What We Do in the Shadows

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Introduction

A few years ago my supervisor asked me to begin recording where I was spending my time. We never did follow-up, but the question was interesting and I kept records over a couple years. When I left the company a few years later, I found time to dust off the data and poke-around in it. General ideas that we had about our business naturally appeared in the quantitative analysis as expected. Comparison of a few particular projects illustrates the value these measures.

1 Data Collection

Research administrators naturally acquire a sense of where their effort goes month after month. In addition, business decisions are made with that infomation, but the measures are not always made with precision over time. This study tests one data collection effort over 12 months in a small ($\approx$100 personnel), non-profit grant-supported company. I was the Grants & Contracts Manager for a portfolio of both public and private projects, with the usual role and responsibilities of a sponsored program office. Effort in this study includes two company initiatives to expand business services. I collected data for one year, and then revamped the collection categories the next year for the data that is the basis for this study 2018-2019. Data collection was not onerous, and standardized categories could be used across department or institutions in effort analysis.

1.1 Database Categories

Defining effort categories was the first step. The major business directions of the company were named, along-with an internal operations category for the research administration activity. The six categories are:

- administrative tasks, (Admin),

- grants (Grants)

- consortium initiative (Case A),

- services initiative (Case B),

- ancillary projects (AddOns), and

- subcontracts (Subs)

Admin tasks include meetings, filing, regulatory, agreements, budgeting, invoicing, reporting not associated with particular projects (including weekends!). These activities should be generally familiar to research administrators. They include general activity with pre- and post-award compliance not associated with a particular project. Registration in SAM.gov, for example, or account management in the eRA Commons is included in Admin. General reporting, payroll meetings and budgeting activity is also included. Activities in this business category might be the easiest to standardize for research administrators. They also provide the foundation for other categories.

Other categories reflect the business interests of other departments. They include all the administrative categories, and add categories where needed. The first year of data collection helped to focus the number of activities to capture general trends. Two company initiatives, for example, required a name for business development activity. Grants naturally needed a proposal activity category. Activity like training, or presentations and travel, were not significant for me. Other departments would have other activity to add in a standardized format. These general categories captured activity in my office in most cases most of the time.

Company business can be described in a generic way. Administration and grants activity are the two most familiar categories for grants & contracts business. The Case A initiative in this study represents an effort to establish a consortium of sponsor-investigators who wanted to design clinical trials in collaboration, and thereby facilitate enrollment. Case B was also an effort to support clinical trials, but in this case the trials were commercially sponsored. Ancillary projects were sponsor-investigator trials led by other institutions that this company supported. Subcontracts to private non-profit foundations, international associations, and private reserach institutions or hospitals include sponsored research activity much-like the grants business except that activity tends toward contracted scope of work compared to key research activity. Six business interests were measured in this study.

1.2 Categories by Activity

I also defined a list of activities as the primary qualitative category for entering effort amounts. This was the category I would use as soon as possible after an event when reflecting on the question, 'What am I doing?' The list includes:

- Agreeements (Agm),

- Budget (Bgt),

- Development (Dev),

- Filing (Fil),

- Invoicing (Inv),

- Meetings (Met),

- Proposals (Pro),

- Regulatory (Reg),

- Reporting (Rep), and of course,

- PTO and Weekends (Wee).

The activity types were prospectively chosen with a general sense of how I would describe what I do. These should be familiar categories to research administrators, and it's not surprising that activity is dominated by Agmts, Bgts, Proposals, and Meetings.

Activity	Number of Events
Agreements	843
Budgets	513
Proposals	328
Meetings	407
Other	543
Total	2,634

Subdivisions of activity were also recorded for project-specific analysis. Different entries were recorded for active projects versus pending, for example. Account codes were used to further define active project types. Sponsor name was also recorded, and was used in this study to select a subset of data. There are 73 sponsors, but only eight that appear with a frequency of around 100 or more (5 sponsors have a frequency around 200, including admin - which frequently gets tagged for events like a budget meeting regarding all projects). I also recorded "notes" that I hoped might be useful with a consistent naming convention. There are over 100 different notes that record things like, "closeout", or "contractor", and "protocol". Note and Project categories won't concern us in this paper. They are mentioned here as a possible standard model if that is recommended for collaboration.

1.3 Recording Effort

That's all there is to say about the categories, and some comment on how effort is recorded is needed. We've already mentioned how there are 2,634 events, and these over 365 days. Because this type of data collection can be tedious, and distract from other priorities, some standardization is useful. In my experience, it was most useful to count by quarter hours. This left me with just a few choices to make for short task (either 0.25, 0.50, or 0.75), and whole numbers with any quarter hours for longer tasks. Meetings were an hour, for example, and status checks on pending redlines or filing might only take a quarter of an hour. There were, of course, days with a single grant due where one entry of 8 hours would suffice. Overall, there were 1,918.25 hours recorded in the 2017-2018 year, including PTO, and excluding weekends. That seems about right for the NIHdefined calendar effort, and the more general 2,000 hours I use for annual workdays.

In summary, time increments of a quarter hour are used to measure effort in this study. Several qualitative categories were also used, but only the 10 Activity variables are analyzed in this study. Activity is the primary qualitative varuakbe used to compare effort distributions in major areas of the company's business. Data collection was designed and prospectively collected, and data entry itself fell below the minimum effort.

2 Interpretation

Data interpretation proceeded according to a rough understanding of statistical methods. If this proves useful then methods could be refined, and the process exported to other departments. First, we look at variance to identify outliers and obvious trends. A number of category comparisons illustrate how effort is distributed over the six company business elements. A few particular cases by project are investigated to uncover the value of this approach.

2.1 Check for Variance

The total of 1,918.25 hours recorded is consistent with the expected number of work hours in a year. We tested the 2,634 events by days and by month, and it appears that the average number of events is constant over time.
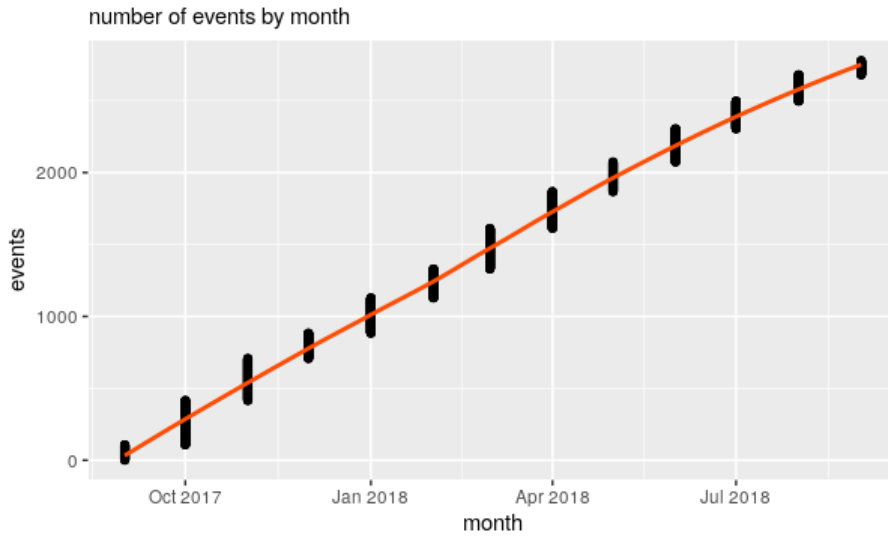
Figure 1: Number of events recorded each month - with loess line

Total and Mean effort by business interest (i.e., Administrative, Grants, Case A, Case B, Ancilaries, and Subcontracts) are:

Admin	Grants	Case A	Case B	AddOns	Subs	Total
530	381	482	156	189	180	1,918

Table 1: Total effort hours by business interest

Admin	Grants	Case A	Case B	AddOns	Subs
46	26	43	10	14	13

Table 2: Median effort by business interest

2.2 Divide and Conquer

Based on this distribution, the business interests are divided between: (1) Admin, Case A and Grants, versus (2) AddOns, Case B and Subs. Two graphics illustrate the difference:

Activity roughly is equivalent across dates. We get a hint here that there was a lot of administrative activity in the Spring and Summer possibly correlated with a lot of activity in the effort to establish consortium (Case A). Indeed, there was an annual meeting during that time, as well as a push for membership. Grants and Subcontract activity was relatively stable with peaks in November and July for grant activity associated with reporting and renewals on the company's largest project. We can also see that effort on
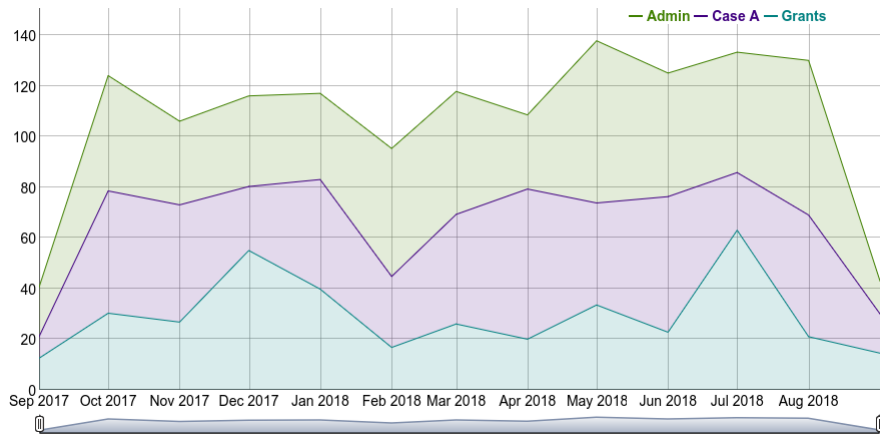
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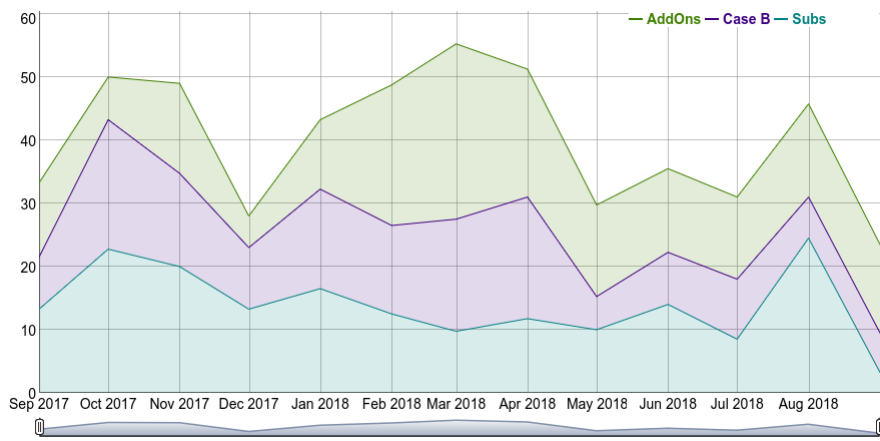Figure 2: Effort by month for Administrative, Case A and Grants

Figure 3: Effort by month for AddOns, Case B, and Subs

the ancillary AddOn projects was light early in the year, and then a bollus of activity occured in Spring. (The scale bar at the bottom is an interactive tool. To view the interactive version visit http://staff.washington.edu/mounce/Graphics/graphics.html)

2.3   Survey the Landscape

We verified that the general levels of activity do not significantly vary. That is, some activity occurs in each business category, and we distinguish two groups that receive large and small amounts of effort. Activity within categories of business interest can also be distinguished. They significantly vary by interest category. Several tables illustrate the differences.

In the major business interest group associated with my office, meetings dominate the

activity, and are the second largest activity in the Case A initiative to establish a consoritum. Consortium activity primarily involved the negotiation of member agreements and bylaws. Grant activity was highest in the area of proposals, with budgeting second, and agreements third. Admin also supports all the PTO.

AddOn projects (suppor for sponsor-investigator trials at other institutions) utilized a standard template agreement, and negotiation regarding the language for services was not significant. Effort primarily involved my office in coordinating budget estimates among the company's four or five departments. Likewise, the Case B commercial clinical trials only required my office to support the agreements, with with a secondary role in budgeting – resulting in fewer meetings compared to the Case A initiative. Sub-contracts for private, non-profit foundations and international associations, as well as private research institutes and private hospital research programs, required more effort in agreement management compared to grants, with budgeting and reporting categories making up the balance of effort.

Admin	Effort
Agm	12
Bgt	2
Dev	92
Fil	27
Inv	7
Met	208
Pro	2
PTO	156
Reg	14
Rep	12
Total	530

Case A	Effort
Agm	251
Bgt	53
Dev	1
Fil	1
Inv	9
Met	110
Pol	1
Pro	12
Reg	28
Rep	19
Total	482

Grants	Effort
Agm	31
Bgt	68
Fil	2
Inv	6
Met	12
Pol	4
Pro	225
Reg	6
Rep	31
Total	382

Table 3: Activity by major business interest

3 Project Example

My interest in collecting this data was to investigate project details in the company's interest, but a few general features are worth noting. It's not surprising, for example, that there are high levels of actvitiy in grant proposals and administrative meetings, two categories that should be familiar to most research administrators. In reporting to management, I can also use this data to justify that my position supports a significant part of the company business in submitting proposals for grants, and I might add that we should consider having fewer meetings. Management is going to notice that the majority of my time was spent on agreements for the clinical trials consortium. It would be natural to inquiry why. The data in this study illustrates how a reseearch administratior can use

AddOns	Effort
Agm	27
Bgt	128
Fil	2
Met	5
Pro	25
Rep	3
Total	189

Case B	Effort
Agm	79
Bgt	28
Fil	1
Inv	11
Met	21
Pro	7
Reg	6
Rep	5
Total	156

Subs	Effort
Agm	68
Bgt	57
Fil	2
Inv	7
Met	7
Pro	4
Reg	1
Rep	38
Total	180

Table 4: Activity by minor business interest

this measure to answer questions about general business interests as well as particular projects.

One sponsor in the Case A category, for example, incurred twice as much effort as any other project. This was due to the negotiation of a complex, three-way agreement between two pharmas, the sponsor-investigator, the sponsor-investigator's institution, and our company on behalf of the consortium. An entrenched position by one of the pharma companies regarding publication, intellectual property and indemnification resulted in significant negotiations and meetings over the entire year.
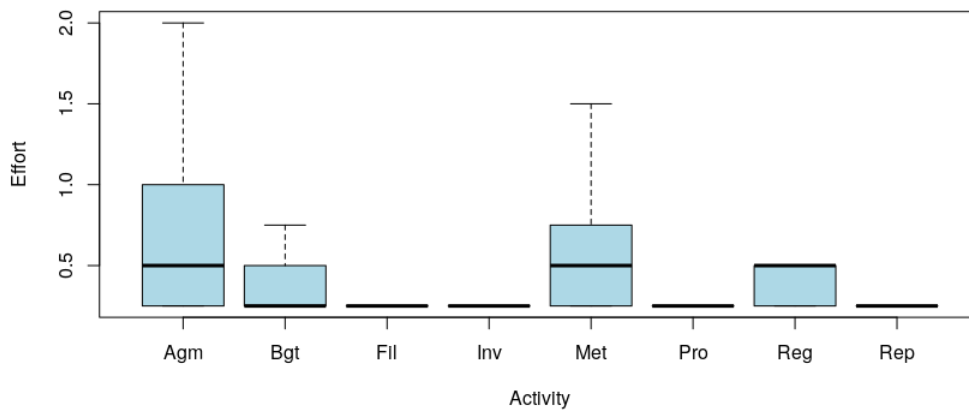

Figure 4: Effort by activity for a sponsor-investigator clinical trial agreement

Second to the effort for this project management was effort applied to managing general membership in the consortium. Negotiating member agreements involved accomodating

a variety of institutional requirements while maintaining consistency with the consortium bylaws. As new members would negotiate changes to the template, the template would change, and amendments issued in fairness to members who had accepted the original terms and conditions. If this also required a a vote on amended bylaws then additional effort was needed. This, of course, required multiple meetings.
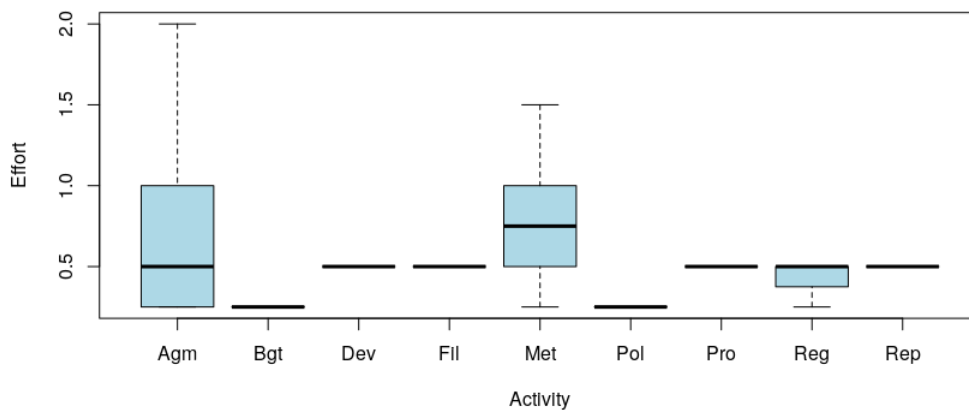

Figure 5: Effort by activity for clinical trials consortium agreements

In contrast, consider a distribution of grant administrative effort with a non-profit, international association. Sponsored project activity here included a significant number of Data Use Agreements, but primary effort was only needed for budgeting the cost. There were a lot of agreements, but they didn't take a lot of time. Sponsor reporting was also standardized over the years, and other routine business was managed during a general weekly meeting - so the effort there was recorded as administrative. There weren't even any invoicing issues that year.
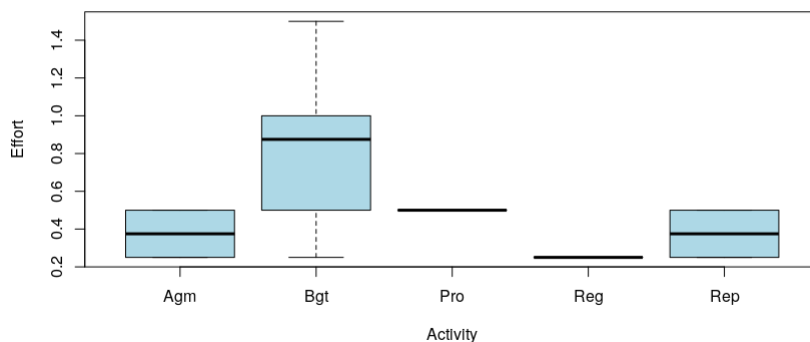
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Figure 6: Effort by activity for an international association

4 Summary

These project examples illustrates how measuring effort in research administration can provide meaningful business information. We interpreted the data to identify large-scale divisions in the categories of business interest by recording data in 10 categories of activity types. Data collection over two years did not interfere with the demands of research administation. General ideas about the company's business were given quantitative answers. This study is one example of effort analysis in reserach administration.

4.1 Collect Data

Research administrators are uniquely positioned to make decisions about effort measures. General categories of business interest were apparent in this study, but are expected to naturally recommend themselves at other research institutions. We chose six categories for this study, and recorded effort by quarter hour to provied a consistent measures that were easy to enter. Up to 10 activity types were created, and we also collected data in 68 divisions related to account codes and project names that are not included in this study. There is also a list of 73 different sponsors, and this list was only used to create the two data subsets for the bar plots. Standardized data collection in other departments, and across institutions, could expand the value of this study with consistent naming conventions for data collection. Further value is expected if data collection continues over time.

4.2 Interpret Meaning

We checked for effort variance in this study, and found it evenly distributed over the business interest categories by day as well as month. A division was identified between two groups based on amount of effort. These groups were further investigated by type of activity. Some expected interpretations were confirmed; administrative activity involves a lot of meetings, and grants activity is dominated by proposals, with budgeting and agreements closely following. Other distributions of effort by activity in categories of business interest were expected, and this study only is a glimpse of what other investigations are possible. One category of business interest was identified to have a possibly ideal distributon in sponsored program effort between agreement management, budgeting, and reporting. Perphaps this category could flourish with more proposals. We investigated two business initiatives, and identified a significant amount of sponsored program effort in one of them.

4.3 Judge Result

The consortium initiative incurred significant effort in agreement management and meetings. Meetings were expected, but we examined one of the sponsored projects that incurred significant effort in order to illustrate the value of recording effort. Membership agreements in the consortium required over 100 hours of agreement management. A separate data collection of effort I undertook records the number and types of interactions with each member, and illustrates which institutions are efficient collaborators when it comes to contracting. The current study allowed us to investigate one sponsor of an investigator-initiated clinical trial. As expected, most of the effort involved agreement negotiation, as we knew from many meetings regarding publication, intellectual property and indemnification. Finance data was not included in this study, and it's possible that this project trial resulted in significant revenue compared to cost. That would be unusual for an investigator-sponsored trial, but the value effort analysis could increase if it were linked with other departments, and accounting would be a natural, first choice for exporting this process.

5 Conclusion

Quantifying and recording research administration effort by business interest category supports intelligent business decision making. We collected data over one year and interpreted results for general administration, business initiatives, and sponsored projects. The collection of effort was not onerous. Adding accounting data would increase the value of this type of study, and standardizing the categories would benefit the study over time. This study reports on the value of measuring effort in research administration.