Representation, Power Dynamics, and Resource Allocation in Regional Water Collaboration

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Abstract

Regional collaboration has become a popular means to manage shared resources and address cross-jurisdictional boundary issues. However, the question of who participates in the process, who has a say in affecting decisions, and who benefits from those decisions is critical for understanding the broader public value created by regional collaborations. Using a variety of text mining techniques, we use meeting minutes to trace how stakeholder representation and power dynamics evolved in a regional water collaboration in San Diego. While the collaboration had participants from a diverse array of organizations and representing a broad spectrum of the area's communities and interests, the decision-making processes and allocation of financial resources were steered by a few agencies. This case study raises a concern that when local government agencies and other stakeholders are left to self-organize, the collaborative dynamics can evolve to mimic pre-existing power hierarchy than the more inclusive ideal.

Keywords: regional collaboration, Integrated Regional Water Management (IRWM), collaborative governance, inclusion, power

Introduction

Policy problems such as traffic congestion, water supply, and air pollution often transcend city and county administrative boundaries. In response, communities increasingly engage in regional collaborations, creating cross-jurisdictional partnerships to address challenges that arise in the regional policy space between the local and state level (Taylor and Schweitzer 2005; Lubell and Lippert 2011; Feiock 2009; Lester and Reckhow 2012). A challenge within these regional networks is ensuring democratic legitimacy and accountability. Despite the fact that regional collaboration can make policy decisions, allocate financial resources, and affect many aspects of a citizen's life from drinking water to air quality, these entities are often obscure to citizens. Unlike regulatory agencies and special districts that have formal bureaucratic structures, governing bodies, and lines of oversight, many regional collaborations form with ad hoc agreements and memorandum of understandings (Feiock 2009), which can mean that participation is voluntary and the rules of engagement are not well-specified. Depending upon the specific form of regional collaboration, they may or may not have to abide by the open meeting rules that other state and local government officials must adhere to.[1] The lack of media attention and close public monitoring means that citizens normally delegate their participation to businesses, nonprofit, and community organizations that attend the public meetings and hearings, so participants may not reflect the full set of stakeholder interests. Because local communities, agencies, and stakeholders often vary in size and resources, power and influence can be unequally distributed in a given region, and collaborations that are formed in these areas may replicate these pre-existing relationships (Lubell and Lippert 2011; Lester and Reckhow 2012).

Thus, an important consideration assessing in the broader public value created by

[1] Our case study (Integrated Regional Water Management) does abide by the Brown Act, California's open meeting rule.

regional collaborations is identifying who participates, who actually has a say in affecting decisions and who benefits from those decisions. One way to approach this question is by assessing to what extent these "collaborations" in fact shift decision-making power to align with best practices of collaborative *governance*. Collaborative governance is "a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets" (Ansell and Gash 2008, 544). At its core, collaborative governance entails a broadening of the people or constituents who are included in public decision-making. This broadening can be constrained (e.g., an agency partnering with a business or nonprofit to co-design a program) or extensive (e.g., a planning forum that represents diverse stakeholder groups) (Margerum 2008). Expanding the range of participants in decision-making has democratic appeal, enhances fairness because stakeholders are (by definition) those people who are affected by the decision, and likely leads to more durable solutions by enhancing legitimacy and reducing overlooked side-effects (Margerum 2011; Margerum 2002; Blair and Janousek 2013; Ansell and Gash 2008; T. A. Scott and Thomas 2016). Collaborative governance has many additional benefits, such as overcoming impasses in particularly adversarial policy settings (Ansell and Gash 2008; Frame, Gunton, and Day 2004), accessing the resources, personnel, and expertise necessary to implement programs (Calanni et al. 2015; Thomson and Perry 2006; Scott and Thomas 2016), and building institutional resilience (Innes and Booher 2010; Goldstein 2012). Participants in collaborations gain knowledge, skills, and problem-solving capacity (Frame, Gunton, and Day 2004; Bardach 1998; Rogers and Weber 2010).

Importantly, researchers have found that *inclusive* forums that engage stakeholders in

joint decision-making, as opposed to those that simply seek input or provide outreach, lead to more effective processes and results (Quick and Feldman 2011; Ulibarri 2015a). Specifically, when collaboration is inclusive and deliberative, it can improve the quality of decisions reached along several dimensions, including increased stakeholder satisfaction (d'Estree and Colby 2004; Leach and Sabatier 2005), perceived legitimacy and salience of decisions (Emerson et al. 2009; C. Scott 2011), and effectiveness of policies and plans (T. A. Scott 2016; Ulibarri 2015b; Koontz and Newig 2014).

In practice, however, collaborative arrangements have struggled with shifting decision-making power to be inclusive. There is a fundamental tension in collaborative decision-making between diversity and the ease of reaching an agreement (Connelly, Zhang, and Faerman 2008; Feiock 2013), and collaborative dynamics are sometimes enhanced with a more constrained set of stakeholders (Ulibarri and Scott 2016). Collaborative bodies often "mirror existing power structures in society" (Margerum 2011, 76; Layzer 2012) if there is not careful attention paid to selecting and inviting stakeholders. Additionally, stakeholders have differential access to resources, knowledge, and other forms of power (Purdy 2012) and those individuals who hold power are often reluctant to set it aside (Boonstra and Brink 2007). Resource and power imbalances can limit the ability of stakeholders to engage collaboratively and affect decisions (Ansell and Gash 2008), even if they are present. Thus, unless all stakeholders are brought into the process early (Leach 2006) and steps are taken to address resource imbalances (Sirianni 2007), efforts at collaborative outreach will likely not shift the pre-existing power dynamics.

Broadening access and ensuring diverse participation may be particularly challenging for regional collaborations. They are often less visible to the public than a traditional governing body and the problems they address are often highly technical and obscure (Bollens 1997).

Moreover, collaborations formed under either MOUs or Joint Powers Authority typically preclude non-governmental stakeholders from voting on budgetary matters that involve public funds as only governmental agencies are democratically accountable. At the same time, formal inter-agency collaborations tend to be less connected to local communities and organizations than bottom-up, action-oriented collaborative groups (Margerum 2008). These two factors mean regional collaborations may not attract the types of organization that would normally participate in either traditional citizen forums (like a town hall meeting) or in community-led collaborations (like a community watershed group). However, few studies have attempted to measure the dynamics of power and inclusion occurring within regional collaborations—to see whether these bodies, which are collaborative in name, are in fact collaborative in practice.

Additionally, understanding how these power dynamics evolve over time is important for assessing the long-term performance of a regional collaboration. Trust, a critical factor underlying the success of collaboration (Ostrom 1990; Ostrom 2005; Edelenbos and van Meerkerk 2015; Emerson and Nabatchi 2015), can take a long time to develop, especially in settings with any history of antagonism. It can also take time and effort to educate stakeholders such that they can engage with highly technical or bureaucratic decisions (Ulibarri 2015a; Margerum and Whitall 2004). These suggest that while a regional collaboration may not be inclusive initially, power dynamics may become more equitable over time. However, longitudinal studies of collaboration are rare (Bryson, Crosby, and Stone 2015), and none (to our knowledge) focus explicitly on power and representation.

To address these gaps, this paper introduces a longitudinal analysis of the power dynamics occurring within the San Diego Integrated Regional Water Management (SDIRWM) Program. SDIRWM is a regional water collaboration in San Diego, California that was formed in

response to a state initiative to foster collaboration between local agencies in shared watersheds. It is an externally directed collaboration (Emerson and Nabatchi 2015) convened by local government agencies and supported by the state Department of Water Resources (Koontz et al. 2004) and which operates at the organizational level (Margerum 2008). We utilize a variety of text mining techniques to capture two distinct aspects of power in the regional collaboration (Purdy 2012): (1) who attends meetings and (2) who controls the process during meetings. We investigate whether the participating stakeholders are diverse and representative of various constituent concerns, who holds decision-making power in the regional collaboration, and whether participation patterns evolve to be more inclusive over time. Then, to understand the implications of the power dynamics on the regional group's performance, we collect data on funded grant proposals to determine whether the allocation of resources disproportionately favored some stakeholders over others.

We find that while the San Diego IRWM attempted to reach out to a diverse array of organizations, representing a broad spectrum of the area's communities, participation in the agenda-setting Regional Advisory Committee was less inclusive. A small minority of agencies and stakeholder organizations attended most meetings and steered the dialogue at those meetings. Additionally, frequent meeting participation was associated with a higher chance of receiving funding, suggesting that uneven participation resulted in uneven allocation of benefits from the collaboration. Despite a decade of collaboration, the dynamics still mimic the pre-existing regional power hierarchy.

From Government to Governance: The Prevalence and Challenges of Regional Collaboration

Natural resources usually transcend traditional city or county boundaries. Fragmented

jurisdictional structure poses obstacles to coordination and negotiation across jurisdictions (Reynolds 2007; Griffith 2005). In response, many local governments have opted to collaborate with neighboring communities, metropolitan organizations, businesses, and community groups to address common issues or concerns.

While there are no statistics on the number of regional collaborations in America, they take innumerable organizational forms. Some are functionally specific regional agencies (which tend to focus on specific physical infrastructure needs), some are formal regional councils of governments, and others are informal policy networks or public-private alliances (Margerum 2008; Feiock 2009). Regional collaborations address a broad range of issues, from water supply (Chatman et al. 2003; Conrad 2015) to transportation (Lubell, Henry, and McCoy 2010; Taylor and Schweitzer 2005; Weir, Rongerude, and Ansell 2009) to economic development (Lee, Feiock, and Lee 2012). They are prevalent both in the U.S. and globally (Davis 2007).Despite their popularity, regional collaborations encounter various challenges. Narrow-niche and technical regional collaborations require substantial expertise and financial capacities, which can limit the participation of disadvantaged communities (Bollens 1997; Ananda and Proctor 2013). A narrow technical focus can also lead to a compartmentalized policy perspective. A water collaboration, for example, might focus exclusively on water quality or quantity, ignoring the energy or land use impacts that should be incorporated into any regional water policy solution (Benson, Gain, and Rouillard 2015). Furthermore, there are conflicting findings about the externalities generated by collaborative governance. Some suggest that there can be a negative spillover effect such that higher levels of cooperation on some policies are associated with lower levels of cooperation in other policy venues (Lubell, Henry, and McCoy 2010). Others suggest that a significant increase in local scale decision-making activity does not necessarily increase

local scale decision-making power (Norman and Bakker 2009).

Regional collaborations also face the problem of competing loyalties, as the goals and incentives of an individual's organization may not always match those of the collaboration (Thomson and Perry 2006). Members who serve in regional collaboration are sometimes elected officials, whose primary incentive is to serve their local re-electoral constituents, not the regional population (Bollens 1997; Feiock et al. 2010). For a collaboration to work, local officials need to give up some authority to achieve regional coordination, but these officials may then be held accountable for regional policies that are contrary to the preferences of their local constituents (Gerber and Gibson 2009). District representatives may be unwilling to forgo authority regarding the scope and location of projects when regional goals conflict with the benefits for district constituencies.

Finally, the voluntary nature of regional collaborations can limit inclusion. Communities that have likeminded constituents, that share common goals or interests, or that have a long working relationship with one another are much likely to collaborate (Hawkins and Andrew 2011; Gerber, Henry, and Lubell 2013), a problem when trying to bring diverse communities together into dialogue. Empowering previously excluded groups often requires both a strong external mandate (Weir, Rongerude, and Ansell 2009) and explicit attention to their inclusion (Brummel, Nelson, and Jakes 2012; Feichtinger and Pregernig 2016).

Each of these challenges suggests that power dynamics can play a key role in the function of regional collaborations. Groups with more resources or formal authority can dictate who has a seat at the table, hold the power to set the agenda of emerging forums, and enable privileged actors to frame problems according to their preferences (Lester and Reckhow 2012; Purdy 2012), and the institutional inertia in a regional collaboration will likely mirror or magnify pre-existing

power and resource imbalances (Margerum 2011). However, careful attention to creating space for inclusion could shift power dynamics over time.

Case Background: San Diego Integrated Regional Water Management (SDIRWM)

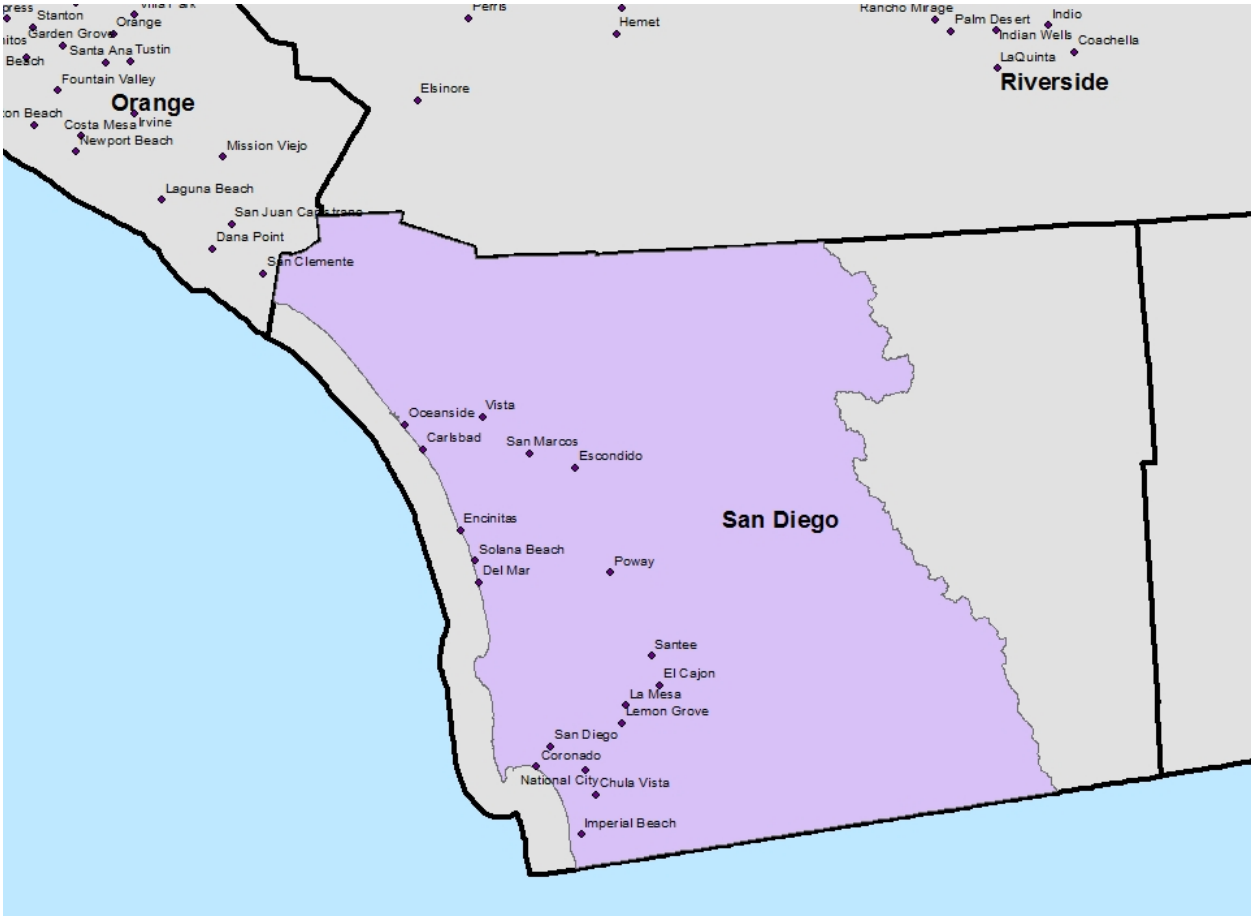
We use California's Integrated Regional Water Management (IRWM) Program as a case to explore power and inclusion in collaboration. IRWM is a collaborative effort to "identify and implement water management solutions on a regional scale that increase regional self-reliance, reduce conflict, and manage water to concurrently achieve social, environmental, and economic objectives" (California Department of Water Resources 2015). In 2002, recognizing that the lack of coordination among water agencies hindered effective responses to water supply shortages, the California State Legislature passed the Regional Water Management Planning Act (SB 1672), which created regional management groups and authorized them to prepare plans to better prioritize and integrate regional water management. Since then, a series of voter-approved bonds earmarked $1.5 billion to support IRWM, available to fund projects in IRWM regions through a competitive grant application process. The program is overseen by the California Department of Water Resources.

The IRWM program provides an interesting case to obtain a rare longitudinal perspective into the power dynamics of a regional collaboration. The 48 regions formed under IRWM were initially given wide discretion as to the specific organizational form they adopted. In a 2008 survey, Lubell and Lippert (2011) studied the Bay Area IRWM program and concluded that traditionally powerful interests dominated the network; anecdotal information from other regions suggest similar patterns. However, over time, the state pushed for increased outreach to disadvantaged stakeholder groups and required that 10% of grant funding go to projects addressing these communities' water needs (Conrad 2015). Thus, seeing how a region responded

to this mandate can give a key glimpse into how inclusive the IRWM process is as well as who is making and benefiting from key decisions.

We focus specifically on San Diego, a county with an average (for California) mix of underlying socioeconomic diversity and of water challenges. San Diego formed its regional water management boundaries in 2005 under the oversight of the state Department of Water Resources. As shown in Figure 1, the San Diego IRWM is contained within the county of San Diego, and covers a majority of the cities and population in the county. San Diego County Water Authority, City of San Diego and County of San Diego were three founding conveners of SDIRWM. They form the Regional Water Management Group (RWMG). The core governing body formally known as the Regional Advisory Council (RAC) was formed in December 2006 to facilitate the completion of San Diego's first IRWM plan and to prioritize projects both within the plan and for future funding applications. SDIRWM holds regular membership meetings, ad hoc thematic meetings, and community outreach events.

Figure 1. Boundary of the San Diego IRWM



Note: San Diego IRWM (in purple) is nested within the San Diego County (black lines mark the county boundary).

Methods Overview: Text Mining and Data Creation

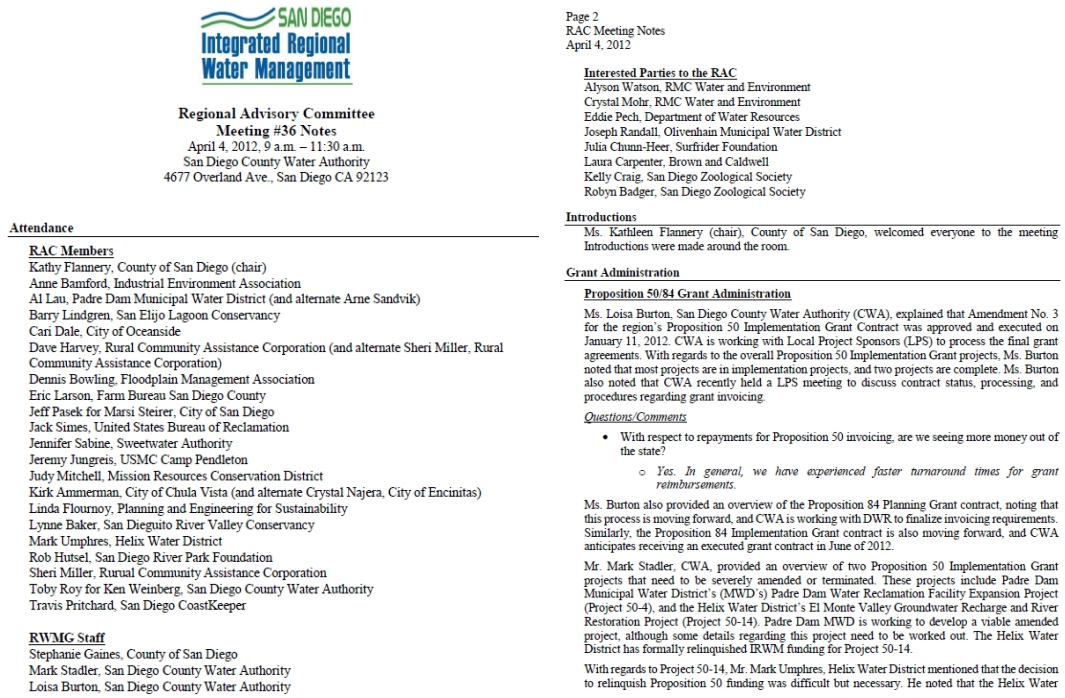
Studies of collaboration frequently derive their data through interviews or surveys. We depart from that tradition and employ text mining techniques to create our data for several reasons. First, surveys and interviews are subject to different forms of reporting bias. Organizations that have received funding through IRWM may feel compelled to overemphasize the positive aspects of the process, creating a halo affect around their evaluation of the process (Leach and Sabatier 2005; Christie 2005). Second, as the IRWM started over ten years ago, some early participants have left their agencies and would not be available for an interview; those who remain active may be a self-selected, more committed group and their experience may differ from those who left. Third, participants' memories about events that occurred a decade ago may

be subject to heavy recall bias. Finally, using surveys or interviews to capture the evolution of a collaborative process over time would require repeated sampling of participants—a huge undertaking for researchers and a likely cause of research burnout for informants.

In contrast, meeting minutes offer a "real time" glimpse into events that happened in the past, allowing us to travel back in time to observe how power dynamics evolved over a decade. Our primary datasets were obtained through web-scraping the SDIRWM website. We downloaded all meeting minutes available on the SDIRWM website since its inauguration.[2] Altogether, we obtained 53 meeting minutes for regular RAC meetings and 37 meeting minutes for non-RAC meetings and events held between December 2006 and April 2015. All meeting minutes contain two components. The first part lists all participants in attendance (their names and representing organizations); the second part summarizes the discussion and activities in the meeting. Figure 2 provides a screen-shot of a typical meeting minute.

[2] http://sdirwmp.org/ (last accessed March 2016, at that time meeting minutes after April 2015 were not available online.)

Figure 2. Screen-shot of a Typical Meeting Minute



SAN DIEGO Integrated Regional Water Management

Regional Advisory Committee
Meeting #36 Notes
April 4, 2012, 9 a.m. – 11:30 a.m.
San Diego County Water Authority
4677 Overland Ave., San Diego CA 92123

Attendance

RAC Members
Kathy Flannery, County of San Diego (chair)
Anne Bamford, Industrial Environment Association
Al Lau, Padre Dam Municipal Water District (and alternate Arne Sandvik)
Barry Lindgren, San Elijo Lagoon Conservancy
Cari Dale, City of Oceanside
Dave Harvey, Rural Community Assistance Corporation (and alternate Sheri Miller, Rural Community Assistance Corporation)
Dennis Bowling, Floodplain Management Association
Eric Larson, Farm Bureau San Diego County
Jeff Pasek for Marsi Steirer, City of San Diego
Jack Simes, United States Bureau of Reclamation
Jennifer Sabine, Sweetwater Authority
Jeremy Jungreis, USMC Camp Pendleton
Judy Mitchell, Mission Resources Conservation District
Kirk Ammerman, City of Chula Vista (and alternate Crystal Najera, City of Encinitas)
Linda Flournoy, Planning and Engineering for Sustainability
Lynne Baker, San Dieguito River Valley Conservancy
Mark Umphres, Helix Water District
Rob Hutsel, San Diego River Park Foundation
Sheri Miller, Rurual Community Assistance Corporation
Toby Roy for Ken Weinberg, San Diego County Water Authority
Travis Pritchard, San Diego CoastKeeper

RWMG Staff
Stephanie Gaines, County of San Diego
Mark Stadler, San Diego County Water Authority
Loisa Burton, San Diego County Water Authority

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RAC Meeting Notes
April 4, 2012

Interested Parties to the RAC
Alyson Watson, RMC Water and Environment
Crystal Mohr, RMC Water and Environment
Eddie Pech, Department of Water Resources
Joseph Randall, Olivenhain Municipal Water District
Julia Chunn-Heer, Surfrider Foundation
Laura Carpenter, Brown and Caldwell
Kelly Craig, San Diego Zoological Society
Robyn Badger, San Diego Zoological Society

Introductions

Ms. Kathleen Flannery (chair), County of San Diego, welcomed everyone to the meeting Introductions were made around the room.

Grant Administration

Proposition 50/84 Grant Administration

Ms. Loisa Burton, San Diego County Water Authority (CWA), explained that Amendment No. 3 for the region's Proposition 50 Implementation Grant Contract was approved and executed on January 11, 2012. CWA is working with Local Project Sponsors (LPS) to process the final grant agreements. With regards to the overall Proposition 50 Implementation Grant projects, Ms. Burton noted that most projects are in implementation projects, and two projects are complete. Ms. Burton also noted that CWA recently held a LPS meeting to discuss contract status, processing, and procedures regarding grant invoicing.

Questions/Comments

- With respect to repayments for Proposition 50 invoicing, are we seeing more money out of the state?
  - *Yes. In general, we have experienced faster turnaround times for grant reimbursements.*

Ms. Burton also provided an overview of the Proposition 84 Planning Grant contract, noting that this process is moving forward, and CWA is working with DWR to finalize invoicing requirements. Similarly, the Proposition 84 Implementation Grant contract is also moving forward, and CWA anticipates receiving an executed grant contract in June of 2012.

Mr. Mark Stadler, CWA, provided an overview of two Proposition 50 Implementation Grant projects that need to be severely amended or terminated. These projects include Padre Dam Municipal Water District's (MWD's) Padre Dam Water Reclamation Facility Expansion Project (Project 50-4), and the Helix Water District's El Monte Valley Groundwater Recharge and River Restoration Project (Project 50-14). Padre Dam MWD is working to develop a viable amended project, although some details regarding this project need to be worked out. The Helix Water District has formally relinquished IRWM funding for Project 50-14.

With regards to Project 50-14, Mr. Mark Umphres, Helix Water District mentioned that the decision to relinquish Proposition 50 funding was difficult but necessary. He noted that the Helix Water

We use the two parts of the meeting minutes for two separate purposes. First, we extracted the attendance list and created a comprehensive database of all attendees. The database is used to study who attended the meetings, observe their frequency and patterns of participation, and examine the diversity of attendees. Second, the meeting summaries offer a glimpse into the participants' roles and power dynamics during the meetings. We also webscraped the San Diego IRWM project database website and downloaded all the funding proposals submitted for consideration, in order to examine how resources were allocated in the SDIRWM and identify who benefits directly from the collaboration. Since we employed a diverse set of text mining techniques in this paper, instead of presenting all the techniques in this section without specific context, we will elaborate each analysis technique as we discuss its results.

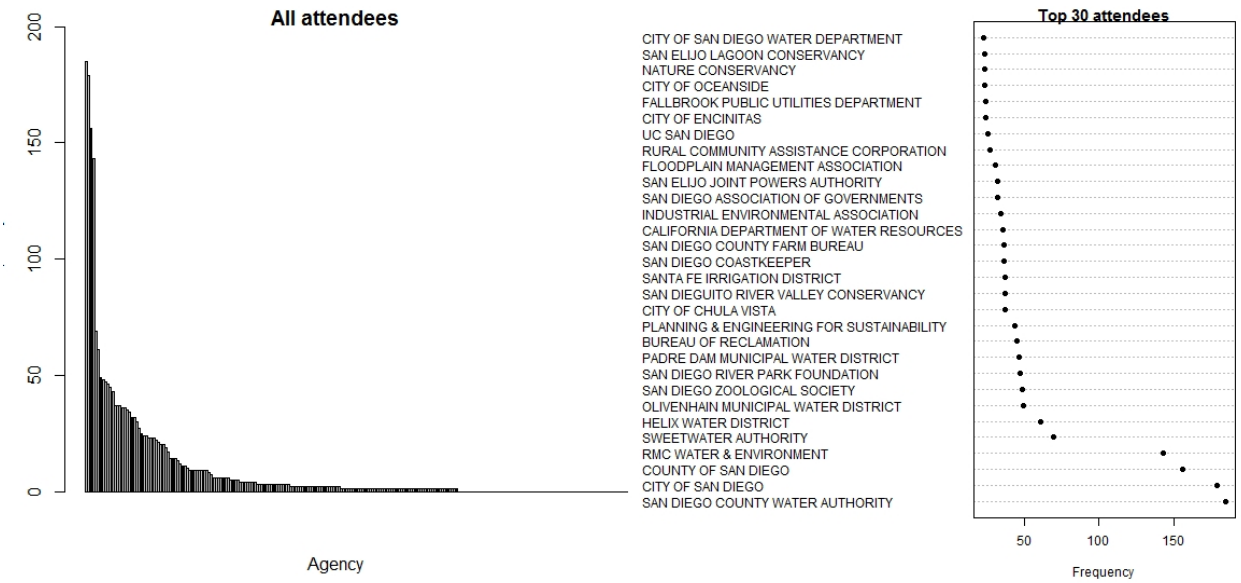
Results

Who Participated? Diversity in Representation

The key currency of a collaborative group is the face-to-face meeting, where deliberation, building trust, and other key dynamics and decisions occur (Innes and Booher 2010; Emerson and Nabatchi 2015; Margerum and Whitall 2004). Thus, without being present at those meetings, an organization or individual has very little influence over the collaborative process. Indeed, the selection of participants is a significant way that convening organizations can use their formal authority to direct the process's function—toward being more or less inclusive—and outcomes (Purdy 2012). By observing who attended meetings, what types of organizations they represent, and whether that distribution changed over time, we can investigate whether decision-making power was concentrated or dispersed.

We begin by examining attendance in RAC meetings because those are where key decisions are made. We tallied all organizations who attended at least one meeting during our study period, and then summed how frequently an individual from those organizations attended. The bar plot in Figure 3 shows the frequency distribution by organization and the dot chart zooms into the count of individual names attending for the thirty most frequently participating organizations.

Figure 3. Frequency Distribution of Attendance by Organizations in RAC Meetings

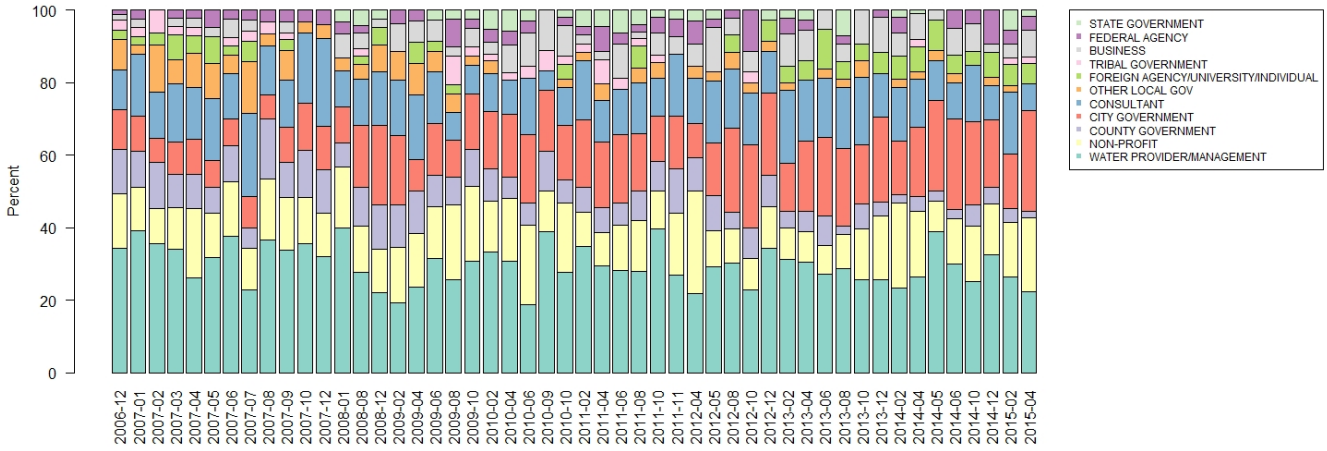


Note: The x-axis of the bar plot shows the organizations (names not shown as there are 155 unique organizations) and their count of attendance in RAC meetings. The dot chart highlights the participation count among the top 30 most frequent attendees. Participation in RAC meetings is highly skewed. Despite the diversity, the meetings were attended regularly by a handful of organizations.

The bar plot reveals a heavily skewed distribution with a long tail—while several organizations showed up regularly, many attended only once or twice in the ten year period. In the dot chart, there is a clear break between the four most frequently attending organizations and all others. These organizations are San Diego County Water Authority, City of San Diego, County of San Diego, and RMC Water and Environment. The 'big three' San Diego government agencies were the founding members of SDIRWM and RMC is a commercial firm that provided the contracted staffing. As these organizations sent multiple attendees to meetings, the total count of attendees amount to over 140. That is, on average, each of these four agencies had at least 2 delegates per meeting.

To examine the diversity of interests these organizations represent, we classified the 155 unique organizations into 11 types. Figure 4 presents what percentage of attendants represented each organization type.

Figure 4. Attendance by Types of Organizations in RAC Meetings



Note: The plot shows the diversity of organizations in 53 RAC meetings. The SDIRWM features a diverse spectrum of organizations. Water authorities or management agencies are the most frequent attendees. City governments have increased their participation over time.

In this visual, we see that a diverse set of organizations attended meetings and that attendance mix by organization type was similar over time. The largest group comprises of water authorities or agencies that oversee water management. The other organizations feature a mix of city governments (e.g. City of Chula Vista, City of Oceanside), water managing districts or agencies (e.g. Sweetwater Authority, Padre Dam Municipal Water District), regional or state governments (e.g. San Diego Association of Governments, California Department of Water Resources), and non-profit organizations or advocacy groups. Among the participating non-profit organizations, some represent disadvantaged communities and minorities (e.g. Jacobs Center for Neighborhood Innovation, Rural Community Assistant Corporation); some have strong geographic focus (e.g. San Dieguito River Valley Conservancy, San Elijo Lagoon Conservancy) while others focus on broad environmental issues in the region (e.g. San Diego Coast Keeper, Center for Sustainable Energy); some are local chapters of national organizations (e.g. Nature Conservancy, Surf Rider Foundation); and others represent higher education and research (e.g. University of California, San Diego, San Diego State University). There is also a noted presence

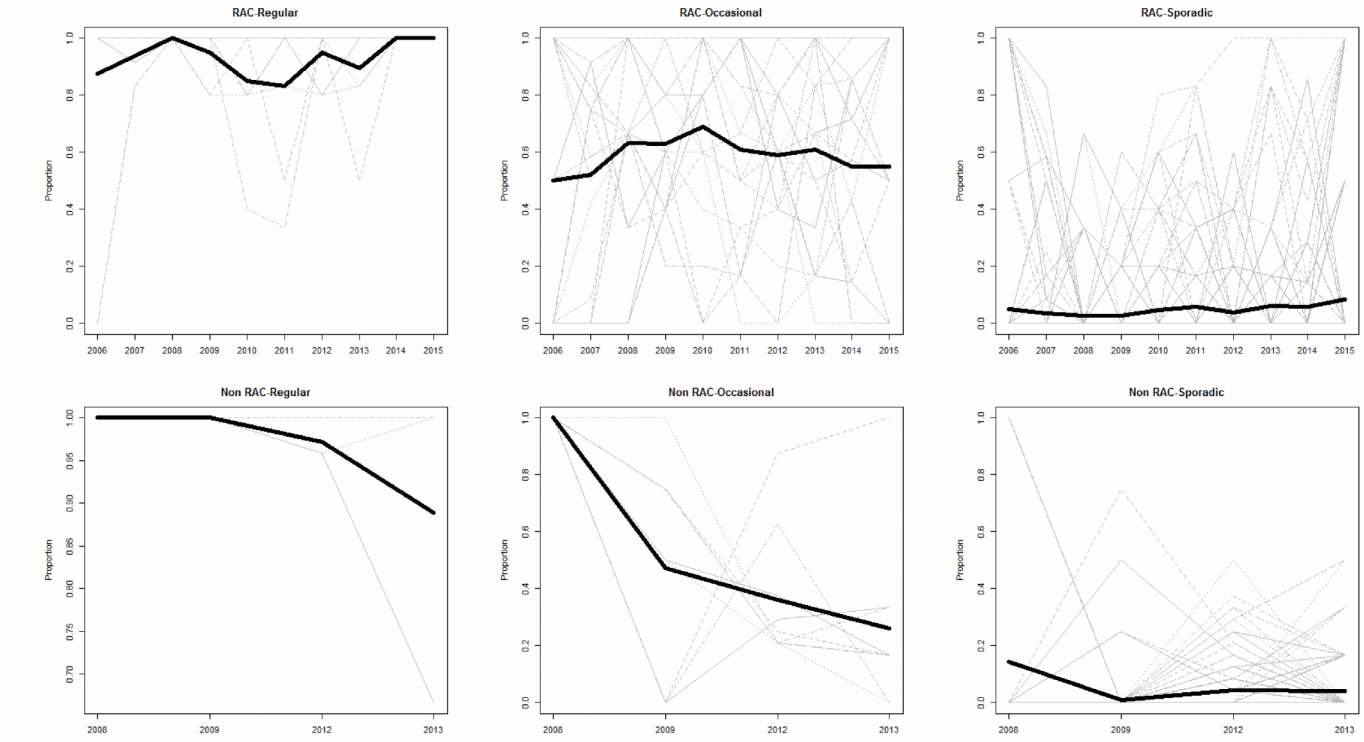
of commercial interests. In addition to the consultants from professional staffing companies, business representation includes professional groups, business associations, and potential contractors (e.g. San Diego Chamber of Commerce, American Society of Landscape Architects, Association of Compost Producers). Finally, although state and federal agencies did not send many attendees, they were consistently involved in the process.

Thus, it appears that a diverse set of organizations was attending the IRWM RAC meetings. In addition to RAC meetings, SDIRWM hosted multiple thematic workshops and ad hoc outreach events (which we refer to as *non-RAC meetings*) before major funding deadlines in 2008, 2009, 2012 and 2013. The goals were to gather communities' interests and needs, as well as to reach out to groups that were not incorporated in RAC meetings. In our dataset, among the 239 organizations that ever participated in any SDIRWM meetings or events, 27% participated in both venues, 36% showed up in RAC meetings only, and 35% attended non-RAC meetings exclusively. These non-RAC meetings invited new participants from local, state and federal offices/ agencies (e.g. US Army Corps of Engineers, CA Department of Fish and Game, Office of State Senator Christine Kehoe). They also drew in a large number of organizations that never participated in regular RAC meetings. These participants include a number of Native American community organizations (e.g. Viejas Band of Indians, Ewiiaapaayp Band of Indians), trade or business organizations (e.g. Bureau Veritas, Rick Engineering), as well as a broad range of local and national non-profit and advocacy groups (e.g. Rural Community Assistance Corporation, Coastal Environmental Rights Foundation, Sierra Club).

Finally, observing how the participating group changed over time can provide insight into whether participants felt the collaboration met their needs enough to use resources to attend. New parties joining midway suggests that there either was an effort to attract new voices to the

table or that participants learned about the process and thought it would boost their interests. Dropout suggests that participants did not feel comfortable participating or did not have the resources to continue participating, hinting at less equitable power dynamics (Brown, Langridge, and Rudestam 2016). We thus tracked the durability of participation to see who stayed, who joined midway, and who left. Figure 5 shows the participation pattern for three clusters of organizations based on their average attendance over our study period. The first cluster consists of organizations that showed up frequently (they participated, on average, in at least 80% of meetings); the second and third cluster comprise of organizations that showed up occasionally (between 40 and 80% of meetings) and sporadically (less than 40%). If stakeholders participate frequently and consistently, their overtime trend lines would cluster high on the y-axis (which indicates frequency) and flat on the x-axis (which indicates consistency overtime).

Figure 5. Three Clusters of Participation in Meetings



Note: The background thin lines in grey plot the overtime attendance trends among organizations. The thick black lines show the overtime average trend. We divide these organizations into three clusters. The 'regular' consist of

organizations that showed up in RAC meetings at least 80% of times. The 'occasional' and 'sporadic' are those who participated intermittently. In RAC meetings, 8 organizations are classified as 'regular', 20 as 'occasional' and 127 as 'sporadic'. In non-RAC meetings, 3 organizations are classified as 'regular', 9 as 'occasional' and 140 as 'sporadic'.

In addition to the three convening entities and RMC Water and Environment, the 'regulars' at RAC and non-RAC meetings include Helix Water District, Olivenhain Municipal Water District, Sweetwater Authority and San Diego River Park Foundation. Except for these few regulars, most other organizations were either occasional or sporadic attendees at both the RAC and non-RAC meetings. The occasional and sporadic attendees comprise of a diverse set of cities, water and utilities agencies, and non-profits.

That so few organizations were regular attendees suggests that most participating organizations did not have the sustained engagement to really shape the agenda over time. Additionally, because the regulars did not represent the full range of organizational types, the power gained from attendance appears to be concentrated in a particular subset of organizations despite having diverse attendees at any particular meeting.

Who Controlled the Agenda? Dynamics in Meetings

While attending meetings is a key part of influence, far more influence comes with actually shaping the meeting through presentations and discussion (Ulibarri and Scott 2016; Ulibarri 2015a). In this section, we use a novel approach of analyzing verbs to gauge power dynamics based on who speaks in meetings.

For each meeting, we used Natural Language Processing (NLP) to analyze the sentences in the notes. In what is known as part-of-speech-tagging, each word in a sentence can be identified as a noun, verb, adjective, etc., based on the syntax and grammatical structure. For each identified participant, we extracted the first verb, regardless of tense, after the name. Table 1 illustrates our operation. We highlighted the actors in bold and their corresponding actions in

bold and italic. In this example, Mr. Stadler "reminded" the group of the strategy and "noted" that the first item has been successfully awarded.

Table 1. Example Paragraph in the Meeting Minutes

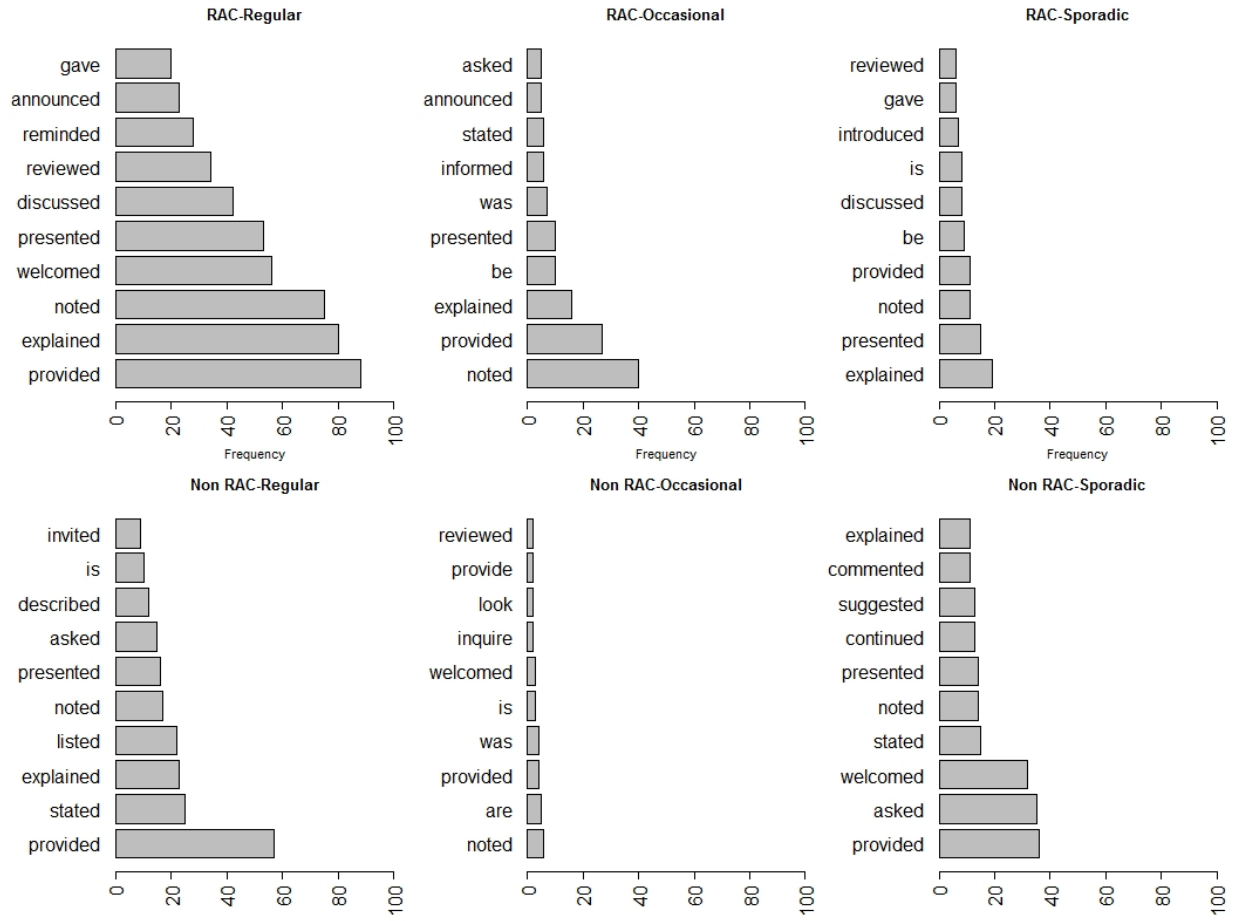
Mr. **Stadler** ***reminded*** the RAC of the San Diego County Water Authority's strategy for improving the IRWM Process through a legislative approach. There are three aspects of the strategy: pursue increased allocation of Round 2 funds, streamline IRWM grant process, and distribute full balance of funds allocated to each region. Mr. **Stadler** ***noted*** that the first item has been successful in that DWR awarded the Region their full Round 2 grant request.

Studying which verbs are associated with which stakeholders provides a proxy measurement of the functions played by different attendees. Verbs such as *remind*, *provide*, *explain*, and *present* conjecture a leading role – actions that guide the meeting and decision making process. Verbs such as *inform*, *report*, *update*, *note*, and *announce* are associated with providing information and guiding the meeting. Verbs like *suggest*, *comment*, or *state* are associated with stating a preference or position. Verbs can also hint at the internal dynamics of the meetings: *discuss* is associated with an egalitarian and deliberative dynamic whereas *instruct* or *tell* suggest a command-and-obey style (Ulibarri 2015a).

Figure 6 lists the ten most frequent verbs associated with the stakeholders in the RAC and non-RAC meetings. We only report the top ten verbs to improve the readability of the Figure. On average, we extracted more verbs in RAC meetings than in non-RAC meetings. There are two reasons for that. First, key decisions were made in the RAC meetings. It should be no surprise that there were more action items captured in those meeting minutes. Second, the note takers are more likely to record the action items of stakeholders they were familiar with. Thus regular attendees were more likely to be mentioned in the minutes than non-regular. This difference is particularly manifested in non-RAC meeting minutes. In those meeting minutes, the note takers tend to summarize actions in passive voice, such as "one question was raised" or "it was asked"

without citing who raised the question.

Figure 6. Frequent Verbs Associated with Three Clusters of Participants in Meetings



Note: Across the six panels, the biggest contrast in wording choice appears among the sporadic attendees in non-RAC meetings. The verbs reveal a power hierarchy. The leading organizers, mostly from the three RWMG organizations, were there to present, provide information and explain the context and procedure. And the sporadic attendees were there mostly to inquire about the process and make suggestions.

The most frequently participating organizations assumed leading roles in the meetings. The regulars in both RAC and non-RAC meetings are associated with verbs like provide, explain, note, welcome, present, discuss, review, remind, and announce. However, there is little difference across the RAC groups, as the list of verbs associated with the occasional and sporadic participants in RAC meetings does not differ substantially from the regular attendees. The same collection of verbs, although with different frequency, appears in the three panels on the first row

of the Figure 6. Despite the uneven level of participation among stakeholders, exchanges occurring within the RAC meetings appear to have been fairly egalitarian, allowing equal access to the conversation.

The biggest contrast in wording choice appears among attendees in non-RAC meetings. These meetings, as mentioned, were ad hoc outreach events and thematic meetings before a major funding deadline. The leading organizers, mostly from the three RWMG organizations, were there to present, provide information, and explain the context and procedure. And the sporadic attendees, often newcomers to the process, were there mostly to inquire about the process and make suggestion; 'ask' is the second most popular verb identified among these participants. This suggests that there were more hierarchical interactions in the non-RAC meetings than in the RAC meetings.

Unlike meeting transcripts that report the exchanges in a meeting verbatim, these meeting minutes are summary reports filed by staff and therefore subject to limitations. The meeting minutes do not provide a comprehensive replication of all the exchanges that took place, and there no mention of the sentiment or mood of these meetings. There is likely bias in the reporting, as there is no explicit mention of complaints or grievances against the SDIRWM, suggesting that antagonistic or unfriendly exchanges might have been diluted or muted in the reporting. However, this bias can be illuminating for the purpose of assessing power, as names captured in the meeting minutes reveal who was given enough of a voice in the process that the IRWM staff wanted to capture their contribution.

Who Got Money? Power in Resource Allocation

In this section, we turn to the critical question of resource allocation to ask whether differential attendance patterns or in-meeting roles affected the distribution of grant resources.

Recall that the IRWM's primary function was to help communities develop grant proposals to fund water projects through the California Department of Water Resources (DWR). Water is a precious resource in California due to aridity and periods of prolonged drought. Since water projects are typically capital-intensive and expensive, the competition for state matching funds was strong.

During our study period, the DWR had multiple rounds of funding. The proposals submitted in 2007 were for Proposition 50, a state bond to fund water projects including coastal protection, CALFED Bay-Delta program, integrated regional water management, safe drinking water and water quality. Proposals in the second phrase (2010-2012) responded to the call for proposals for Proposition 84. Proposition 84 authorized approximately $5.4 billion in general state bond to fund safe drinking water, water quality and supply, flood control, waterway and natural resources protection, water pollution and contamination control and water conservation efforts. The recent round (2014-2016) corresponds to Proposition 1, which allocated $510 million for IRWM funding to improve water supply infrastructure projects, storage, water protection, water recycling and advanced water treatment technology, water supply management and conveyance, wastewater treatment, drought relief, watershed protection and restoration.

The SDIRWM archives all proposals that were submitted by any organization in an online database. We web-scraped the site to create a database with multiple attributes about the proposals. The site has 249 submissions, of which 56 (22%) were funded. The proposals were submitted by only 62 organizations (a fraction of the 155 total participating organizations). City of San Diego led the pack with 35 proposals. County of San Diego and San Diego County Water Authority were a close second and third with 23 and 17 proposals. The next most prolific—Santa Fe Irrigation District, Olivenhain Municipal Water District, and City of Chula Vista—each

submitted 10 proposals. While nonprofit organizations and municipal governments from less wealthy parts of the county did submit proposals, they were far less frequent than the larger governments and water utilities.

Additionally, the quality and completeness of the submissions vary tremendously. While some were meticulously drafted, many appeared to be put together hastily without a fully developed plan. The variation in quality may reflect underlying resources inequality. The expense of developing a technical proposal and necessity of coming up with private money to be matched by the state meant may have disadvantaged less wealthy communities or smaller nonprofit organizations.

We now turn to the key question: were more powerful players in the IRWM process more likely to have their grants funded? In Table 2, we present three logistic regressions. The dependent variable is binary (1=proposal accepted; 0=rejected). We include dummy variables for the funding cycles as they have different mandates and priorities. To ensure that we have sufficient samples within each funding cycle, we combined the proposals submitted in 2014 with those in 2015-2016.

Table 2. Modeling Grant Application Success with Logistic Regression

	Model 1	Model 2	Model 3
Intercept	-2.068***	-1.929***	-2.750***
	(0.397)	(0.348)	(0.372)
Proposal led by county government	-0.181		
	(0.645)		
Proposal led by city government	-0.554		
	(0.436)		
Proposal led by other organizations	-0.559		
	(0.404)		
Occasional attendance		-0.620	
		(0.476)	
Sporadic attendance		-1.721***	
		(0.422)	

Three convening organizations			0.775*
			(0.354)
Length of proposal (divided by 100)	0.025*	0.032**	0.026*
	(0.011)	(0.011)	(0.011)
Year 2008-2012	0.784	0.871*	0.820*
	(0.416)	(0.432)	(0.418)
Year 2013-2015	0.601	0.646	0.634
	(0.747)	(0.765)	(0.738)
Log-likelihood	-116.4	-107.9	-115.2
AIC	246.7	227.7	240.4
N	249	249	249

Note: Logistic regression coefficients and standard errors. Dependent variable is binary (1=proposal funded; 0=not funded). *p<.05; **p<.01; ***p<0.001.

Proposals in the first funding round experienced a slightly lower chance of acceptance. This could reflect either a change in standards by the funding agency, a growth in capacity by the IRWM, or both.

We use the length of the proposal as a proxy indicator of the preparedness of the plans. A longer proposal is likely to have more developed ideas than one with a few terse sentences. Across all three model specifications, this proxy variable is statistically significant at 0.05 level. The relationship suggests that more developed plans were more likely to be accepted. Another potentially important variable, the amount of funding requested, could serve as a proxy for the complexity of the project, but this information unfortunately is absent in over half of the proposals.

In Model 1, we examine whether the type of organization is correlated with the success of proposal. We collapsed our 11 types of organizations into 4 categories due to small sample size. The reference category consists of proposals by water providers or management agencies. Surprisingly, we do not observe any statistical difference across four broad types of organizations.

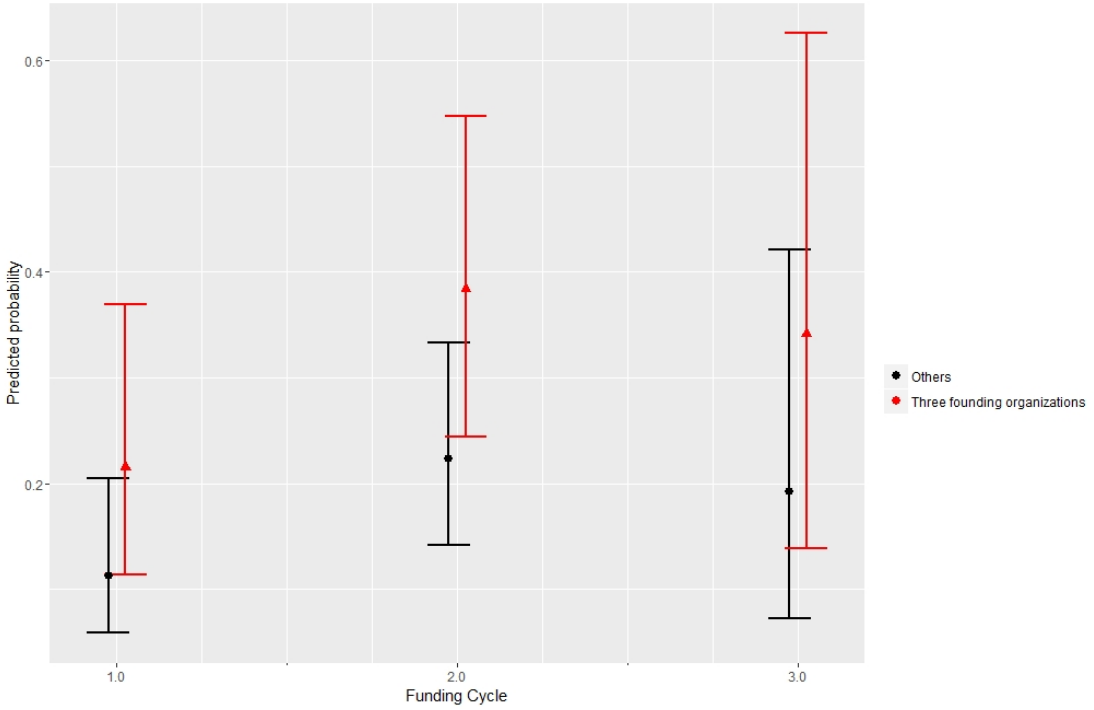
Instead, the main predictor of application success, as revealed in Model 2 and 3, lies

primarily with the frequency of attendance and being a member of the convening body. In Model 2, we included the variable from Figure 4 based on attendance regularity. The baseline group consists of organizations that attended at least 80% of meetings. Compared to this baseline, proposals submitted by organizations that attended sporadically (defined as less than 20% of meetings) were more likely to be rejected ($p<0.01$). Hence showing up regularly did translate into an advantage in the grant allocation process.

In Model 3, we examine whether the three convening RWMG organizations had an additional advantage in the process. We used a dummy variable (1=pitched by a RWMG organization; 0=otherwise) to capture the effect. The coefficient (0.775) is positive and statistically significant at 0.05 level. This finding shows that who creates the collaborative the table matters for resource allocation (in this case even a decade later).

To understand the extent the three convening RWMG organizations' advantage, we compare the predicted probability of proposal acceptance in Figure 7. The point estimates reveal that, on average, the three organizations enjoyed a ten percentage point advantage in grant acceptance. (The 95% confidence intervals for the three convening organizations are wider than their counterparts due to smaller sample size.)

Figure 7. Estimating the Advantage of Early Conveners in the Grant Application Process



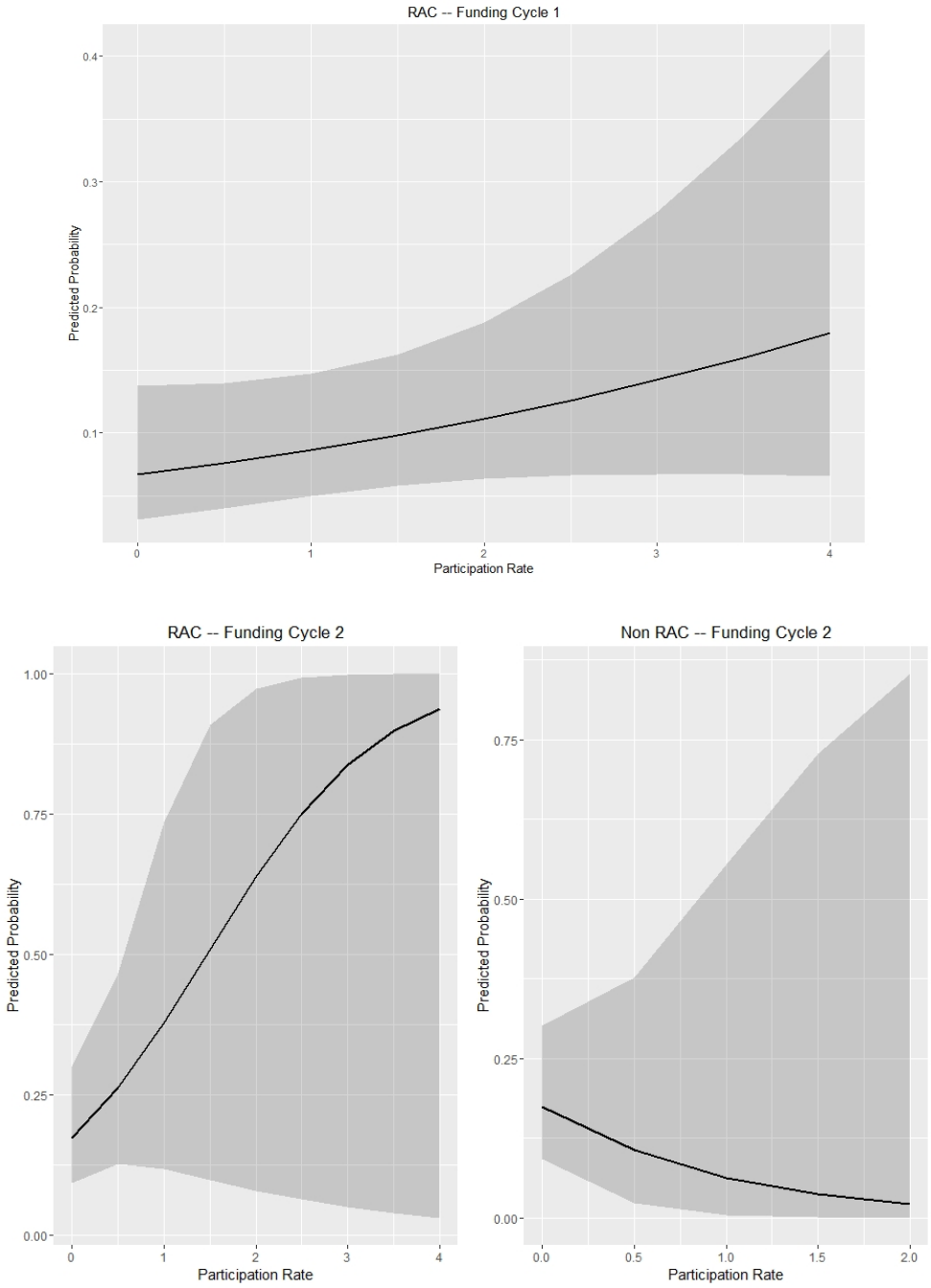
Note: We contrast the predicted probabilities of getting funded among the early conveners and others. The advantage enjoyed by the early conveners persisted a decade after the regional collaboration was established.

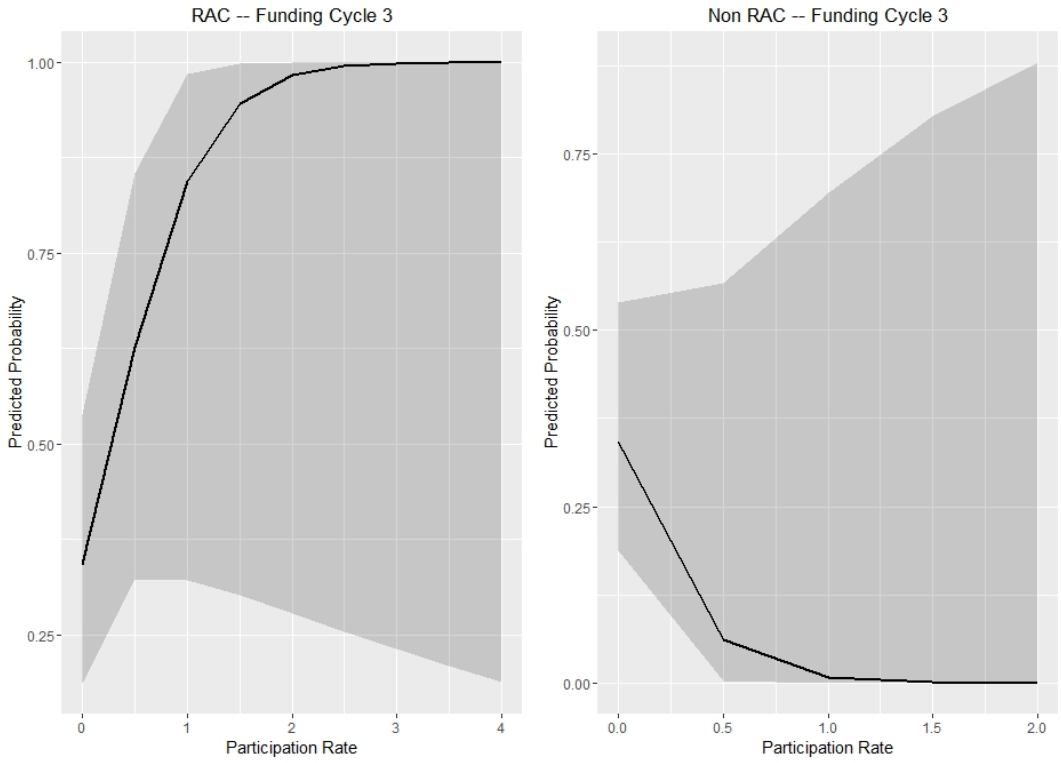
We also tallied the participation count to test whether the extent of participation in RAC meetings and non-RAC meetings correlates with funding received. We conducted separate analyses for three funding cycles because non-RAC meetings did not occur in the initial funding cycle in 2007. We divided the participation counts by the number of meetings. For example, if an organization sent one attendee to every RAC meeting, the attendance ratio would be 1. If two attendees participated in all 53 RAC meetings, the ratio would be 2. If an organization sent one participant who attended 10 of the 53 RAC meetings, the attendance ratio would be 0.18 (10/53).

To visualize the effect, we plot the attendance ratio on x-axis and the predicted probability of getting a proposal accepted on y-axis in Figure 8. The empirical maximum for attendance ratio in RAC meetings is 3.9 and 1.8 in non-RAC meetings. Due to the small N in each funding cycle, the 95% confidence intervals (shaded in grey) are wide. The panels in Figure

8 show two consistent patterns. A higher attendance ratio in RAC meetings is associated with a higher chance of acceptance. A higher attendance ratio in non-RAC meetings does not translate into higher success, but is actually correlated with a higher chance of rejection.

Figure 8. Effect of Participation on Grant Success in RAC and Non-RAC Meetings





Note: No non-RAC meetings were held in the first funding cycle. The panels show the impact of participation on the predicted probabilities of getting funded. The panels reveal a bifurcated pattern. Higher level of participation in RAC meetings is correlated with a higher chance of getting funded. Participating in outreach events does not translate into higher chance of grant success.

Discussion

The longitudinal data presented in this paper paint a complex picture about the San Diego regional collaboration. On the one hand, we observe that a diverse set of organizations representing differing interests in the region participated to some extent in the IRWM process. On the other hand, the level of participation was highly uneven. A small minority of organizations attended regularly, while most organizations—especially those representing less advantaged organizations like NGOs and tribes—only attended sporadically and/or only attended the non-RAC events. And while the verbs used to describe the RAC meetings suggests that dialogue was collegial and deliberative, the non-RAC meeting's verbs suggest the meetings were targeted toward informing attendees about the process rather than jointly involving them in decision-making. Moreover, a small subset of organizations had a predominant presence and

these organizations appear to have garnered more resources for their projects.

However, this analysis comes with several important provisos. First, while our statistical analysis reveals consistently that the regular attendees and early conveners were more likely to receive grant funding, it does not mean that other participants' interests were completely left out of the funded projects. In particular, the three early conveners, which have large staffs and substantial expertise with large infrastructure projects, may have acted as "regional brokers" to advance projects that benefit the region instead of specific locales. In Table 3, we list some examples of the projects funded under Prop 84. While occupying the central role, the lead agencies typically engaged multiple partners in each project. This suggests that even though less powerful organizations were less successful in the grant allocation process, their interests may have still been incorporated by working with the leading agencies.

Additionally, while we find that participation in non-RAC meeting did not translate into success in obtaining funding, we cannot preclude the possibility of indirect influence on the grants' content. Just as most funded projects had multiple partners (most of whom were RAC attendees), it is possible that the RWMG have incorporated some of the suggestions they received from stakeholders at the non-RAC meetings into their proposals. This too we cannot determine with our data alone. Follow-up in-person interviews with stakeholders who were recently involved in the process may help to address this question.

Similarly, in our statistical analyses, we find that there is a clear relationship between the participation level and the probability of getting funded. But the interpretation has to be taken with care. One might interpret the correlation as a causal relationship, i.e., that those who were the table regularly had more influence and were subsequently rewarded. However, it is also possible that the correlation is spurious due to self-selection bias. That is, only organizations that

believed at the start that they had a favorable chance at winning a grant bothered to show up at the meetings. It is not possible with our data to determine between these two possibilities.

Likewise, the structure of the grant programs may have limited the ability of diverse organizations to obtain funding and provided differential incentives for organizations to participate. Prop 84 funds for implementation grants were specifically targeted to "projects that are ready or nearly ready to proceed to implementation," which would have favored projects that had already been planned and developed by the water agencies and local governments with the greatest capacity and longest experience. Smaller and lower-capacity entities are unlikely to have a repertoire of projects ready to pull off the shelf and implement. Prop 1 grants gave priority to projects that could "leverage private, federal, or local funding or produce the greatest public benefit," cover most of the region, and "employ new or innovative technologies and practices," again giving an advantage to larger water agencies. Thus, the advantage we saw among the three convening entities may not have been solely to their status as early drivers of the agenda, but also because they were the largest agencies in the region.

Finally, as a single case study, we do not observe a counterfactual with these data: what would have happened to grant allocation and water planning in San Diego absent the IRWM process? While our analysis suggests that the IRWM program did not live up to the inclusive ideals posited by the program's founders, it is entirely plausible that the program led to a more equitable distribution of resources than would have otherwise happened. The large water agencies likely would have still received the grant funding for their projects, but without input and co-sponsorship from smaller organizations they may have overlooked important societal interests.

Despite these limitations, these data provide important insights into the dynamics of

participation and inclusion in regional collaboration. According to the California Department of Water Resources, the ultimate goal of the Integrated Regional Water Management Program is to involve multiple agencies, stakeholders, individuals and groups to address all aspects of water resources and differing perspectives to derive mutually beneficial solutions. Despite the diversity of groups represented in the meetings, resource allocation remained skewed and mimics the traditional power hierarchy in the region. Moreover, we find that it is not just participation but the *type* of participation that truly matters. Showing up in outreach events or thematic workshops did not translate into influence. To gain influence, organizations needed to have sustained attention. The ability to have sustained attention and routine participation, unfortunately, is highly unevenly distributed in a society. Our data suggest that organizations or communities that have more resources and social capital were more capable to prevail in the long run.

This research also highlights the challenges of building collaboration in an externally mandated setting (Emerson and Nabatchi 2015). Many government agencies are increasingly requiring collaborative approaches for planning and implementing policies. Other researchers have shown that mandating that stakeholders work jointly often falls short in creating interactions that move beyond one-directional consultation (Brummel, Nelson, and Jakes 2012; Feichtinger and Pregernig 2016). Our case study likewise suggests that without strong incentives, leaving stakeholders to self-organize in a mandated collaborative process can perpetuate power and resource inequalities in the region.

These observations raise a fundamental question: is regional collaboration a fair and effective means of governance? We certainly aware that one case study is insufficient to answer this profound question. As in any empirical study, there is always a tradeoff between depth and breadth. What we offer here is a starting point to systematically answer this question empirically.

Methodologically, we have demonstrated the way that a variety of text mining techniques can be employed to dig deep into the collaborative process and trace how it evolved from infancy to maturity. Our method also allows researchers to use historical public records to examine meeting dynamics that they could not attend. Our future goal is to examine other IRWM regions in California, as well as in other states, and to investigate how regional collaboration thrives in different institutional settings. San Diego County is geographically and politically less fragmented than, for example, the Los Angeles metropolitan area or the San Francisco Bay Area. We will examine in future work whether collaborations in more fragmented regions exhibit similar patterns of leadership and resource allocation as we found in San Diego. By building a comparative view of regional collaboration, we can begin to understand when and how collaboration fundamentally shifts how we make decisions.

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Table 3. Examples of funded projects under Prop 84

Project Name	Project Description Summary	Lead Organization	Project Partners
Chollas Creek Integration Project	"to address water quality, flooding, and habitat protection concerns within the DACs surrounding Chollas Creek"	San Diego County Water Authority	Jacobs Center for Innovation; San Diego Coastkeeper; UC Davis; City of San Diego Planning Dept; Encanto Planning Group; City of San Diego Parks and Recreation; Urban Corps; Jackie Robinson YMCA; City of San Diego Stormwater Division Prevention; Groundwork San Diego Chollas Creek; University of CA; San Diego Unified School District; San Diego State University Consensus Organizing Center; National Park Service
Implementing Nutrient Management in the Santa Margarita River Watershed	"Use appropriate water quality objectives to address nitrogen and phosphorous loading from the Santa Margarita River watershed, which can result in low dissolved oxygen and increased algal blooms"	County of San Diego	Counties of San Diego/Riverside; Cities of Temecula/ Murrieta/ Wildomar/Menifee; Riverside Flood Control Dist; Rancho CA Water Dist; Camp Pendleton; Bureau of Reclamation; SDRWCB; Caltrans; Fallbrook PUD; So. California Coastal Water Research Project; Mission RCD; EMARCD; Trout Unlimited
Lake Hodges Water Quality and Quagga Mitigation Measures	Mitigate travel of quagga mussels to protect ability to transfer water between reservoirs and generate power & improve to water quality in Lake Hodges to improve reservoir's usability	San Diego County Water Authority	Santa Fe Irrigation District; San Dieguito Water District; City of San Diego; San Diego Coastkeepers; San Dieguito Watershed Council; San Diego Gas & Electric
North San Diego County Cooperative Demineralization Project	"focused on developing new local water supplies and managing water quality issues through the reclaimation of wastewater, brackish water, and urban runoff"	San Elijo JPA	SEJPA; OMWD; San Elijo Lagoon Conservancy Support by: San Dieguito Water District; Santa Fe Irrigation District; Cities of Del Mar, Encinitas, Solana Beach; Escondido Creek Watershed Alliance; Caltrans
Regional Water Data Management Program	Create a "web-based system [that] will make data instantly available to interested stakeholders and will make data instantly available"	County of San Diego	City of San Diego; San Diego County Water Authority; San Diego Regional Water Quality Control Board; EcoLayers