality of accredited universities. In a presentation to the Congressional Education Commission, student movement leaders cited data that showed only 11

of 73 technical higher education institutions were accredited (Fech 2011). This raises the issue of access as well as quality, since technical schools are predominantly attended by lower income students (Ibid.). The Confech also objected to the inequality in access. The Movement claimed the cost of standardized tests required for admission at the traditional universities was prohibitive for lower-income high school students. In addition, standardized test scores correlated positively with student socioeconomic level. Additionally, state funding went predominantly to the traditional universities which, for the reasons mentioned above, were largely inaccessible to lower-income students..

6.1.3.3 Timeline of Events of the 2011 Student Movement

The first official call to march by university students was made on April 28, 2011 in the capital city of Santiago (Santa Cruz and Garces 2013). Fifteen-thousand students, teachers, and workers marched and fairly quickly, a coalition of groups and organizations came together in support of the movement (Ibid.). These organizations included Confech, teachers' unions, university faculty, secondary school students, and other important educational figures, including university rectors. Initial activity was isolated to the capital, but a national mobilization was quick to follow. The Movement continued to assemble and sent a formal communication to the Ministry of Education with a list of desired reforms. In an attempt to bring the coalition's demands into the national dialogue, this formal communication was sent a day prior to President Piñera's national address. The letter was underwritten by Confech and the coalition of civil society groups who had joined in support. As a result, President Piñera did mention education reform in his speech (Castro 2013). This proved to be the first win for the students in inserting university reform into the national agenda; however, the coalition was unsatisfied with Piñera's statements (Ibid.). The student leaders continued to call for national protest.

On May 26th Confech organized a march of 8,000 students that culminated when Movement leaders' delivered their second official communication to the government in the form of a letter to Education Minister Lavín (Confech 2011). While the students were in the streets, Minister Lavín announced to a private gathering of traditional university presidents the government's intention to work on education reform. Shortly after this meeting, the government announced a set of twelve reforms including an increase in state funding of public universities, increased financial aid, lowering the interest rate for student loans, better regulation of universities, and debt forgiveness for teachers (Urquieta 2011). One week later, the CRUCH and Confech rejected the proposed reform because it did not sufficiently address their demands, specifically the demand for increased funding. Movement participants continued to protest on the streets and occupy universities, schools, and political buildings. In its second month, security authorities began to use tear gas on protesters. The media portrayed the movement as aggressive and participants as criminals, but the students continued to mobilize and planned a national march for June 1 (Cabalin 2013).

The Ministry of Education asked Confech to call off the protest and instead to attend a meeting in person to discuss educational reforms. The student leaders responded that without a written response to their original letter, they would continue with the march. Minister Lavín failed to deliver a written response to Confech's letter, and the students moved forward with plans for the June 1 protest. This rally is now called "Hundred-Thousand March." The march is considered the largest Chilean social mobilization since the return to democracy in 1989 (Santa Cruz and Garces 2013).

Movement participants not only took to the streets in marches, but also occupied symbolic locations including schools, universities, the Social Democratic Party's headquarters, and the entrance to the Ministry of Education (CSG-2, CSG-12). In addition to mobilizing the public, the movement gained political backing of left-leaning party representatives and elected

officials. The coalition demanded that the government send an education reform bill to Parliament by September 30. On June 16, the Movement again took to the streets in massive numbers, doubling the size of the Hundred-Thousand March earlier in the month (Vera 2012).

On June 21, MINEDUC and Confech met for the first time to discuss education reform with Minister Lavín (Ibid.). Again the movement found the government's proposals to be cosmetic changes that would fail to remove profit-seeking from the education system. The contentious negotiation and aggressive mobilization continued until the end of the school year in late November. The Movement sustained seven months of massive protests and public debate. It brought back the pre-dictatorship symbolic practice of the "cacerolazo," banging pots in the street. The government made a series of proposals for reform and hosted meetings with student leaders. During the mobilization, public satisfaction with the President and the Minister of Education reached record lows. In fact, the President replaced the Minister of Education twice over the seven- month period (Ibid.). In spite of the dialogue with the state and several proposed reforms, the students were dissatisfied. According to the leaders of the Movement, the reforms never adequately addressed the fundamental issues of profit vs. quality or accessible education (Vallejo 2015). No policy agreement was reached, but the Movement successfully altered political discourse by questioning the neoliberal paradigm. University students mobilized a long repressed civil society, and in 2014 several leaders of the Movement were elected to political office.

6.1.3.4 Strategies of the Movement

Leaders of and participants in the Student Movement described their principal strategies for achieving the desired outcome to be mass communication and mobilization (CSG-2, CSG-6, CSG-8, CSG-12). If respondents had not been specifically asked about the use of open government data as a strategy to articulate the demands of the Movement, they most likely would

not have mentioned it at all. When prompted, respondents did say that they used OGD to compile a technical report for government officials and members of Congress. But by and large, movement participants and instead focused on mobilizing Chileans. The Movement employed a variety of online platforms to disseminate their message, mobilize, and organize, including Facebook, Twitter, Tumblr, YouTube, Vimeo, Prezi, Slideshare, and domains specifically registered to host the Movement's websites. The use of social media as a strategy for this mass communication and mobilization is well researched and documented (Pena et al. 2015, Cabalin 2014, Somma 2012, Valenzuela et al. 2012). Social media and online platforms were important accessible outlets for mass communication because the Chilean press was not diversified. Cabalin (2014) concludes that, social media was more than a means to reach an online audience. It helped the Movement in its effort to combat mainstream media's portrayal of the students as irresponsible, naive, and uninformed (Cabalin 2014). The legacy of authoritarian control of media impacted the strategies of the movement. During the Student Movement, Freedom House characterized the Chilean media as "a duopoly" (Freedom House 2011). Two private newspaper companies controlled 95 percent of Chile's newspapers and they also receive significant advertising revenue from the state. Due to state-biased coverage and criminalization of journalists during the Student Movement, Freedom House downgraded its rating of the Chilean press from "free" to "partly free" in 2012. Additionally, Cabalin explains that the most dominant newspaper, *El Mercurio*, not only controlled an extensive network of newspapers around the country, it is a political actor, representing the voice of the elites (Cabalin 2014, 6).

In addition to organizing rallies and marches, the Movement was quite creative in sustaining mobilization. They held a 1,800-hour marathon relay, a flash mob dance, and a kiss-in, all at the front steps of the National Palace (Somma 2012, 306). For 1,800 hours straight a group of students and university professors ran in circles around the National Palace. The students committed to 1,800 hours of running in circles to bring attention to Chilean economist Marcel

Claude's calculation that the government could send 300,000 Chilean students to university each year with an annual investment of 1.8 billion dollars or less than 1 percent of Chile's GDP[12](Claude 2011). In addition, a flash mob of students dressed as zombies and danced to Michael Jackson's "Thriller." symbolizing the awakening of a generation and the stirring of social movement in Chile (Farfan 2011, 4). Later, a kiss-a-thon was organized as a peaceful and ironic demonstration for education reform (Crouchet Gonzalez 2015, 226). The students had not only been aggressively repressed by the National Police, but were also denied permits for planned marches (CSG-12). Because the movement was national and dispersed across levels of education, there were numerous, co-occurring protests during the seven months, including hunger strikes and occupation of high school buildings. Nearly all of the events were publicized on one of the aforementioned social media outlets. The students were creative and consistently active in mobilizing their base.

In addition to focusing on the grassroots level of politics, the students sought support from influential social and political actors. Several university rectors, the teacher's labor union, and elected officials of the opposition party (Senator and President of the Radical Social Democratic Party, José Antonio Gómez; President of the Communist Party of Chile, Deputy Guillermo Teiller) joined the movement in solidarity (Colegio de Profesores de Chile 2011). While the most prominent spokespeople of the Movement were university students, they could count on support from a coalition of civil society organizations. The students seized a series of political opportunities to insert their demands into the political agenda: the president's national address, public consultation with the Ministry of Education, and a presentation to Congressional Commission on Education. Even as the Movement pursued opportunities to interact with key decision makers, they consistently prioritized a focus on their base (the grassroots community, and their support of the Chilean family).

[12] Calculated based on 2011 GDP as reported by World Bank.

In her evaluation of the Movement's outcomes, Francisca Castro (2013) explains that after two meetings with the Ministry of Education in May and June, the Movement began to focus more on mobilization and coalesced with secondary school students who had also begun to mobilize (Castro 2013,17). In an interview, noted spokesman and student leader Giorgio Jackson confirms this emphasis on the Chilean public over political officials. Giorgio says, "…everyone thinks that being in the Congressional Education Commission … is something that produces a lot of satisfaction. But what I love the most is when I'm in the metro and someone says to me, 'Keep going because there are so many of us behind you.'" (Aldea 2013). Jackson's preference for the day-to-day support from average Chileans demonstrates the importance of mobilizing the masses over negotiating with experts or politicians.

6.1.3.5 Outcomes of the Movement

Many scholars and a majority of interviewees in this case study considered the 2011 Student Movement a success (Castro 2013, Labbé 2013, Valenzuela 2012, Bellei and Cabalin 2013). Interviewees most often cited the achievements of bringing education to the forefront of the political agenda and the election of former movement leaders to serve in the Chilean National Congress. Indeed, four former student leaders won seats as deputies (El Mercurio 2013).

In her media-based evaluation of the impact and consequences of the Movement, Castro (2013) concluded that the Movement was successful in both tangible and intangible ways. Castro evaluated political impact by looking for evidence that the Movement was able to set the political agenda of the President and Congress. To measure this she looked at references to education in presidential speeches pre and post-Movement and counted the number of formal meetings between student leaders and government officials. Castro also listed the educational policies adopted by the Piñera government, policies which included an increase in university scholarships,

a decrease in student loan interest rates, administrative changes, and the implementation of a new ranking system (Castro 2013, 21).

Castro's evaluation included the political impact of the resignation and replacement of the Minister of Education. President Piñera replaced this position twice. The removal of Lavín, the first Education Minister, was largely due to the Movement's claims that Lavín had a conflict of interest due to ties with a private university. In addition to removal of prominent figures, several education officials renounced the administration's response to the Movement and stepped down from their posts. With the aid of journalistic investigation, the students also succeeded in pressuring the state to shut down a private university that was found to be making profit from tuition revenue, which is illegal according to Chilean law (Torres et al., 2011).

Castro also described intangible impacts like changes in public opinion. Student leaders made education reform part of the national agenda by meeting with congressional members and attending formal hearings by the Congressional Education Commission. National surveys revealed a decrease in the popularity of government officials as well as a desire for greater income equality. The students' demands were for policy changes on the surface, but their demands constituted a fundamental rejection of neoliberal ideology and the embededness of education within the economy.

6.2 Results

6.2.1 Data Intermediaries

A total of twelve DIs participated in semi-structured interviews designed to elicit information on the topics of access, quality, and reuse of OGD. Data intermediary participants were trained in economics (4), public administration (5), or computer science (3). Three of the twelve were female, and all are middle or upper-middle class. DIs were the first to explain that

reuse of OGD for policy advocacy is limited to a small circle of experts working in think tanks or research centers (CDI-1, CDI-3, CDI-7, CDI-9, CSG-5). They reported that only a handful of NGOs participated in data intermediation for social impact. Some think tanks and journalists use open government data to achieve a desired social and/or political impact, but they do not work directly with marginalized groups. Members of Parliament were their primary audience, and accordingly they produce technical reports. Their secondary audience was the public. While data intermediaries valued rational, data-driven debate, they recognized the difference between a technical argument for policy change and arguments based on the lived experience of those advocating for policy change (CDI-9, CDI-13).

6.2.1.1 OGD Access and Format

All DIs in the study preferred reusable file formats like Excel, but many mentioned formats used for econometric analysis software like STATA or SPSS. Most DIs used open government datasets as often as datasets acquired through formal requests made through the Law of Transparency. Their most common complaint about accessing government data was timeliness. Timeliness included the frequency with which datasets are published to portals as well as the time it takes to fulfill information requests. Unique to Chile, and perhaps due to the strong role of economists, many DIs also expressed a desire for time-series panel data, which is used for an advanced econometric analysis of impact on a certain segment of the population over time. DIs were active in accessing and analyzing government data and were critical of the government's data collection and publishing practices. Many participants explaining the government ineptitude in data collection referred to botched census data collection in 2013. The government did admit to measurement error and the omission of certain groups of the population which resulted in inaccurate reporting of economic and social indicators (External Census Review Commission 2012).

Most DIs had developed their own strategies for acquiring datasets. They knew which agency within which government ministry maintained and published a particular dataset. DIs almost exclusively downloaded data from the portals of government ministries and not from the unified state portal maintained by the President's Office of Modernization. Many DIs found the current unified state portal to be insufficient in the number of datasets available, the quality of data, and timeliness. The government had in fact developed several iterations of the open data portals since 2011. The first had a simple interface and scraped datasets published by other government institutions. The 2011 portal was no longer the official one, but is still used by some data intermediaries, such as journalists (CDI-2).

6.2.1.2 The Politicization of OGD

Interviews with the DI participant group revealed the politicization of open government data in Chile. According to DIs, OGD implementation follows the President's political agenda. Several participants compared the open data projects of the Piñera government (2010 - 2014) and Bachelet governments (2006 - 2010; 2014 - present). They all agreed that the Piñera government prioritized open data initiatives more than Bachelet did (CDI-2, CDI-6, CDI-11, CDI-12, CDI-13). CDI-13, a proponent of OGD, explained that while she did not vote for Piñera, she recognized he had more vision for open data. And CDI-12 opined that OGD has not advanced in Chile since Piñera left office in 2014.

External influences also play a factor in OGD implementation. Participants consistently stated that the government fulfills open data commitments made to the international community as members of the Open Government Partnership (CDI-1, CDI-3, CDI-7). DIs saw this commitment as tangential to the potential domestic impact of making government datasets public. CDI-12, who had previously worked in government, believed that government employees see the publishing of data as an inconvenient task.

6.2.1.3 Civic Reuse of OGD

Data intermediaries had strong opinions about the public use and awareness of OGD. Most argued that open data is a foreign concept to the average Chilean (CDI-1, CDI-2, CDI-3, CDI-6, CDI-8, CDI-10, CDI-12). Not only did they say that data is used primarily by a small circle of experts, but many find this confined use to be appropriate. According to these DIs, open government data was not for the average citizen, but for technically trained individuals or organizations. Because most DIs perceived that the general public has little awareness of OGD and even less technical training on how to access and reuse it, the former portrayed their role as a unique and valuable input in the open data system.

Referring to the leaders of the 2011 Student Movement, one DI explained that it was necessary for students to perform the role of data analysts. She stated that the university students had the benefit of years of expert, complex analysis completed by academics and economists (CDI-8). Another data intermediary explained that the students created the space in the media for experts and academics to provide their analysis in support of education reform (CDI-9). CDI-8 and CDI-9 stated that the students' role was to bring political and public attention to issues of education inequality and profiteering in education. CDI-13, an academic who studied the use of social media by the Movement, was the only one to express the belief that an important next task is to make OGD useful to the average citizen. She advocated for making OGD more accessible to the average Chilean through training or data visualizations. CDI-9 voiced concern over government's providing data visualizations to reach the data-illiterate population. He believed government officials would choose visualizations that reflect well on government programming (CDI-9).

6.2.2 Public Officials

The public officials whom I interviewed included current and former directors of open data initiatives, open data portal managers from several government institutions, past and current Ministry of Education personnel, and elected officials. Twelve officials participated in interviews. Ten of the twelve were male. All public were middle or upper-middle class citizens and well educated. Participants were asked questions about open data practices and legal frameworks, reuse of OGD, policy-making, and civic engagement. All were familiar with the concept of OGD and were proponents open data practices.

Of the eleven participants in this group, four administered open government data portals. Government employees who oversee the day-to-day tasks of open data portals have a unique perspective on open data initiatives. They turn initiatives into practice: they conduct training, collect datasets from other arms of government, manage the open access, and interface with OGD users. These participants were familiar with both the technical and political aspects of open data. Unlike other public sector employees and elected officials, they were often aware of international OGD standards and possessed a keen insight into the technical, political, and social inputs to the OGD system.

6.2.2.1 Institutional Practice of OGD

When asked about the implementation of OGD in Chile, government officials were quick to point out the lack of legal obligation to publish OGD (CPO-10, CPO-11, CPO-2, CPO-9). The Law of Transparency from 2008 does include a chapter on "Active Transparency" which sets forth guidelines for publishing certain information online, but there is no specific legal obligation to publish government datasets. While the law provides citizens with the right to information, OGD is not a priority of government employees. Interview participants explained why a legal obligation is important in the Chilean context. They said that the Chilean public sector was well trained and highly professional (CPO-2, CDI-1, CDI-7). However, they believed public officials

were not well informed in OGD best practices and consider OGD an obligation because there was no codified OGD regulation. Administrators of open data portals discussed the importance of increased awareness of the value of opening data within government (CPO-1, CPO-3, CPO-4, CPO-6). One participant who conducts studies described the challenge in acquiring datasets from other teams inside her ministry. She advocated raising awareness and breaking down data possessiveness, the belief that "this data is mine" (CPO-8).

The concept of the Chilean bureaucracy's professional excellence in the context of OGD is exemplified in the story of the Open Energy Portal. The Open Energy Portal is an impressive implementation of government data. The data portal includes raw data, interactive visualizations, mapped data, and a host of mobile applications based on public sector energy information. It is a model for other government industries and has gained praise from international practitioners. However, this OGD portal was built as an exercise in interoperability and not as an OGD initiative. The primary goal was to create a single repository for data for internal use. An administrator heavily involved in the portal said, "I didn't even know what OGD was when I started this." He described the portal as a solution to data problems and not as the result of an open data initiative (CPO-5).

6.2.2.2 The Concern for Civic Reuse

In addition to their concern about awareness of OGD within government agencies, the interviewees worried about the lack of public reuse of OGD. Interview participants who demonstrated the most concern over reuse were the administrators of open data portals. Their preoccupation spanned user types from average citizens to software developers (CPO-1, CPO-2, CPO-4, CPO-5, CPO-6, CPO-10). One (CPO-2) cited a recent study that found that only twenty percent of the population is aware the Council for Transparency exists. The council is in principle

the autonomous organ that facilitates access information. CPO-2 argued that citizens do not know about their right to information and know much less about open government data.

CPO-4 described his greatest challenge in developing the open data portal to be creating something that will actually be used by average citizens. CPO-9 further legitimized this concern by reporting a finding from a government study that "most users of open government data are an elite, technical community." This preoccupation with civic use of OGD led most public officials to conclude that end-use products like applications or visualizations must be created for citizens (CPO-1, CPO-4, CPO-5, CPO-6). Public officials were interested in citizens' seeing government data as relevant and useful but assumed that raw datasets must be made useful through visualizations and mobile applications. CPO-5 explained, "Open data has a value as long as you can create a product for users."

Visualizations were often mentioned as a solution to help populations not skilled in data processing or in data analysis to help them understand government data. These information visualizations were not built yet, but research participants from various agencies and levels of government reported an interest in adding visualizations to data portals for people who would not download and analyze a raw dataset. CPO-4 explained, "Some users want one specific data point. They don't know how to manage a whole dataset, but they can get [a data point] through a visualization." CPO-10 has spent his career working on government modernization initiatives. He believes the Chilean government is too focused on supplying datasets and fails to ask how datasets are being used. He supported applying a business model to the practice of open data, one in which the government would treat citizens as customers of government data. CPO-10 and CPO-5 envisioned providing citizens with end products like smart phone applications that would allow citizens to interact with OGD to better inform their decisions as consumers. According to them, these applications were ideal because they do not require citizens to have data literacy or analysis skills.

6.2.2.3 OGD and Political Will

Much like Dominican public officials, Chilean officials were attentive to the political ramifications of open data. When discussing the tasks involved in implementing open data portals, POs discussed the technical as well as political obstacles. Some of the technical components mentioned by interview participants include interoperability of content management systems, merging of datasets, proprietary software formatting, and training in data portal software. However, portal administrators insisted they themselves are capable of tackling these technical challenges. It was the political implications of open data that created the most difficult obstacles. At the leadership level, Chilean elected officials used open data as a way to signal a high value for transparency and to distance the administration from corruption (CPO-10, CPO-11). However, access to information has exposed corruption in public administration (CPO-10, CPO-4, CPO-11). As CPO-2 stated, "Transparency is a paradox. The more information, the less trust." This double-edged sword has made the discourse on open data at high levels of government popular but makes the practice less so.

Aware of the political implications of transparency, open data portal administrators focused on the efficiency gains of OGD. To encourage government employees from other agencies to supply datasets, portal administrators reported explaining how opening up data will save time spent on responding to individual information requests. Similarly, at its inception Chile's open data initiative was closely linked to achieving greater government efficiency. Chile joined the Open Government Partnership in 2012 during Piñera's presidency, and Piñera's open data agenda was strongly linked to his political agenda for a more efficient government (CDI-6, CDI-2). The Office of Modernization and Digital Government (henceforth referred to as the Office of Modernization) is the government agency responsible for implementing open government and open data initiatives and for coordinating these initiatives across government institutions. Personnel in this office are political appointees of the president. Surprisingly,

interview participants from other government departments working on open data were either unaware of the Office of Modernization or found its employees difficult to work with (CPO-1, CPO-5, CPO-8). One of the officials within the Office of Modernization described his agency as fragile and added, “The leadership within the office will change with the election of a new head of state” (CPO-11) According to him, this precariousness has affected the implementation of open data initiatives in the Chilean government.

Although data portal software was mentioned as a technical aspect of open data, contracting an open data platform service provider can become political. The Office of Modernization decided to change the software platform from Junar, a Chilean software company, to CKAN, an open source open data platform with technical support from a British technology company. Junar has a strong presence in Chile as many local governments and ministries managing their open data portals with Junar's platform. Not one of the four open data portal directors supported the change in platform. They were familiar with both software systems and had even discussed the two platforms with international counterparts. The consensus was that Junar was a better, more user-friendly platform. While most chose not to comment on why this decision was made, former public officials explained the political motivation of being able to point towards a specific change or “advancement” in open data under the Bachelet administration (CDI-2, CDI-6).

6.2.3 Social Movement Organizations and Activists

Interviewees in the activist category included former leaders of the movement, active participants of the movement, and members of nongovernmental organizations oriented toward education policy advocacy. Most were in their twenties or thirties, eight of the twelve were male, and all belonged to the middle or upper-middle class. In total, twelve individuals participated in semi-structured interviews that focused on the topics of advocacy goals, strategies for

mobilization and communication, mechanisms for participatory democracy, and reuse of open government data.

6.2.3.1 Social Groups and the Concept of OGD

Movement participants who now work in NGOs or as elected officials were familiar with the concept of OGD, but the other activists in the sample are not. They demonstrate awareness of concepts of transparency and the practice of public data collection, but they are not familiar with OGD. The participants in this group who were familiar with the concept of OGD were critical of the government's OGD practice. CSG-3 suggested that government does not value open data practices because its goal is to maintain a culture of secrecy. According to her, Chilean government officials feel they own government data, and it is simply not for public reuse. She contended that open data initiatives are intended more for an international audience and less for Chilean civic reuse. CSG-5 complained of a lack of access to disaggregated data on education. He knew the data existed because the government issues reports that include analysis of the data, but he believed the agency will not provide access to the raw data (CSG-5).

Activists were significantly unfamiliar with OGD concepts like access to data, reusable data formats, or methods for data analysis. When asked about the concept of open data, two well-educated activists demonstrated confusion and asked for an explanation of OGD (CSG-9, CSG-12). In contrast, CSG-5 was well aware of open data initiatives and the potential social impact. SG-5 is the director of an NGO, which other interview participants mentioned as one of the few civil society organizations making use of OGD. She described her favorite open data project, an application developed in the United Kingdom with public health care datasets. Despite this awareness and interest in OGD, when CSG-5 recently conducted workshops with community organizations on how to engage in government decision-making, she did not include training on the use of OGD. There was an apparent disconnect between the value she placed on open data

and her practice of community organizing and policy advocacy. She explained her organization's confusion with how to make use of OGD, "It is very abstract. We are still trying to figure out how it is of use to us. It is really for the elites." Still, CSG-5 continued to argue for the use of OGD in advocacy saying, "You have to prove your need is more important than others, and you have to use data to do this." She explained that the difference of having data-driven arguments and a human rights argument is an emotional demand versus a negotiation between equals facilitated by the use of OGD.

6.2.3.2 Student Movement Leaders and the Reuse of OGD

Former leaders of the Movement were not only familiar with the concept of open data, but had experience accessing and analyzing OGD. However, they did not see the use of OGD as an important strategy of the 2011 Movement (CSG-2, CSG-6, CSG-8). CSG-6 explained not making use of data by saying, "We knew we couldn't enter the technical discussion. We weren't experts." For leaders of the Movement, the primary audience was the Chilean family, and data was not a strategy to communicate with them or mobilize them to action. Bringing an end to profiteering in higher education by appealing to the public conscience was the students' primary focus (CSG-8, CSG-6, CSG-9). According to Movement leaders, the family was a place for reflection and not for technical discussion of statistics. One former leader said, "I love working with data, but I distance myself from the technocrats. The technical is powerful, but the technical becomes a religion." He went on to explain that data can bring one further away from reality. When asked if data is necessary to bring a rational argument to a social justice cause, he replied, "For me the social justice argument is rational" (CSG-2). Another student leader echoed this sentiment saying, "Chile is how it is because when they want to make a change they call on the experts instead of the people" (CSG-6). CSG-8 further explained why data was not an important tool of the Movement. He stated, "Social justice and not technical reports incite mobilization" (CSG-8).

6.2.3.3 Student Movement Advocacy Strategies

According to members of advocacy organizations, successfully advocating for policy change under the second Bachelet administration had been surprisingly challenging. Both CSG-10 and CSG-11 found it to be challenging to achieve advocacy goals during the Bachelet's administration. CSG-11 explained that the goal of the Bachelet administration is policy transformation rather than policy participation, the government has chosen to avoid public consultation which would prolong the process for drafting bills. He claimed that Bachelet was focused on implementing change, and not on including citizens or advocacy groups in this process (CSG-11).

CSG-10 described a feeling of elation at Bachelet's re-election in 2013. Her campaign platform included an education reform that was almost identical to CSG-10's policy recommendations. However, once the government began to work on education reform, the order of reforms and specific policies were quite different from the campaign platform. CSG-10 became more disillusioned with a president, supposedly friendly to the cause, who has implemented reforms without public engagement.

CSG-2, one of the primary leaders of the movement further explained the brokenness of mechanisms for participation. When asked what methods they used to participate in politics and influence government decision making, the interviewee listed the interaction with actual government policy-makers fifth behind organizing and mobilizing tactics such as protests, occupying buildings, and strikes. CSG-2 mentioned that opinion polls were useful tools for the movement to measure the amount of political pressure achieved by mobilizing the masses. These opinion polls measured the public's approval of not just the President, but also of the Ministry of Education. The Movement leaders felt motivated and successful when public officials received

record low approval ratings. Public opinion polls seemed as important a political mechanism for engagement as lobbying with congressional members.

6.3 Findings

6.3.1 The Avoidance of OGD

This case study yielded the counterintuitive finding that Chile's sociopolitical context was not friendly to the social impact of open data (depicted in figure 14, below). One would expect that open data would have a substantial social impact, because access to OGD has existed since 2008, because there is a population of technically skilled data intermediaries, and because Chilean political and social elites value data-driven arguments. However, this was not the case. Of the thirty-five interview participants, only four believed that students used OGD as a part of their communication and advocacy strategy. These four talked about the use of OGD to produce a technical report on the state's financing of university education. This report was used in presentations to parliamentary commissions and discussions at MINEDUC. These documents show that OGD is indeed the primary source of data analyzed to make claims on cost, access, and quality of education in Chile. However, outside of this report and the use of it to inform discussions with government experts, there is little evidence of the Movement's use of OGD.

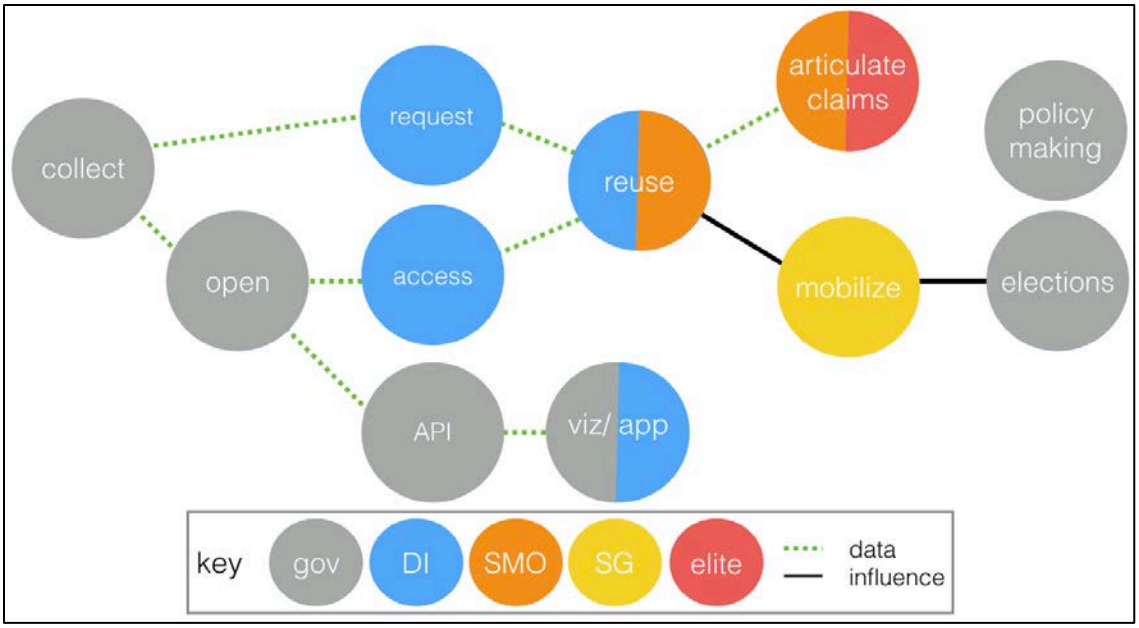


Figure 17 Social Impact of OGD Process Map - Chile

6.3.1.1 "We are not experts"

Interviewees offered three explanations for why student leaders did not find use of OGD to be a valuable strategy to achieve the desired reforms. The first explanation is the "we-aren't-experts" belief (CSG-6). Movement leaders and participants did not identify with the role or tasks of data analyst. This explanation was not offered just by the Movement participants. Data intermediaries explicitly agreed. Even among public officials there was little expectation that students would use OGD to make claims on government. The pervasive opinion that OGD is not for the average citizen further evidentiated the claim that, in the current Chilean sociopolitical context, open data is unlikely to have a social impact. Under Pinochet, Chile was a technocracy: experts made policy, and public consultation was not a part of the decision-making process. Chilean political scientist Patricio Silva (1991) attributes the entrenchment of technocracy in Chilean government to the Chicago Boys' aggressive neoliberal modernization strategy. Silva also argues this professionalization carried over to political opposition. Even after the end of the

dictatorship, only elite academics could critique government policy (Silva 1991, 400). With a muzzled media, public officials and academic elites were not publically contested. Consequently, Chilean citizens are accustomed to data analysis performed by elite experts only. When asked about the use of OGD in the movement, CDI-8 instead described the years of academic and technical analysis of the education system. She claimed that student leaders did not need to use data because it was not their role and that the analysis had already been done by the experts. Thus, in the case of the Student Movement the historical practice of rational decision making did not afford a space in which social groups could practice data-driven advocacy; instead it deterred the Movement participants from conducting their own analysis for social mobilization (CDI-8).

6.3.1.2 "It's political, not technical"

Not only did the Student Movement participants not identify as data intermediaries, they voiced distaste for the technical. The four former leaders of the Movement who participated in interviews not only denied that OGD was an important strategy, they went further to say data was simply not the point. One academic turned education activist explained this distancing from the technical. As described in the results section, CSG-11 attended meetings with various elected officials and MINEDUC policymakers. He was armed with analysis using OGD conducted by academic experts. To his surprise, public officials supported his data-driven proposals. Repeatedly policy makers told him that they agreed with his proposals, but he needed to keep making noise. SG-6, a former Student Movement leader, reflecting on the Movement experience concluded, "It was political. Not technical" (CSG-6). This distinction between the technical and the political may be a relic of the Pinochet administration which relied on technocrats instead of consensus-building. The political nature of the movement and political aims of the leaders are even more obvious considering three former leaders are now elected officials in the chamber of

deputies. One former student leader is not only an elected official but is now starting his own political party.

6.3.1.3 Data is not for the grassroots

The third explanation for why OGD was not an important strategy for Movement leaders is related to the target audience of the Movement. Before any discussion of OGD, I asked the movement leaders and participants in my sample about important strategies for mobilization and communication. They were also asked who was the target audience of the Movement, that is, whom were they most trying to influence. Participants consistently mentioned the Chilean family and the grassroots as their base, the most important audience. Data was not for this audience, but an isolated strategy for credibility with the elite technocrats. To gain mass support for the Movement, leaders relied on traditional protest methods like rallies, marches, and sit-ins. The students used data to interact with technocrats and elites, but messages were strategically made simpler for the base. CSG-2 explains this concept with the theme of indebtedness and vouchers: "Simplifying the message was key for us… the only way to involve the average Chilean is to simplify the message." To get a better understanding of the outside perspective, we also asked public officials and data intermediaries about the Movement's use of OGD. Nearly all responded that they did not recall students' using OGD, but that social media was an important tool. One DI was certain a popular video spread over social media was a good example of the Movement's use of OGD (CSG-13). The video featured a clever protest that invited Chileans to participate in the 1,800 hour marathon run around the presidential palace. The video was a call for participation and included footage of runners and joggers with flags and signs. The choice of 1,800 hours was not arbitrary. As mentioned, it was calculated by an economist as the amount of money in millions the government would need to spend to make university education accessible to all Chileans. The video never explains the significance of the number. The goal was mobilization, not to educate the public on the national budget. The targeted use of data for technocrats and an

explicit disuse otherwise demonstrates that in the minds of the Chilean Student Movement leaders, data is for the elite, not for marginalized.

6.3.2 Political Barriers to Inclusion in Policy Making

The primary focus of the student leaders was mobilizing the masses; interacting with elected officials and policy-makers was a secondary interest. This strategy speaks to the structure of Chilean government. According to the Civil Code of the Chilean Constitution, any law that alters government revenue or spending must originate from the executive. Most bills are drafted either by the president or by ministries and introduced as initiatives to parliament. When drafting new policies, some ministries hold public consultations. However, ministries are not obligated by law to hold public consultations while drafting a bill. Sometimes the individuals or organizations which the ministry may view as experts on the topic are invited to a panel discussion on the bill. The general public may also attend. The president also has the authority to set a timetable for parliament on bills, essentially assigning priority to specific initiatives (Navia 2009, 404). The most urgent agenda-setting motion a president can assign requires a three-day deadline for voting. With policy-making and voting timelines under the control of the executive, opportunities for public participation are subject to the president's prioritization of civic engagement. In practice, Chilean public policy is created within a closed decision-making space. Elected officials have the opportunity to amend legislation, but they are not drafting legislation. Under this balance of power, Chileans are not voting for their policy-makers. They elect the president, and this single person controls the political agenda. With such few mechanisms for institutionalized participation, a social movement or civil society group does not have very much leverage or opportunity to affect policy-making. If data is primarily a strategy to present a rational argument to elites and policy-makers, the democratic context of Chile leaves little space for social or political impact.

6.3.3 OGD and Señora Juanita

It is not just the Student Movement leaders who think OGD is not for the average Chilean. Data intermediaries and public officials agree. CDI-2, a civic technologist who has been involved in Chile's open data and open government initiatives says, "OGD is not for Señora Juanita." Señora Juanita is the symbol of a working-poor, female head of household. Her profile has been iconized in Chilean politics, particularly during election time. CDI-2 goes on to describe his experience at regional open data conferences as "elites making speeches to elites." He does believe OGD can have a social impact, but only but only when government itself makes use of OGD to better offer services to marginalized. Data intermediaries and public officials are united in the opinion that the average Chilean will not be downloading raw data sets. However, DIs and public officials do believe citizens will make use of more finished products like visualizations or applications. They described a goal of making government data more accessible to Chileans who do not know how to work with large datasets but who could supposedly interpret a visualization of a pie chart of trend over time. While it is conceivable to trace datasets from government portals through data intermediation and advocacy activities, the potential social impact of visualizations is much more tenebrous. Critics voice concern over the government's manipulation of data visualizations to reflect favorably on government.

6.4 Conclusion

If theories on the civic reuse of OGD (Davies 2010, 2013, Davies et al. 2015, Keserū and Chan 2015, World Wide Web Foundation 2015, Chattapadhyay 2014, Janssen and Zuiderwijk 2014, Zuiderwijk et al 2014, Ubaldi 2013, Magalhaes et al 2013, Evans and Campos 2013, Harrison et al. 2012, Shadbolt et al 2012, Robinson et al 2009) and dialectic democracy (Cohen 2009, Young 1990, Habermas 1984, Benhabib 1986) were to hold for Chile, social movement organizations would have worked with data intermediaries to develop OGD-based rational

arguments for policy change. Chile scores well in both democracy and transparency indicators and has a history of valuing the rational argument in policy making. A legal framework has been in place since 2008, and state agencies and ministries have published datasets online. Data analysis is highly professionalized in Chile. These are the indicators academics and evaluation specialists look for: technical capacity, legal frameworks, datasets, and political factors. But counter to their assumptions, my qualitative analysis showed little use of OGD in Chile and an overall disinterest in use of OGD to create a technical argument for the demands of the 20ll Student Movement. The primary reason lies in the perception that data is not for the marginalized, not for the base. Participants across all three groups articulated this belief. Data is for the elite and is a tool of the neoliberal paradigm. The Movement participants' explanation that the Movement was political, not technical, that the Chilean reality is a result of the technocrats' privileged influence over policy, should be heard as critical, disorderly, and revolutionary. Leaders and participants in the 2011 Student Movement did not just request the redistribution of public resources, they questioned the neoliberal paradigm that validated the technocratization of the higher education system. The Student Movement leaders' end goal was a political shift away from the supremacy of the market and away from the Chilean technocrats' elite place of power. Research participants across groups made it clear that in Chile data is for technocrats and elite experts. Data is not for the marginalized. The finding that OGD did not play a prominent role in the political and social struggle of the Chilean 2011 Student Movement demonstrates that a society's sociopolitical context greatly impacts its proclivity to make use of OGD to achieve social impact. Access to data was not sufficient, and student movement leaders who were themselves skilled in data analysis were not interested in using OGD to achieve the Movement's goals. Faced with a Chilean government dominated by elite experts and neoliberal values, students employed tactics of radical antagonism described by Mouffe (2000) and DiSalvo (2012) instead of negotiating a rational policy consensus. This case demonstrates that OGD's claim for social impact relies less on evaluations of readiness and implementation of OGD and instead on

democratic theory of discursive and deliberative democracy. OGD researchers will not find social impact in countries where social projects must introduce friction to policy making instead of rational arguments.

CHAPTER 7. FINDINGS AND RECOMMENDATIONS

The qualitative process trace conducted in each site provided a ground-truthed reality of the civic reuse and social impact of open government data. With new insight into how political systems impact use of OGD in advocacy strategies, I argue that the sociopolitical context affects the civic reuse of OGD. Based on strategies used by Chileans and Dominicans for empowering and integrating the most oppressed groups into the movement, I offer a new interpretation of empowerment and expectation of how OGD can contribute to increased inclusion of society's most marginalized. After discussion of five key findings, I conclude with three important lessons to inform researchers and practitioners on how to move forward in understanding the social impact of OGD.

7.1 Findings

7.1.1 Marginalized Do Not Use OGD

Social movement and civil society advocates across all cases revealed that in practice, data is not a tool used by the marginalized nor is data used as a strategy to include the marginalized into the policy making process. Social movement organizations and CSOs did make use of open government data to influence government decision makers. They also mobilized marginalized groups to make claims on government. However, these activities were mutually exclusive. The preliminary case study conducted in Hong Kong revealed a disconnect between data intermediaries and marginalized groups. At the time I concluded that to achieve social impact of OGD these linkages must be stronger. In Chile and the Dominican Republic data intermediaries were better situated within the movement, but these cases again revealed a disconnect between data and the marginalized. Accordingly, the claim that marginalized groups make use of open government data to increase their influence over government decision making

was unfound. The concept of data intermediaries as technical facilitators who work with marginalized to access and process data was also not evident in any case. Instead DIs collaborated with leaders and framers of the movement to develop advocacy strategies that target elite decision makers. Marginalized are still active in the social movement and active in rights claiming, but they are not users of OGD. The use of OGD to advocate with the elite in the Dominican Republic and the non-use of OGD to engage with marginalized groups in Chile demonstrate that data does not trickle down to the marginalized.

The use of data by social movement activists but not by or for the marginalized is most clear in the Dominican case study. The Dominican 4% Movement advocated for an increase in government funding for pre-university education equal to 4 percent of GDP. Data intermediaries within the Movement developed detailed arguments of how an increase in government spending would impact the education of Dominican children and improve the quality of education. This is evident in their ample use of data in the video "Education for Tomorrow." The script of the video is a variable-oriented narrative that describes how increased spending can improve the quality of education and in turn improve socioeconomic indicators correlated with education -- construction of more schools would increase access to educational centers and reduce the number of students per classroom; investment in teacher training and teacher salary would increase the quality of teaching and the number of teachers, reducing the students per teacher ratio. Long term outcomes were articulated through a set of correlations between educational attainment and income earnings, adolescent pregnancy, infant mortality, prevalence of sexually transmitted infections, gender-based violence. The groups mentioned as beneficiaries in the video (underpaid teachers, parents who cannot afford to pay for a child's transportation to school, and school children with dirt floors and no bathrooms) did not access or analyze government data nor did they meet with public officials to advocate for policy change. These marginalized groups played important roles in the 4% Movement. They attended rallies and strikes and voted in the presidential election, but

they did not use open government data to participate in advocacy efforts. No claim of increased inclusion in policy making can be made; however, the coalition's successful use of government data did increase marginalized groups' access to government services. The 4% Movement's strategists, particularly the *petite comité* masterfully and successfully used government data to achieve their desired outcome. The 4% Movement could be considered an example of social impact if it was a measure of benefit for marginalized instead of inclusion of marginalized.

While Dominican respondents reported the use of OGD as a critical strategy of the movement, the Chilean Student Movement leaders did not describe the use of OGD as an important strategy. When asked what were the movement's most prominent strategies for influencing decision makers, leaders and participants spoke of marches, occupations, flash-mobs, a marathon, dramas, and stories of family indebtedness, not once was OGD mentioned. When social groups did make use of OGD to produce a technical report for the Ministry of Education, a Chilean public official told them to focus on tactics for mass mobilization as opposed to data analysis. The Student Movement did mobilize Chilean students and families across the country, but data was not used in the call to mobilize the masses. The case of Hong Kong proves similar to that of Chile. CSO representatives reported using OGD to produce technical reports for government, but used more traditional methods of rallies and signature campaigns to engage the most marginalized. The Hong Kong occupiers were the only example of the three cases that used OGD to facilitate mobilization efforts. The Umbrella Movement occupiers used open government data not as a tool for accountability, but to facilitate their occupation of public spaces.

In addition to the strategies of civil society activists, data intermediaries and public officials expressed the belief that open data is not for average citizens, much less marginalized citizens. In Chile a majority of data intermediaries and public officials were aware that OGD was not used by most Chileans. Some public officials and data intermediaries saw no problem with this or a need to change it. They believed that marginalized groups did not have the capacity to

make use of open data. Particularly in Chile, public officials and data intermediaries believed average Chileans did not have the computer and data literacy skills to benefit from raw datasets. Their conclusion was to build tools that take away the analysis component like information visualizations and OGD-based smart phone applications. While an infoviz and a smartphone app may allow some groups to interpret or interact with data, these projects would not likely support inclusion in policy making. Solving data access challenges with information visualizations and smartphone applications and not capacity building further demonstrates the disconnect between how governments are implementing OGD initiatives and the concept that marginalized will use OGD in their political projects. I also see this disconnect in Hong Kong where the first OGD portal datasets were primarily in English, which is not the native language of the most marginalized populations. Accordingly, from the perspective and practice of social movement organizations, data intermediaries, and public officials, OGD is not for the marginalized. This poses an obvious obstacle to OGD contributing to greater inclusion of marginalized through participation in policy making and access to government services. The next discussion explains how a new interpretation of power and reconceptualization of empowerment can improve the expectation and practice of OGD's social impact.

7.1.2 Empowerment Theory and the Social Impact of OGD

The shared result that marginalized groups are not accessing and using OGD to achieve a social impact brings into question the validity of the claim. The OGD literature focuses on policy, intermediaries, and technical components like datasets and portals that advance government's practice of OGD and close the socio-technical gap between the marginalized and government data. However, the claim made for a social impact of open government data describes a process of empowerment of marginalized groups, whereby they acquire increased inclusion and influence through opened government datasets. It is clear that the gap between marginalized and government decision making is too expansive to be bridged solely with OGD. Data cannot

overcome the social ordering of power. Because the definition of the social impact of open data implies a change in power, it is appropriate and necessary to use empowerment theory to understand how change in power happens and how OGD can contribute to this change.

The OGD field clearly interprets empowerment in the conventional sense as 'power to' and 'power over': power to access government data and power over government decision making. This interpretation influences their annual reporting on the impact of OGD. The most recent report on open data produced by the World Wide Web Foundation describes open data as "information — and therefore power — [… that] can increase the accountability of government institutions." (Davies et al 2015, 14). This use of the conventional framework of empowerment informed the design of this research. I chose interview groups that would allow me to trace data and influence through a process that gave marginalized groups 'power over'. The questions I asked were designed to understand how social movement organizations and data intermediaries facilitate marginalized groups in transforming OGD from its original government published format to an advocacy artifact to achieve 'power over' policy makers. I asked data intermediaries how they access data and how they interact with marginalized groups. I talked to public officials about OGD portals. Elected officials explained how they engage with activists and citizens and how civic use of OGD influences the nature of this engagement. All of this is to say that I accepted the OGD field's social impact claim as a set of directions on to whom to talk to and what sequence of events to expect. Conversations with one-hundred individuals in three different sites led me to the conclusion that the empowerment literature should be consulted in order to reach a more appropriate understanding of inclusion and how it happens.

In Chapter Two I described the relevant academic literature used to create the analytical framework to trace data through political, technical, and social spaces. After setting up this framework I explained that a literature review on empowerment was missing and began to review this body of literature and its relevance to the topic. By reviewing empowerment theories it

became clear that the OGD's conventional interpretation of power misses the invisible structuring of power within a society. As Jo Rowlands (1995) explains, individuals internalize messages of oppression and come to believe them to be true and act accordingly. Their political and social exclusion is an internalized position within society. Dominican and Chilean families had internalized powerlessness over government decision making and accepted their education systems in spite of issues of access and quality. To undo this internalized exclusion requires what feminist theorists call generative empowerment. According to Rowlands, to achieve generative empowerment individuals and social groups reach new understandings: understandings of power dynamics and how they affect the individual, understandings of interests and abilities, and understandings of how to act to achieve these interests.

The activity of reaching new understandings is well documented in empowerment literature. Celebrated Brazilian educator and scholar Paulo Freire calls this understanding 'conscientization' and describes it as the process of individuals achieving a critical conscience of the way they exist in social, political, and economic spheres (Bergman Ramos 2005). Adopting the generative empowerment framework in the practice of OGD means recognizing that social impact/social change does not start with influencing decision makers. It begins as the marginalized identify and develop a need and a right to influence decision makers from a place of strength. This focus is not just on inclusion in spaces of power but on an awareness of individual and collective realities, interests, and rights.

Just as the ODB community cannot find substantial evidence for inclusion based on conventional interpretations of power, this research design could not identify a process of empowerment based on conventional interpretations of power. When leaders and strategists of the movements in Chile and the Dominican Republic talked about how they engaged with marginalized groups, they both reported using reflection as a method to engage and mobilize. Interviewees talked about critical reflection occurring in schools or around the family dinner table

as a time to consider why things are the way they are and what could or should change. Interviewees in Chile and the Dominican Republic believed critical reflection was key to the movement because it empowered and motivated the grassroots to mobilize and demand change.

The possibility of OGD to aid in empowerment through critical reflection and the discovery of new understandings has not been formally conceptualized or researched. However, the Dominican case presented a clear example of data for critical reflection. One of the lead strategists (DSG-9) of the Dominican 4% Movement described how data could be useful in critical reflection. DSG-9 had been president of the Dominican Teachers Association (ADP) off and on over the past decade. She advocated for increased public spending on education well before the coalition formed and took up yellow umbrellas to demand 4%. DSG-9 did however join in strategizing for the movement as a member of the *petite comité*. Her role on the committee was to engage with teachers, students, and parents. She described the first phase of mobilizing the grassroots as a "reflection phase" where teachers, students, and parents were asked to reflect on the condition of the Dominican education system. Some prompts were situational. For example, reflections were held at schools and participants were asked what they would change in the classroom around them. In addition to the situated reflection, OGD was a point of reflection. Participants were told the percent of Dominican youth of school going age that were not in school. DSG-9 described this use of OGD for critical reflection as the "heating up of data." She emphasized that data is only useful in critical reflection when it is felt. I asked her what she thought about a statement made to me by another member of the *petite comité* — "data is necessary but not sufficient." DSG-9 said, "Of course! Obviously, the cold data doesn't tell you anything. What you need is people to feel it and to feel empowered. We had access to data, but then what do you do? How do you use it… to create this sense of right to education? Because this is what mobilizes people."

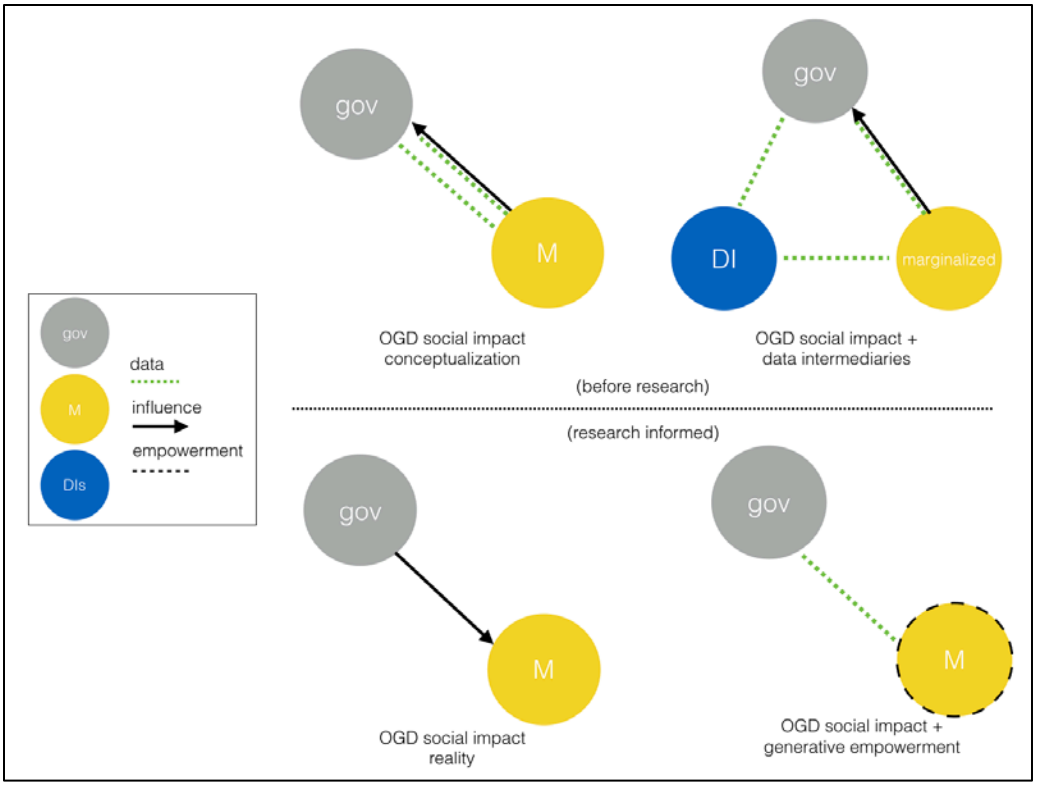


Figure 18 Advancing the conceptualization of OGD and Empowerment

This story of data and critical reflection suggests that advancing the OGD interpretation of power to a generative one reveals new opportunities for empowerment through OGD and a more appropriate claim for social impact (Figure 15, above). If the OGD community is to adopt the generative empowerment framework, it must resist the urge to remove citizens from data analysis activities. It must also resist the urge to measure empowerment based on tangible 'power to' and 'power over' outcomes in policy making. To test the assumption that OGD can create empowerment through generative internalization would require qualitative studies of a context-specific training intervention in data access and data literacy with marginalized groups. This study would measure qualitative empowerment indicators focused on inward processes of critical reflection before and after a training intervention.

The empowerment literature reveals that OGD's conventional interpretation of power constructs a shallow understanding and claim for social impact. Generative empowerment through processes of new understanding brings a new set of challenges and opportunities to achieving a social impact of OGD. In addition to the current use of OGD to construct technical reports and rational arguments for elites, OGD can be used by marginalized to critically reflect on their experience of oppression. The generative interpretation of empowerment is a more complete interpretation of power and should be adopted by the OGD community.

7.1.3 Democracy and the Use of OGD for Social Impact

I incorporated democratic theory into the literature review in order to gain a conceptual understanding of the political components of the OGD social impact process, namely "accountability" and "government decision making." I did not set out to test the validity of a certain school of thought within democratic theory; however, the comparative cases do present two main findings on OGD and democracy. The first finding is that social movement organizations were more likely to use OGD to make claims on government in democratic systems. The second finding is that OGD was useful in articulating claims for social change in an elite representative democracy. This finding is pertinent to democratic theory because it suggests that representative democracy and not substantive democracy can produce a socially just policy outcome and that this form of representation is more conducive for use of OGD to make claims on government.

7.1.3.1 Democratic regimes were more favorable to reuse of OGD for social impact

The comparison of two electoral democracies, Chile and the Dominican Republic, to the non-democratic political system of Hong Kong gives evidence that a democratic system is most conducive to reuse of OGD in political advocacy. In each of the three cases social movement activists, CSOs and marginalized groups demanded a change in public policy. Examples where

OGD was used in halls of government by social movement activists occurred only in Chile and the Dominican Republic. Chile and the Dominican Republic are both electoral democracies where citizens have mechanisms to hold public officials accountable. Below I discuss in detail how the 4% Movement's activists used data to negotiate with elected officials. The comparative lack of use of OGD in political engagement by the Umbrella Movement in Hong Kong suggests that use of OGD to affect government decision making is more likely to occur in an electoral democracy. The Umbrella Movement's contentious claims were made during protest and occupation of political and commercial locations. Without processes of democratic responsiveness, Hong Kong occupiers used OGD to be adversarial and contentious. Their use of OGD for social change did not include government mechanisms. They embedded open government video feeds on an online site as a window into their occupation, to create protection through transparency, and they used public sanitation data to inform occupiers of where to collect trash and use the restrooms. Their use of OGD optimized the encampment experience. The occupiers appropriated OGD (and its values of transparency and optimization) in their successful disruption of social and economic order. However, this civic reuse of OGD falls outside the OGD concept of social impact.

7.1.3.2 OGD was useful in articulating claims to elites in a representative democracy

While both the Dominican Republic and Chile are both electoral democracies, research participants reported a strong concentration of power within the executive and a culture of corruption. Several participants in both countries even called out the tension between access to government data and trust, explaining that OGD and RTI has exposed political corruption and eroded citizens' trust in public officials. Based on two flawed democracies, it is challenging to make claims on what aspects within a democracy allow OGD to be most impactful. However, the Dominican case provides evidence that a representative democracy and not substantive democracy provides favorable conditions for using OGD to articulate claims to government

decision makers. This is because use of OGD tamed the message of the 4% Movement and provided data-driven arguments that engaged public officials and political elites in a discourse on education spending.

To build the process and conceptual framework of OGD's social impact I consulted political scientist Sidney Tarrow's arguments in *Power in Movement* (1998). In this work Tarrow argues that contentious claims must be tamed and integrated into the political process. We see this explicitly in the Dominican case. The coalition leaders developed their advocacy strategies around several mechanisms for accountability. Members of the 4%'s *petite comité* did not hesitate to describe the use of open government data as an essential advocacy strategy. To them analysis and presentation of OGD to elected officials was key because this audience required a more technical explanation of government spending and education outcomes. The group met with the Ministry of the Interior, the Ministry of Education, the National Advisory Council on Education, representatives in congressional houses, the president, and presidential candidates during the 2011 presidential campaign. Dominican DIs produced technical reports that the coalition's lobbyists used to negotiate with elected officials and government bureaucrats. The election cycle was also key to the 4% Movement's advocacy efforts. Through these efforts, the Movement succeeded in obtaining the written commitment of all six presidential candidates to allocate 4 percent to education. The coalition commanded so much legitimacy that they organized a televised panel discussion where each candidate sent an expert to describe and debate how to spend 4 percent to improve quality of education.

In addition to the use of OGD for advocacy with elected officials, the leaders identified another important decision-making place within government. The Ministry of Education's budget had become an issue of contention since Dominican president Leonel Fernandez proclaimed he would not support allocating 4 percent of GDP for public education because he did not believe the Ministry of Education was capable of spending that amount of money. The *petite comité*

strategized a plan to invalidate this claim by working with the ministry to draw up a budget equal to 4 percent of GDP. The Ministry of Education's budget requests are made by the National Advisory Council on Education. The council is made up of public officials from other ministries, technocrats, and experts on policy and education. Members of the 4% coalition used OGD to create an education budget for 4 percent of GDP and successfully lobbied the council to approve the budget. For the first time the Ministry of Education submitted a budget to the Ministry of the Interior and successively to the executive that requested the 4 percent of GDP.

According to Young (1990) the political relationship between citizens and representatives should involve more than distribution of resources. She argues that government produces the most socially just policies through substantive democracy, where social groups problem solve with policy makers through inclusive and subjective debates. This is not what happened in the Dominican Republic. Dominican democracy is not substantive as Young describes. This is evident in the 4% Movement's strategy of integrating economic elites in order to influence political outcomes. Interviewees explained that the business class holds great weight in Dominican politics, particularly during election time when presidential campaigns require campaign funding. To reach the economic elites, who possess neoliberal values of optimization and efficiency, the 4% Movement leaders used OGD to create rational, data-driven arguments. A DI from the coalition's analysis committee explained that to incorporate the elites they tapped into their pre-existing objection to government corruption and convince them that the government could afford spending 4% of GDP on education. To do this they used OGD. They crafted "data bombs" that quantified corrupt spending and explained how this spending could better be used on education. It is also clear that elites were the target audience of the "Education for Tomorrow" video. One argument used in the video was that an underfunded education system increases crime, which increases spending on private security. This argument targeted groups of the population with sufficient disposable income to afford the expensive objects that require security

and the private security to guard them. Whether through advocacy with elected officials, bureaucrats, or presidential candidates, Dominicans quite clearly used OGD to articulate an advocacy goal that public officials, presidential candidates, and elites could support. Using data-driven arguments to cater to the elites who finance presidential campaigns is not what Young conceives of in her theory of substantive democracy. Use of OGD may not even by necessary in Young's substantive democracy, but in the Dominican elite representative democracy OGD was useful to articulate claims.

I cannot make the argument that OGD infused articulations of social justice claims always work in a representative democracy because there is no evidence of this in Chile, which is also a representative democracy. Chilean student activists only reported using data in an analysis on tertiary education financing, which they presented to public officials at the Ministry of Education. One Chilean activist said that the Ministry of Education called him after a meeting and said, "We are all in agreement with your proposal, but this is a political problem. Every time you try and make changes you face a lot of political backlash. So what you need to do is continue to raise your voices, every time louder" (CSG-11). The challenge to influence government decision making could be a product of the significant control of the executive over law making and public spending. The Chilean students never viewed elected officials as important decision makers. In fact, participants boycotted national and municipal elections in 2010 and 2012. I argue in the next section that the difference in the use of OGD in political engagement for social change is best explained by the two countries' very different experiences of technocracy and neoliberal reform.

7.1.4 Technocracy and the Neoliberal Reform Experience Mattered

The comparative method was chosen because it constructs a locally oriented context of interaction and discovers the knowledge research participants use to act and interpret actions. For this reason each case study includes a background section on the political context and the social

movement. Through the localization and contextualization of the reuse of OGD in a specific sociopolitical context it became clear that a society's experience of technocracy and neoliberalization greatly affects the practice of and the propensity of social actors to make use of OGD. Neoliberalism can both engender and repress the social impact of OGD. In Hong Kong, use of OGD was limited to elite academics and think tanks deemed legitimate by government. In the Dominican Republic, leaders of the movement coopted the neoliberal value for technical discourse and used OGD to construct a data-driven argument for their desired social change. In Chile, leaders of the Student Movement purposefully avoided technical arguments and the use of OGD. These observations are best explained by contextualizing them within the technocratic and neoliberal reform experience of each case.

The assumption that OGD would have a social impact through the empowerment of marginalized groups is a conclusion easily constructed within the neoliberal framework. This neoliberal worldview would imagine social groups achieving influence through reasoned debate. The privileged role of technical experts that was particularly dominant during neoliberal reform provides social groups with economic and political elites that value rational and reasoned arguments. The recasting of political decisions as technical calculations is a neoliberal play that can be traced through the practice of OGD as well as the conceptual claim for social impact. The political process of social engineering through optimization requires the collection of data. In order to develop social programs and monitor their effect on the population the state must collect data. Thus, the pursuit of optimization is the reason why states have government data to open.

The Dominican 4% Movement purposefully made use of their society’s neoliberal values to cast education as a suboptimal social problem that could be solved with a more efficient distribution of public funds. They strategically used OGD and the neoliberal discourse to gain the support of public officials, social elites, and presidential candidates. One of the data analysts for the 4% Movement emphasized the importance in recognizing that the Movement was not

challenging the power structure. Their goal was not to change the balance of power, but to work within what Scott calls high-modernist ideology to achieve the redistribution of resources (Scott 1998, 4). They used data-driven arguments to engage with the president, ministers, elected officials, presidential candidates, and non-state actors seen as influential in politics like the business elite and the middle class.

The coalition's organizational structure included an analysis committee that served as data intermediaries. These DIs used OGD to calculate the impact of the low quality education on society. They argued through regression analysis that low educational attainment aggravated an array of social ills like teen pregnancy, crime, and an uncompetitive workforce. When President Fernandez claimed the Ministry of Education could not manage a budget of 4 percent of GDP, the coalition worked with Ministry of Education's National Advisory Council to produce an operating budget equivalent to 4 percent. The analysis team also used OGD to construct "data bombs" that cited the peso amount of public funds used to purchase government jeeps and the impact a redistribution of these financial resources would have on the education system.

In contrast to the Dominican 4% Movement, the Chilean Student Movement leaders and participants were disillusioned and fed up with the un-checked faith in technocracy and rational design. They believed their experience as students was a direct and negative consequence of a neoliberal higher education system. Accordingly, the Chilean Student Movement leaders and participants were much less interested in using OGD and rational debate to achieve their desired reform. This was not because OGD was not available nor was it because the Movement did not have skilled data intermediaries to access, transform, and analyze datasets. The Student Movement's former leaders explained that the flaws in the higher education system stemmed from "political, not technical" issues. They often distinguished between the political and the technical and did not identify as technical "experts." This intentional avoidance of recasting

desired social change as calculated social optimization is a product of the Chilean society's experience under the rule of experts.

Ong's assertion that neoliberalism turns political decisions into problems solved using technical evaluation is explicitly observed in the Chile case. The Student Movement refused to allow education reform to be seen as technical and nonpolitical. Accordingly, they described the Movement's most important strategy as physical protests in the form of taking over schools, marching, and a plethora of creative street activities. This prioritization of mass mobilization was also encouraged by technocrats. When Movement delegates brought technical reports to public officials their advice to the movement was to "make noise" — mobilize. These findings demonstrate that the willingness of social groups to make use of OGD to achieve desired outcomes was shaped by the government's practice of technocracy and the neoliberal experience. Sociopolitical contexts with strong technocratic legacies are not conducive to the reuse of OGD to achieve social change.

7.1.5 The Issue Matters

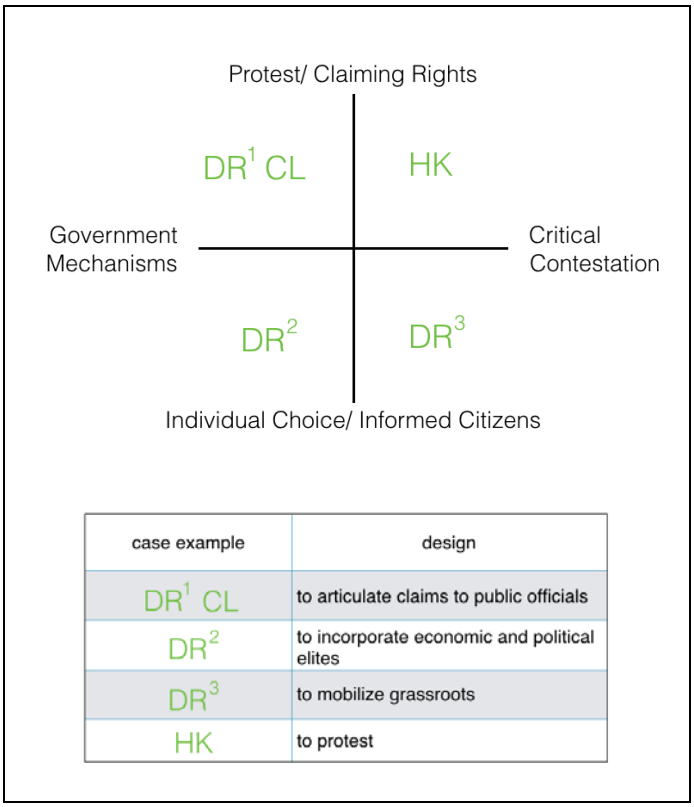
When questioned about the use of OGD, leaders and participants in the Chilean Student Movement often distinguished between the technical and the political. This suggests that OGD is more likely to be used by a social movement for engaging in technical discussions as opposed to political messaging. A former leader of the Chilean Student Movement explained that technical arguments are most useful for describing the implementation of policy. This is essentially the strategy of the Dominican 4% Movement. The 4% Movement framed their advocacy as the technical application of a law already in the Dominican constitution and the General Education Law. They were strategic in framing their desired outcome as an adjustment in the national budget's education line item based on a pre-existing law. Chilean students did advocate for budgetary reforms to increase government subsidies for university education; however, student

leaders demanded budgetary reforms as a tangible political shift away from the neoliberal paradigm that allowed profiteering in tertiary education. In Hong Kong, Umbrella Movement occupiers were requesting an application of the Basic Law's timeline towards democratic elections. This transition involved a modification of electoral law and a shift in power from mainland China to Hong Kong citizens. The discourse focused on universal democratic values and demanded rights through civil disobedience not technical arguments.

The findings in each case support the conclusion that the use of OGD as a strategy to affect government decision making varies greatly by project (represented in Figure 16 below). Use of open data is more valuable in articulating a demand for distributive justice through policy implementation or spending initiatives. There are two obvious reasons for this. First, social groups cannot make claims about government spending without information on how the government spends. In order for the 4% Movement to make the claim that the government was not spending the mandated 4 percent of GDP for pre-university education, it had to have data on budget allocation and government spending. Second, as the Dominicans demonstrated, OGD can be useful in creating data-driven arguments for policy change.

The Chilean and Hong Kong movements involved much more than changes in budgetary spending. Chilean university students mobilized mass demonstrations to challenge the privileging of market outcomes in Chilean policy making over social and economic equality. While a commitment to accessible and quality education could be demonstrated in changes to the national budget, the students requested a more comprehensive legal reform to the system of higher education. Hong Kong Occupiers made no request of the national budget. Their demands were unequivocally for democratization through direct election of the chief executive. In both Hong Kong and Chile, former movement leaders or prominent participants ran for elected office. In Hong Kong Occupy leaders became district councilors. In Chile, student leaders have become deputies. There is a difference in the claims and requests made by the leaders and participants of

the social movements in Hong Kong, Chile, and the Dominican Republic (shown in Figure 19, below). The Dominicans made technical arguments for a budget increase. Hong Kong occupiers and Chilean university students demanded political rights and political change. These cases show that OGD is useful in technical demands for distributive justice but not for demands for a change in the political and social order. The neoliberal experience creates a distinct difference between the technical and the political, and this difference confounds the OGD conceptualization of social impact.



case example	design
DR1 CL	to articulate claims to public officials
DR2	to incorporate economic and political elites
DR3	to mobilize grassroots
HK	to protest

Figure 19 – OGD for Politics all Countries

7.2 Recommendations

This research offers three important lessons to inform the discussion and practice of OGD for social change.

7.2.1 Marginalized groups are not making use of OGD for social change

This research supports prior findings of little evidence of social impact of OGD. The comparative analysis provides an explanation of why. The most obvious reason why social impact is elusive is because marginalized groups were not users of OGD. The existing OGD research assumed actors called data intermediaries enabled marginalized groups to make use of OGD. However, interviews with social movement organizations and data intermediaries revealed that marginalized groups and data intermediaries do not interact. Data intermediaries in the Dominican Republic were quite active in accessing and analyzing data but this activity was not done with marginalized counterparts. When data intermediaries did engage in analyzing OGD, marginalized populations were not the primary audience. Informants from the Dominican Republic and Chile explained that marginalized populations experience the reality that requires social change and do not need datasets. Movement leaders in Chile never mentioned using data-driven arguments to mobilize the grassroots or engage with the populations most negatively impacted by social injustice. In the Dominican Republic, the 4% did use OGD as a prompt for critical reflection to motivate the grassroots to mobilize. This finding reveals a new opportunity for the use of OGD for empowerment.

7.2.2 OGD should adopt a generative empowerment framework

Using empowerment theory to unpack the working definition of OGD's social impact revealed a conventional and incomplete interpretation of power. Under the conventional interpretations researchers find little evidence of social impact and will continue to find little evidence. This interpretation ignores the subtle and systematic oppression that occurs through passive internalization. It is this internalized oppression that distances marginalized from OGD and from spaces of government decision making. To unwork this internalization, groups engage

in generative empowerment that creates an awareness of situational oppression and fosters the belief that one has the right to claim power and influence decision makers.

The good news is that according to the findings, shifting focus to the intangible interpretations of power offers opportunities for reuse of OGD for a different kind of social impact. The Dominican and Chilean student movement leaders reported employing critical reflection strategies to engage with marginalized groups. In the Dominican case, there was even reported use of OGD during critical reflection. This suggests that OGD can increase situational awareness and data can allow for new understandings of the lived experience of oppression. Critical reflection is particularly relevant to Latin America as a prominent strategy of empowerment by both Brazilian educator, Paulo Freire, and liberation theologists (Schild 2015, 553). OGD practitioners and academics should pay attention to this recurring observation of conscientization or critical consciousness as the primary method to engage and empower society's oppressed. Recognizing how reflection relates to empowerment helps better identify the value OGD has for marginalized groups. If the OGD field is truly interested in "information and therefore power," it is essential that they adopt the generative empowerment model and shift their focus from tangible policy outcomes to intangible empowerment.

A focus on generative empowerment requires changing the practice and measure of social impact. A new working definition of social impact of open data would be: "Marginalized groups make use of OGD to create their own understanding of how they experience social injustice. Marginalized gain confidence in negotiating with decision makers through the use of OGD." Practitioners should pursue interventions that enhance marginalized groups' data access, data literacy, and data contextualization. Measuring OGD's impact on generative empowerment requires qualitative measurements of self-actualization. In practice, generative empowerment through critical reflection still involves a facilitator role. These facilitators could act in a way as data intermediaries in that they introduce a group to data and demonstrate the value in coupling

OGD with situated knowledge. The challenge to public officials and civic technologists is how to design access and reuse of data for critical reflection. I doubt the narrow focus on high-tech access through APIs or no-data-analysis-skills-necessary smart phone apps will be useful in critical reflection. Public officials should not abandon formatting for high-tech reuse, but should recognize that data for the use case of critical reflection requires a different set of standards.

7.2.3 Contextualize

The third important takeaway is that not all societies have an equal propensity for social impact of OGD. Opportunities for political participation and the neoliberal context emerged as two prominent and intervenient factors. Social impact is more likely in democratic countries with greater opportunities for political participation and in countries that have experienced modest neoliberal reform and reliance on experts in policy making. OGD researchers currently focus quite narrowly on RTI policies and technologies that support access to data to evaluate a country's "readiness" for OGD implementation and impact. This comparative study demonstrates that the broader political context matters. Unlike findings on the interpretation of empowerment, recognizing political context matters is harder to act on. There is no clear line of action to undo a legacy of neoliberal reform. Awareness of these intervenient factors can inform in-country actors and international organizations on where barriers to social impact of OGD are greatest and help these actors focus on other opportunities and strengths for OGD impact. The sociopolitical precondition that I found to most influence the use of OGD for social impact was the technocratic neoliberal reform experience. There is of course an urge to project these finding on to a larger sample and predict where increased social inclusion through OGD is more likely or least likely. I do not think predictive modeling would be valuable or accurate. Marginalization and open government data are both tokens of high-modernity and neoliberalism. They are governed by processes that take on different realities in different contexts. While I will not hypothesize what structural characteristics of a society disconnect the marginalized from OGD, I will recommend

that practitioners evaluate what is the most appropriate use of OGD for excluded groups by asking them. Perhaps by asking marginalized groups about a time when their needs or desires were addressed by powerful decision makers and then considering how data fits into this. Or perhaps by asking what would make you feel like a proper adversary to government decision-makers and then considering how data fits into this.

APPENDIX A.

A.1 Thematic Open Coding Results

Thematic open coding of transcripts across cases conducted using Nvivo qualitative analysis software produced valuable insights into the cross-cutting themes of OGD, data intermediation, strategies for political advocacy, and the impact of the sociopolitical context on the reuse of OGD. These results are reported by thematic category. Each category concludes with an assumption statement from the analytical framework and response statement based on findings from coding results.

I will report thematic coding results in order of aggregate number of coding references visualized in Figure 17 hierarchical map of nodes coded in all cases. The order of parent nodes according to aggregate number of references and all countries is as follows: Strategies of the Movement (574 coded references), Data (391 coded references), Data Intermediation (168 coded references), and Sociopolitical Context (144 coded references).

Table 3 Thematic Coding Categories

Thematic Category	Child Nodes	Secondary Child Nodes	Tertiary Child Nodes
Data			
	access	limited access, sufficient access	
	format	friendly, unfriendly	
	quality, timely, legal framework, political will to open data, visualization, RTI and trust, concern for civic reuse		
Data Intermediation			
	Data Intermediary Type	academic, economist, journalist, NGO	
	Data Transformation, High Tech Task, Low Tech Task		
Strategies of the Movement			
	Advocacy Strategies with Decision Makers	president, presidential candidates, elected representatives, private sector, public opinion polls	
	Communication Strategy	public officials social media, traditional media	Ministries, Public Consultation
	Data Reuse for Social Impact	data for legitimacy, data for social impact analysis	
	Non data-driven strategies	social justice or human rights argument, reflection on lived experience	
Sociopolitical Context	Neoliberal Experience	neoliberal reforms, technocracy	
	Crisis in Representation, Elitism, Presidentialism		

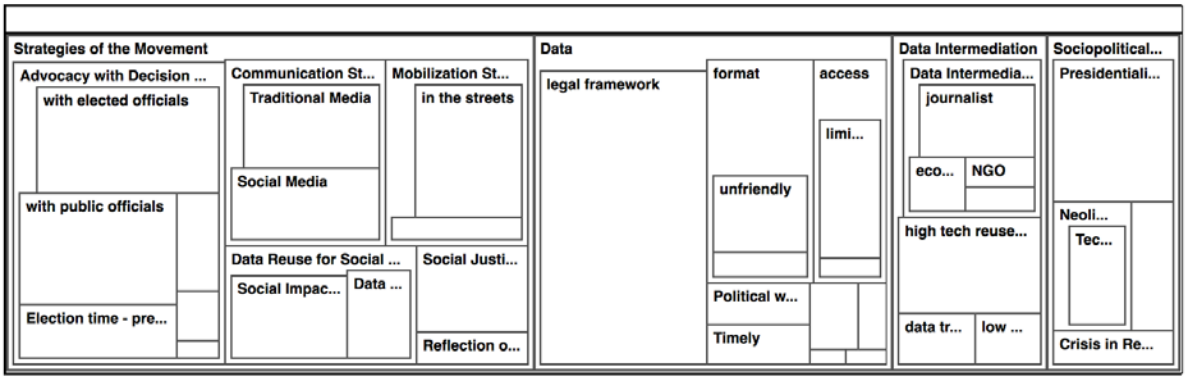


Figure 20 Hierarchical Map of Nodes Coded - All Cases

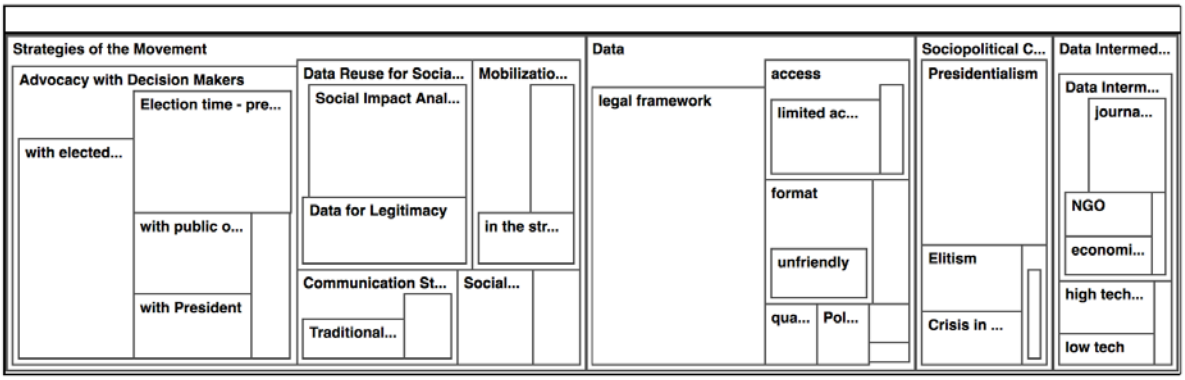


Figure 21 Hierarchical Map of Nodes Coded - Hong Kong

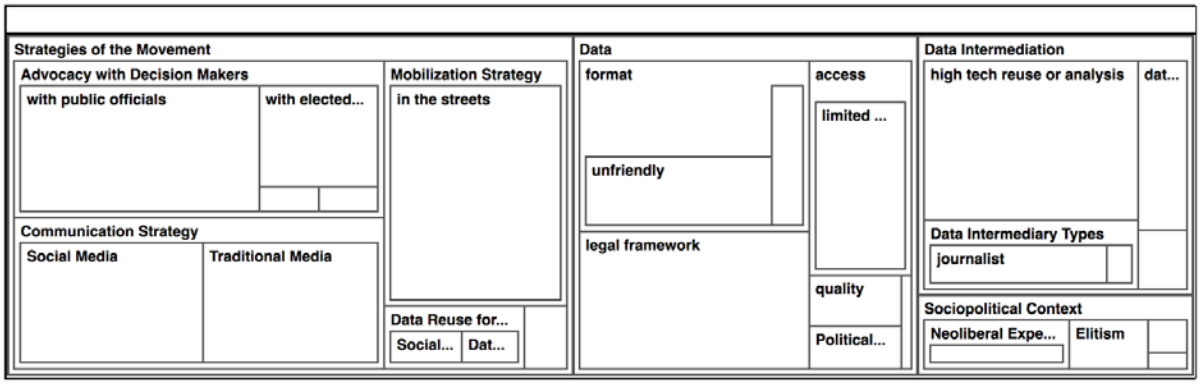


Figure 22 Hierarchical Map of Nodes Coded - Dominican Republic

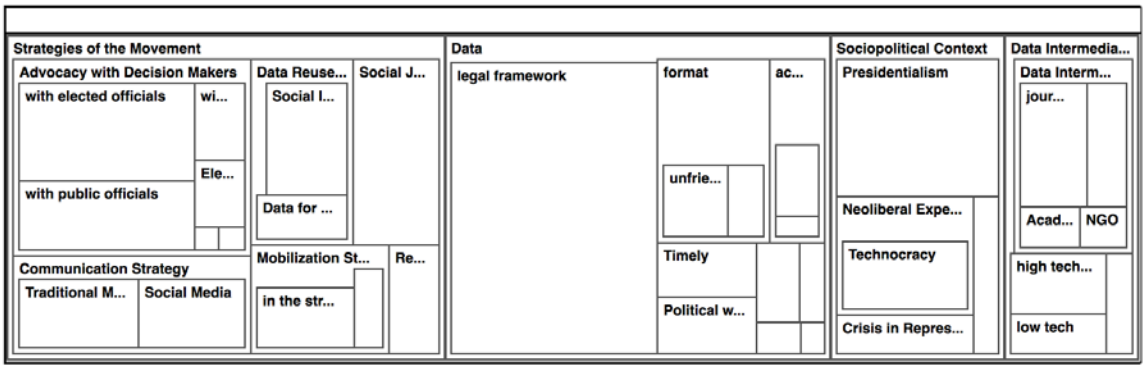


Figure 23 Hierarchical Map of Nodes Coded – Chile

Table 4 All Nodes Coded

Node	All Cases	CL	DR	HK	CL%	DR%	HK%	Percent of Parent Node	Percent of all Coding References
4 : Strategies of the Movement	513	172	174	167	34%	34%	33%	100%	45%
Advocacy with Decision Makers	212	64	95	53	30%	45%	25%	41%	18%
with presidential candidates	36	6	28	2	17%	78%	6%	17%	3%
through Public Opinion Polls	3	1	0	2	33%	0%	67%	1%	0%
with elected representatives	84	31	37	16	37%	44%	19%	40%	7%
with President	18	7	11	0	39%	61%	0%	8%	2%
with Private Sector	9	1	8	0	11%	89%	0%	2%	1%
with public officials	66	19	14	33	29%	21%	50%	31%	6%
meetings with Ministry	18	6	1	11	33%	6%	61%	4%	2%
Public Consultation	18	0	2	16	0%	11%	89%	4%	2%
Communication Strategy	107	33	17	57	31%	16%	53%	21%	9%
42 : Social Media	51	16	6	29	31%	12%	57%	48%	4%
43 : Traditional Media	54	18	8	28	33%	15%	52%	50%	5%
44 : Data Reuse for Social Impact	77	27	41	9	35%	53%	12%	15%	7%

45 : Data for Legitimacy	29	8	17	4	28%	59%	14%	38%	3%
46 : Social Impact Analysis	51	18	28	5	35%	55%	10%	66%	4%
47 : Mobilization Strategy	87	20	21	46	23%	24%	53%	17%	8%
48 : Focus on the base	14	5	9	0	36%	64%	0%	16%	1%
49 : in the streets	67	13	8	46	19%	12%	69%	77%	6%
non data-driven arguments	81	18	17	46	22%	21%	57%	16%	7%
50 : Reflection on Lived Experience	14	8	6	0	57%	43%	0%	17%	1%
51 : Social Justice Human Rights Argument	35	23	9	3	66%	26%	9%	43%	3%
1 : Data	345	150	104	91	43%	30%	26%	100%	30%
13 : access	54	13	19	22	24%	35%	41%	16%	50%
14 : limited access	43	7	15	21	16%	35%	49%	80%	80%
15 : sufficient access	6	2	4	0	33%	67%	0%	11%	11%
16 : concern for civic reuse	7	5	2	0	71%	29%		2%	7%
17 : format	71	25	14	32	35%	20%	45%	21%	66%
18 : friendly	11	5	0	6	45%	0%	55%	15%	15%
19 : unfriendly	35	9	9	17	26%	26%	49%	49%	49%
20 : legal framework	182	88	61	33	48%	34%	18%	53%	170%
21 : Political will to open data	16	8	4	4	50%	25%	25%	5%	15%
22 : quality	12	3	4	5	25%	33%	42%	3%	11%
23 : RTI + Less Trust	2	1	1	0	50%	50%	0%	1%	2%

24 : Timely	15	8	6	1	53%	40%	7%	4%	14%
25 : Visualization	2	2	0	0	100%	0%	0%	1%	2%
2 : Data Intermediation	149	54	38	57	36%	26%	38%	100%	13%
5 : Data Intermediary Types	80	36	28	16	45%	35%	20%	54%	4000%
5a : Academic	9	5	2	2	14%	7%	13%	11%	11%
7 : economist	16	10	6	0	28%	21%	0%	20%	20%
8 : journalist	44	17	13	14	47%	46%	88%	55%	55%
9 : NGO	11	4	7	0	11%	25%	0%	14%	14%
10 : data transformation	15	4	2	9	27%	13%	60%	10%	750%
11 : high tech reuse or analysis	53	9	7	37	17%	13%	70%	36%	2650%
12 : low tech	13	6	4	3	46%	31%	23%	9%	650%
3 : Sociopolitical Context	139	71	51	17	51%	37%	12%	100%	12%
26 : Crisis in Representation	16	8	7	1	50%	44%	6%	12%	12%
27 : Elitism	21	6	9	6	29%	43%	29%	15%	15%
28 : Neoliberal Experience	39	24	4	11	62%	10%	28%	28%	28%
29 : Technocracy	34	19	4	11	56%	12%	79%	24%	24%
30 : Presidentialism	67	34	31	2	51%	46%	3%	48%	45%
31 : Standout	20	11	9	0	55%	45%	0%	NA	2%
Total Coding References	1146	447	367	332	39%	32%	29%	NA	100%

A.1.1 Thematic Category: Strategies of the Movement

Within the Strategies of the Movement category, 41 percent of items coded referenced the activists' target audience; 19 percent of items coded make reference to the movement's communication strategy; 14 percent reference the use of data by the movement; 17 percent of the content coded to mobilization practices and strategies; and nine percent of items coded to the non-data-driven arguments for social change.

When Chilean and Hong Kong research participants were asked about how the movement made use of OGD to achieve desired change, their response often explained that they did not. This clarification was often followed up with the explanation that they did make great use of social media. In fact, 88 percent of the coded references to social media belong to the Hong Kong and Chile set. This research does not investigate the use of social media by social movements. There is a growing body of literature that does. However, it is interesting to note that research participants from Hong Kong and Chile spoke much more on the use of social media and mobilizing the base than on use of OGD and data-driven arguments. Dominicans did celebrate their mobilization efforts and made particular note of how peaceful they were, but the Dominican participants were the only participants to describe the use of OGD as a principal strategy of the movement. Fifty-three percent of references to the reuse of OGD as a strategy of the social movement fall into the Dominican case, 35 percent come from Chilean interviews, and only 12 percent are references made in the Hong Kong interviews. This coding result reveals that the two social movements more focused on grassroots and mobilization were less likely to make use of OGD, supporting the finding that data is not used to target marginalized audiences. The Dominican participants mentioned targeting elite decision makers more than the grassroots.

Assumption from Analytical Framework: Marginalized make use of OGD with the help of data intermediaries to influence government decision-makers.

Results from Thematic Coding: Social movements that focused on mobilization of grassroots and marginalized did not consider OGD a primary strategy.

A.1.2 Thematic Category: Data

Legal frameworks were the most referenced theme within the OGD thematic category. Almost 60 percent of content coded in the OGD parent node referenced laws, regulations, and

norms on OGD. Chileans most often referenced legal frameworks. Forty-eight percent of the references to OGD legal frameworks are from the Chilean case. This was a topic brought up by both public officials and data intermediaries. The second and third largest OGD child nodes are format and access. Within the access child node across all cases, 80 percent described limited access to data. Within the format node, participants describe data that is not machine-readable or easily reusable as unfriendly. References to unfriendly formats are three times more prevalent than references to friendly formats. Content coded to the data node was often collocated with content coded to the data intermediary node. This was in fact the strongest node correlation revealed in the node matrix analysis.

The top three nodes within the data thematic category reveal a primary concern for access and reuse of OGD which is regulated by legal frameworks. OGD standards not related to access and format were not brought up by participants. For example, quality and timeliness, two important OGD standards, are mentioned much less. As one data intermediary in Hong Kong said, we can't even complain about quality because we don't have access (anonymous interview). The other child nodes that emerged in this category have to do with the politicization of OGD. Across all cases, there were 18 references to a lack of political will to make government data open. Fifty percent of these references were from the Chilean case.

Coding within the data theme primarily reveals that these countries are at more preliminary stages in provisioning and codifying access to OGD. This result is in line with the 2015 Open Data Barometer finding that only 10 percent of the datasets they reviewed were fully open. The interviews from Chile and the Dominican Republic equally reported unfriendly formatting, but Dominicans reported limited access more often than Chileans (15 references versus 7). Despite greater reported barriers to access and use of OGD, the Dominican 4% Movement used OGD in advocacy efforts much more than Chileans.

Assumption from Analytical Framework: Cases with greater access to user friendly OGD are more likely to make use of OGD.

Results from Thematic Coding: Social movements will make use of OGD despite limited access or unfriendly format.

A.1.3 Thematic Category: Data Intermediation

Coding reveals that research participants most associated journalists with the role of data intermediary. Reviewing the interview transcripts shows an association between journalists and the tasks of accessing OGD, processing the data, and using the data to describe a social cause. Following journalists, economists, academics, and NGOs were other professions associated with the task of data intermediation. A DI's reported profession varied by case. Hong Kongers never referenced economists or NGOs as data intermediaries. Chileans most referenced journalists and economists. Dominicans most associated journalists and NGOs with data intermediation. Notably, developers and coders were not considered active actors in data intermediation for social impact.

The skills and software that data intermediaries used to access, transform or analyze data were coded into categories of high tech or low tech tasks. Overall, data intermediaries reported high tech type tasks. The Hong Kong case most heavily reported these highly technical tasks such as writing code to scrape data, deploying sensors to collect data, using APIs to call OGD into a map or application, or analyzing data with expensive proprietary software that requires training like ArcGIS. Hong Kong data intermediaries discussed transforming OGD into usable, machine-readable formats more than DIs from Chile or the Dominican Republic. This aligns with the greater referencing of unfriendly formats and limited access within the data thematic category of the Hong Kong interviews. The Dominicans were less involved in high tech data transformations and made use of basic statistical software like Excel to create data-driven arguments for the movement's cause. Reading through the surrounding content of high-tech tasks for civic benefit revealed that data intermediaries and public officials were often interested in technical analysis for policy makers or developing apps and platforms that marginalized groups may make use of but remove the requirement for marginalized to perform any tasks to access or analyze data. This further evidentiates the finding from the strategies of the movement thematic category that data does not trickle down to marginalized groups.

Assumption from Analytical Framework: Data intermediaries provide marginalized groups with technical skills in accessing and analyzing data for social impact.

Results from Thematic Coding: Professionals trained in data reuse are not in direct collaboration with marginalized groups when accessing and reusing data, even when their goal is to improve livelihood of marginalized groups. The case where DIs were most focused on high-tech reuse of *data reported least amount of use of OGD for social impact.*

A.1.4 Thematic Category: Sociopolitical Context

The sociopolitical theme was first constructed to identify how opportunities for political participation impact the use of OGD for social impact. The ability of marginalized groups to influence government decision-making is not only affected by access to data and skills in data intermediation. Social groups must have access to political mechanisms that allow them to engage with policy makers. The conceptual framework used to probe this theme was informed by democratic theory. According to democratic theory, I assumed that social groups are more likely to make use of OGD in political regimes that offer citizens opportunities to participate in policy making. These opportunities include elections or day-to-day engagement with policy makers. Alternatively, social groups in political regimes were power and policy making is concentrated in the chief executive would be less likely use OGD to influence government decision making. Of course, Hong Kong is not a nation-state nor is it a democracy; however, Hong Kong does engage in a policy making process under a political system separate from mainland China.

Coding within the advocacy strategies of the social movement node presented important differences in opportunities for political participation between the three cases. Research participants from the Dominican Republic discussed advocacy with political decision makers much more than Chilean and Hong Kong participants. According to interview texts, the Dominicans used the election cycle as a key advocacy opportunity and were much more strategic in targeting presidential candidates and elites from the business class that funded presidential campaigns. Dominicans also mentioned elected officials most often. Forty-four percent of coded references pertained to the Dominican set compared to 37 percent in Chile and 19 percent in Hong Kong. Reflective of the regime type, Hong Kong participants targeted public officials more than elected officials during advocacy efforts and referenced this 33 times compared to 14 in the Dominican Republic and 19 in Chile. Advocacy with elected officials is coded almost equally between Chile and the Dominican Republic.

Considering the Dominican movement did make strategic use of OGD but described their political system in similar ways as Chilean research participants, opportunities for political participation must not tell the whole story. The Chilean sociopolitical context stands out from the Dominican context in one significant way, the neoliberal experience. References to neoliberalism and technocracy fall mostly into the Chilean case selection with 43 coded references compared to 22 in Hong Kong and 8 in the Dominican Republic. Dominican research participants reported that the use of OGD was strategic in creating rational and reasoned arguments that would integrate the

economic and political elite. Fifty-nine percent of the coded references to use of data to legitimize the claims made to government came from the Dominican Republic. Rational and reasoned arguments that explain how a policy change or redistribution of resources creates a more optimal outcome is a hallmark of the neoliberal paradigm. While the Dominicans recognized and used the prevailing neoliberal framework to their benefit, Chilean Student Movement leaders and participants were explicit in their distaste and purposeful avoidance of neoliberal, data-driven advocacy strategies. Sixty-six percent of coded references to a social justice argument to legitimize a claim on government came from the Chilean set.

Assumption from Analytical Framework: Social groups are more likely to make use of OGD in political regimes that offer citizens opportunities to participate in policy making.

Results from Thematic Coding: Greater opportunities for political participation and accountability do incentivize use of OGD. However, there are other sociopolitical factors that also impact reuse of OGD, particularly a society's neoliberal reform experience.

A.2 Revisiting Assumptions from Analytical Framework

To create a predictive model I must first turn the assumptions from the social impact of OGD analytical framework into a set of indicators. I will call these assumptions conditions. According to the literature from OGD, ICTs and democracy, and democratic theory, the conditions that ready a society for social impact are (1) access to OGD (2) sociotechnical access: internet connectivity and presence of data intermediaries (3) access to mechanisms for government accountability or inclusion in policy making

A.2.1 Analytical Framework Condition 1: Access to Open Government Data

There are several organizations that rank government according to their open data practices. However, no historic ranking exists to compare practices in Hong Kong, Chile, and the Dominican Republic during the years in which the social movements were most active. The Global Open Data Index is the only study to rank all three countries for the year 2015. The Global Open Data Index organizes expert in-country reviewers to assess their government datasets. Experts group data into use categories: environmental, government budget, population statistics, etc. They then evaluate for degree of openness based on access, format, and copyright laws for further reuse. Countries then receive a percentage score of overall openness between 0 and 100.

Based solely on access to OGD openness, we would assume civil society organizations in Chile and Hong Kong would be better poised for reuse of OGD for social impact. In this index Chile received the highest ranking of the three with Hong Kong close behind. Out of 149 countries, Hong Kong ranked 37th; Chile was ranked at 29th; the Dominican Republic came in at 76th. The score represents the degree of openness of public sector data.

Table 5 – Open Government Data Indicator

	Hong Kong	Chile	Dominican Republic
Global Open Data Index (2015)	Score: 42	Score: 47	Score: 26

A.2.2 Analytical Framework Condition 2: Socio-technical (internet connectivity and presence of data intermediaries)

Supply of open government data is not the only technical input required for the reuse of OGD for social impact. Many scholars and practitioners research and discuss barriers of access to information technologies and the need to train marginalized groups in computer and data literacy. The common finding in these studies is that connectivity does not equate to empowerment (Hargittai, 2002; van Dijk 2005, 2012; Radovanovic 2011; DiMaggio et al., 2001). In *The Digital Divide*, Latin America scholar Daniela Trucco Horwitz finds that connectivity in Latin America is market-driven and therefore reproduces and perhaps exacerbates pre-existing social inequalities (Trucco 2014). Research in Hong Kong concludes with similar findings with a significant gap in access and use between highly educated and less educated populations (Tseng and You 2014, 157). Facebook accounts per capita in 2011 provides a quantitative proxy to compare connectivity across cases (below in Table #). According to this indicator, Chileans and Hong Kongers are much more connected than Dominicans.

Data intermediaries are considered to be important actors for the reuse of OGD for social impact (Davies 2010; Chattapadhyay 2014; Janssen and Zuiderwijk 2014; Zuiderwijk et al 2014; Ubaldi 2013; Magalhaes et al 2013; Harrison et al. 2012; Robinson et al 2009). These technically savvy individuals are thought to assist marginalized groups in accessing and analyzing online government datasets. In a study on reuse of OGD in the United Kingdom, Davies finds data

intermediaries fit a profile of well educated, higher income males. Looking at indicators for highly educated population and a society engaged in manufacturing and exporting high tech products, Hong Kong and Chile would be the cases with the greatest supply of data intermediaries (Table 5, below).

Table 6 - Analytical Framework Condition Two: Socio-technical Indicators

	Hong Kong	Chile	Dominican Republic
Facebook Accounts per capita (2011)	51.30	46.60	19.20
Gross Tertiary Enrollment (2011)	61	79	47
High Tech Exports (2011)	14	5	2

In all cases participants in the data intermediary group were well educated, middle to upper-middle class, and mostly male. The Hong Kong selection revealed an overwhelming association of highly technical skills and data intermediation. In addition to this anecdotal evidence, statistics on the tech industry and educational attainment demonstrate that Chile and Hong Kong would be most likely to supply social groups with a population of individuals skilled in data intermediation.

The Hong Kong data intermediaries that were also members of NGOs were highly skilled civic technologists. Their organizations were more focused on policy issues around technology like OGD or copyrights. Compared to Hong Kong and Chile, Dominicans associated NGOs with data intermediation with much more frequency. These NGOs did serve as data intermediaries for the 4% Movement, applying valuable but not as technical skills. Dominican DIs accessed datasets and formatted and analyzed data exclusively in Excel. There were few non-governmental organizations in Chile known by study participants for their use of OGD for social change. Interestingly, two of these organizations have supported OGD projects or consulted on social campaigns using OGD in the Dominican Republic.

Assumption from Analytical Framework: Cases with greater connectivity and presence of skilled population to serve as data intermediaries will exhibit greater evidence of social impact of OGD.

Results from Thematic Coding: Higher internet connectivity is not associated with greater evidence of reuse of OGD for social impact. The case where data intermediaries were not as

highly technically trained, but associated with NGOs demonstrated reuse of OGD for social impact.

A.2.3 Analytical Framework Condition 3: Mechanisms for accountability and inclusion in policy making

OGD academics assume social groups will have access to mechanism of in order to influence government decision makers. Accordingly, social groups are most likely to achieve social change in democratic regimes where citizens have access to mechanisms of participation. Freedom House provides a yearly score and rank of political rights and civil liberties. According to Freedom House, the evaluation of political rights is based on electoral process, political competition, and minority group representation in government. The evaluation of civil liberties is based on freedoms of expression, assembly, education, etc. (Freedom House 2015). According to the scoring, Chile was the most free in 2011 with the highest scores of 1, and the Dominican Republic received a score of 2 in both sections and ranked with Chile in the category of free (Freedom House 2011). Hong Kong, SAR received a 5 in political rights and a 2 in civil liberties and an overall rank of partly free (Freedom House 2011).

Implementation of open data and a commitment to inclusion in policy making indicates a commitment to transparency. Transparency International evaluates transparency based on perceived levels of corruption. The index is based on surveys and assessments completed by in-country independent institutions that measure their perception of public sector corruption. In 2011 Hong Kong and Chile ranked as two of the top twenty "cleanest" countries (Transparency International 2011). The Dominican Republic fell far behind with a score of 2.7 and a ranking of 129 out of 182 at the time of the 4% Movement in 2011 (Transparency International 2011).

Table 7 - Analytical Framework Condition 3: Democracy Indicators

Indicator	Hong Kong	Chile	Dominican Republic
Freedom House Freedom in the World (2011) Political Rights (PR) and Civil Liberties (CL)	PR Score: 5 CL Score: 2 Rank: partly free	PR Score: 1 CL Score: 1 Rank: free	PR Score: 2 CL Score: 2 Rank: free

Thematic coding revealed that in all three cases, participants described political power as heavily concentrated in the executive. Policy making occurs in a closed power space where citizens see little opportunities to influence outcomes. Tracing OGD through civic and political spaces revealed different realities of political participation than the scores reflected in the Freedom House's Freedom in the World rankings. In the Chilean and Dominican case selections there were sixty-seven references to the concept of presidentialism. These references were evenly split between the countries, with 34 coded references in the Chilean selection and 31 coded references in the Dominican case. Both cases equally described a crisis in representation in terms of the accountability of elected officials to the electorate. These results were unexpected, as Chile ranks much higher in democracy indices.

Assumption from Analytical Framework: Cases where citizens have access to mechanisms of accountability are more likely to exhibit a social impact of OGD.

Results from Thematic Coding: The case where social groups identified and pursued opportunities for political accountability made greater use of OGD to achieve social impact.

A.2.4 Overall assumption based on Analytical Framework

Based on international rankings for open data practices, corruption perception, government effectiveness, and regulatory quality, Chile and Hong Kong appear to have an institutional environment that is more conducive to social impact of open data than that of the Dominican Republic. According to the analytical framework and these findings, the Dominican Republic would be the least likely to exhibit social impact of open government data.

A.3 Predictive Model

Ground-truthing the analytical framework conditions for social impact to findings in the comparative study has revealed a lot of misconceptions on the individual determinants of social impact. I will now use Boolean logic to model the relationship between these conditions and the outcome of social impact in each country. Boolean logic allows researchers to identify causal conditions with smaller sample size. Indicators are replaced with a binomial classification of high, average, or low presence. This classification will be calculated using index rankings and quintile distributions. A classification of high corresponds to an indicator score ranked in the top

two quintiles. Average classification corresponds to the middle quintile. Low classification corresponds to the lowest quintile.

Causal conditions from the social impact of OGD analytical framework:

1. OGD - Access to OGD
2. OGD/ICT for Democracy - data intermediaries
3. ICT for Democracy - connectivity
4. Democracy - mechanisms for government accountability/ inclusion in policy making

In Table # below, the global open data index score will provide this measure of access to open government data. I will use the Freedom House's Freedom in the World scores and rankings on political rights and civil liberties to indicate degree of democracy. The literature on ICTs and democracy will be represented in the model through indicators of internet connectivity measured by Facebook accounts per capita. The model will also test the condition that data intermediaries are important actors in achieving social impact through use of OGD, a concept from both the OGD and ICT and democracy literatures. Two indicators will be tested to measure the presence of a population of individuals trained in data intermediation skills. One will be a measure of the productivity in the high tech sector and the second will measure gross tertiary enrollment. The social impact measure is based on use of OGD to achieve social impact as reported by research participants.

Table 8- Indicators for Predictive Model based on Analytical Framework

Indicator	Hong Kong	Chile	Dominican Republic
OGD Access Global Open Data Index (2015)	Score: 42 percentile rank: 4th quintile	Score: 47 percentile rank: 5th quintile	Score: 26 percentile rank: 3rd quintile
Data Intermediation Gross Tertiary Enrollment Rate (2012)	score: 61 Percentile rank: 4th quintile	score: 79 Percentile rank: 5th quintile	score: 47 Percentile: 3rd quintile
Data Intermediation High Tech Exports (2011)	Score: 14 Percentile rank: 3rd quintile	Score: 5 Percentile rank: 2nd quintile	Score: 2 Percentile rank: 1st quintile
Internet Connectivity Facebook Accounts per capita (2011)	score: 51.3 Percentile rank: 5th quintile	score: 46.60 Percentile rank: 5th quintile	score: 19.2 Percentile rank: 3rd quintile
Democracy Freedom House Freedom in the World (2011) Political Rights and Civil Liberties	PR Score: 5 CL Score: 2 Rank: partly free	PR Score: 1 CL Score: 1 Rank: free	PR Score: 2 CL Score: 2 Rank: free

Table 9 – Predictive Model based on Analytical Framework with Boolean Classification

	OGD	Data Intermediation	Internet Connectivity	Democracy	Social Impact
Hong Kong SAR	high	average	high	low	absent
Chile	high	low	high	high	absent
Dominican Republic	low	low	average	high	present

The predictive model built from the analytical framework excludes the comparative analysis finding that sociopolitical context matters. Situating OGD practice within the sociopolitical context of these cases reveals that the neoliberal context matters. Including a measure of neoliberal reform will test how a country's neoliberal experience predicts social impact. The proxy for neoliberal experience will be the Economic Freedom Score from 2011. This score from the Heritage Foundation is calculated from 10 different components of free market practices (Heritage Foundation 2011). A higher score indicates greater levels of marketization and privatization. The scores, below in Table #, reflect greater implementation of neoliberal policies in Hong Kong and Chile in comparison to the Dominican Republic.

Table 10 – Neoliberal Experience Indicator

	Hong Kong	Chile	Dominican Republic
Economic Freedom (2011)	score: 89.7 Percentile rank: 5th quintile	Score: 77.4 Percentile rank: 5th quintile	Score: 60 Percentile rank: 3rd quintile

Even with the addition of neoliberal experience to the model (below, Table 10), the model performs poorly. By nearly every indicator, Chile and Hong Kong should see greater reuse of OGD for social impact. This method is clearly not useful for this context.

Table 11 – Predictive Model based on Analytical Framework with Boolean Classifications + Neoliberal Experience

	OGD	Data Intermediation	Internet Connectivity	Democracy	Neoliberal Experience	Social Impact
Hong Kong SAR	high	average	high	low	high	absent
Chile	high	low	high	high	high	absent
Dominican Republic	low	low	average	high	average	present

Boolean classifications can be used to build cross-tabulation tables to evaluate strength and symmetry of correlation between the desired outcome of social impact of OGD and the desired preconditions identified from the analytical framework and the comparative case study. A cross-tabulation of each condition with social impact reveals that the most symmetric relationships are between social impact and OGD access (below, Table 11) and social impact and the neoliberal experience (below, Table 14).

Table 12 – Truth Table: OGD and Social Impact

	OGD Access Present	OGD Access Absent
Social Impact Absent	Chile, Hong Kong	
Social Impact Present		Dominican Republic

Table 13 - Truth Table: Democracy and Social Impact

	Democracy Present	Democracy Absent
Social Impact Absent	Chile, Dominican Republic	Hong Kong
Social Impact Present		

Table 14 - Truth Table: Socio-technical Determinants and Social Impact

	Sociotechnical High - Average	Sociotechnical Average - Low
Social Impact Absent	Chile, Hong Kong	Dominican Republic
Social Impact Present		

Table 15 - Truth Table: Neoliberal Experience and Social Impact

	Neoliberal Experience High	Neoliberal Experience Average
Social Impact Absent	Chile, Hong Kong	
Social Impact Present		Dominican Republic

The first relationship is counterintuitive. One would expect access to OGD to be an important determinant to achieving social impact of OGD. This puzzle can be explained by looking back at the findings from the Dominican case study. Discussion on OGD with public officials, data intermediaries, and social movement participants revealed that while public officials prioritize OGD gold standards of APIs and JSON, DIs and 4 Percent Movement advocates could make valuable use of excel sheets. And while they preferred a machine-readable format, a DI would go through tedious data transformation tasks to extract data from images or PDFs. The values that inform the methodology and data collection of the Global Open Data Index are similar to those of the Dominican public officials. It is not that OGD standards of format and reusability are not important to the overall movement. Governments should strive for these standards. However, the social impact of OGD does not correspond to achieving these high

standards. DIs exhibited a great amount of care as opposed to highly technical expertise. My conclusion from this exercise is that that the conditions thought to foster social impact are not accurate. It seems that activists are willing to make use of unfriendly formats using low tech skills to successfully advocate in even a limited democracy.

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