



Computer Karma: Non-Monetary Benefits from Statistical And Information Technology Volunteer Work

Brandy is a statistician and database programmer at the University of Michigan Medical School. She has worked on a wide variety of research projects. She holds a bachelors degree in engineering, and masters degrees in both mathematics and statistics. The American Public Health Association awarded Brandy a student research award for her statistics masters thesis on path analysis. She has also received “Advanced Analytics” and “Data for Good” awards from the Midwest SAS Users Group conference.

Outside of work, she enjoys playing the piano, composing music, singing in choir, yoga, tai chi, cardio karate, and making greeting cards. The baby is Brandy’s new niece.



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Outline

- 1) Definition of Karma.
- 2) Knowledge and Experience.
- 3) Networking, Hidden Job Market.
- 4) Help with Over-Employment.
- 5) Closing Comments.



What Is Karma?

- Karma = Natural consequences of one's actions.
- Some of our actions towards other people, other beings, and the planet return to us.
- What goes around comes around.
- Example 1: Those who open doors for others will have doors opened for them.
- Example 2: Those who send greeting cards will receive them.
- Example 3: When a rubber ball is thrown against a wall, it rebounds.



More on Karma

- Karma is not a 100% guarantee. Some things that happen to us can be explained by karma, some can not.
- Terrible things happen to both good and evil people.
- Why? Answer lies in realm of faith and philosophy. Beyond the scope of this presentation.
- Focus of presentation on non-monetary benefits from statistical and information technology volunteer work, jokingly called “Computer Karma.”



What Kind of Karma will Help a Data Scientist? (Part 1)

- In order to be a successful data scientist, one must be aggressive in seeking out new knowledge and always searching for ways to expand one's skills.
- Attend local American Statistical Association (ASA) and Statistical Analysis Software (SAS) meetings, conferences, classes.
- **Volunteer projects are not a replacement for paid educational training nor for attending meetings. Volunteer work supplements paid training by providing an opportunity to apply what has been learned without the pressure of a deadline in a paid job.**
- Networking for Jobs. Learn options for employment + which employers are best fit.
- Referral network when data scientist is pressured into extra jobs.



What Kind of Karma will Help a Data Scientist? (Part 2)

- Karma can help a data scientist to survive a lay-off. Since originally writing this presentation in 2018, the author experienced a surprise lay-off in 2019, but survived.
- Employers that focus on good works, rather than profits, sometimes lay people off more humanely.
- Be recognized as a familiar face when interviewing. “Oh, I recognize you from the SAS users group meetings or from the American Statistical Association meetings.”
- References from volunteer work, in addition to references from faculty, staff, and students.
- Volunteer network can provide referrals to new jobs.





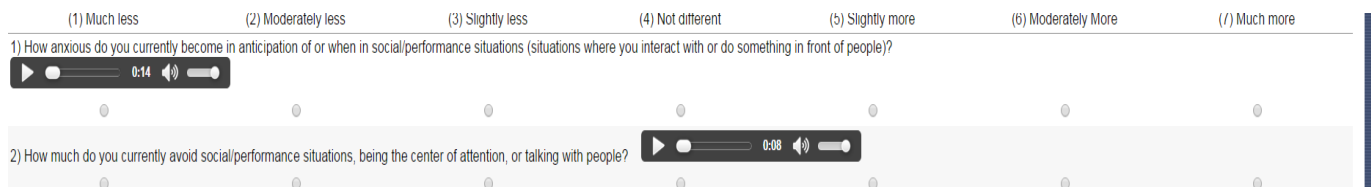
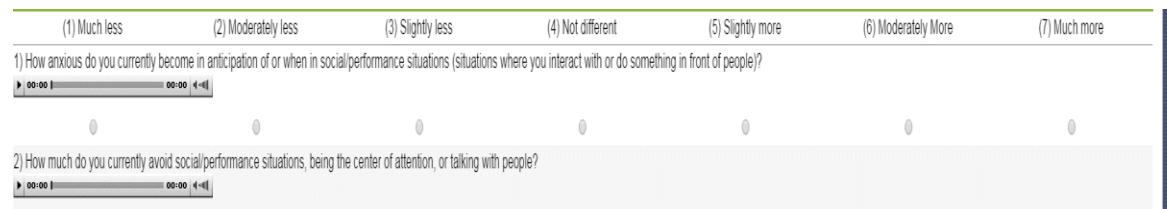
My First Encounter with Computer Karma

- First Eureka moment occurred after working as a volunteer for the database committee at my congregation.
- Did not expect any benefits other than helping the congregation to save money by using volunteers, instead of hiring people, and that I would expand my circle of friends.
- One day, one of the volunteers, Jim, opened Windows Explorer by right clicking on Start /Explore. I had always clicked on Start and then selected Explore from the Start menu.
- Although I never expected this to be useful on a job, several years later, I was sent to a community health center in Southwest Detroit to install an Access database that I had created for a health study.
- When I clicked on Start to get to Windows Explorer, “Explore” was not on the drop-down list. Then, I remembered that trick that I had learned on the database committee, right clicked Explore, and this saved me from an embarrassing call to tech support.



Audio Links and Computer Karma

- Learned how to create audio links on web pages by working on a web page for my congregation with audio links to sermons, for the benefit of people who could not attend or who had hearing impairment.
- Initially, I did not expect any benefit at work from this volunteer project.
- Fast forward a few years ... At work, we decided that the best way to make Qualtrics web surveys accessible to study participants with social anxiety and low literacy was to add audio links for the interview questions and response choices.
- Default audio link in Qualtrics is Shockwave (top), compared to standard audio below.

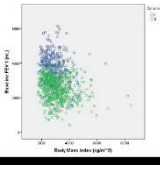




Qualtrics Twilight Zone

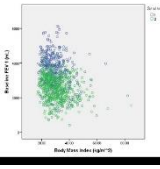
- Interrupted from lunch hour with an emergency tech support call. My Qualtrics interviews had been terminating with the error message, **“Shockwave has crashed”**.
- Qualtrics Twilight Zone. Tech Support stumped.
- Flashback to using standard audio links for volunteer project.
- Problem solved by replacing Shockwave links with standard audio links.
- Lesson learned – default options are not always the best.





Continue Working on Grants as Volunteer After Funding Ends

- Purpose of study to find which college policies and resources were associated with less hostility and microaggressions towards LGBT (Lesbian, Gay, Bisexual, Transgender) college students. Also, which policies and resources associated with better self-esteem and lower psychological distress.
- Data analyzed with SEM (Structural Equation Model).
- Before SEM analysis, needed to check for significant correlation within state.
- Intra-Class Correlation = (Variance Due to Student in Same State) / (Total Variance).
- Let σ_b^2 = Variance due to students within the same state.
- Let σ_e^2 = Error Variance.
- $ICC = \sigma_b^2 / (\sigma_b^2 + \sigma_e^2)$ = Correlation coefficient from effect of students in the same state.
- Through this project, I learned about how to compute the ICC in SAS, along with how to do a likelihood ratio test for significant clustering effect by state.



Continue Working on Grants as Volunteer After Funding Ends

- A few months later, I was invited to be an analyst on a totally unrelated, paid project on using virtual reality interviews to help autistic high school students handle job interviews.
- The project leader asked me if I had any experience in computing and testing intra-class correlation coefficients.
- I showed him my SAS code, publication, and response to the reviewers, and I got the job.
- Computer karma helped me to stay employed, in addition to working on a social justice research project.
- MWSUG paper link on LGBT college students, policies & resources, hostility & microaggression. Midwest SAS Users Conference, Data for Good Track, St Louis, MO, 10/9/2017. <http://www.mwsug.org/index.php/2017-proceedings.html#DG>

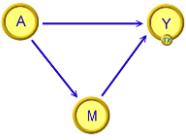


SAS® Code to Test for Clustering at the State Level

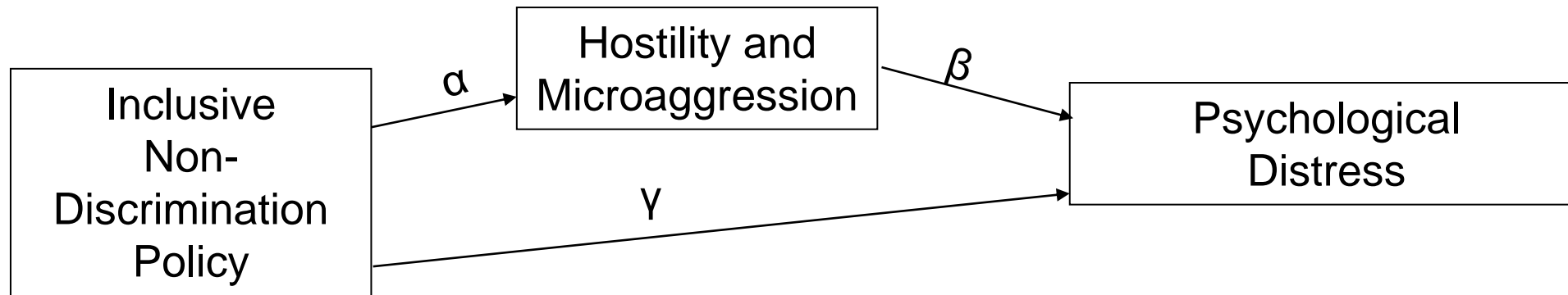
```
/* Random Intercept for State (AKA Clustering at the state level) */  
Proc Mixed Data=StateEnviro Method=REML NOCLPRINT;  
Class college_location;  
Model LGBQ_Hostility =POLICY_gi Domestic_partner_benefits LGBT_Office2  
Ally_programs LGBTQ_courses Alumni_Name_choice StudentOrgRatio/solution;  
Random int/subject = state; Run;
```

```
/* Model without Random Intercept for State */  
Same as above, but omit Random int/subject = state;
```

```
/* Likelihood Ratio Test for Clustering by State */  
Proc IML;  
LRT_Full=500.2; LRT_Reduced=500.9;  
LRT=abs(LRT_Full-LRT_Reduced);  
p_value=.5*(1-probchi(LRT,1)); /* p=0.2014 */  
print LRT[format=7.2] p_value[format=7.4]; quit;
```



Test Indirect Effects with Bootstrapping



- During the publication revise-and-re-submit, a reviewer asked me to calculate indirect effects from the policies and resources by bootstrapping.
- Bootstrapping means taking a huge number of samples with replacement and then estimating the parameter and confidence interval from the samples.
- So, I learned how to estimate bootstrapped indirect effects in SAS.
- At work, when I was unexpectedly asked to help with the statistical analysis section of a grant from an unrelated study on prisoner recidivism, and grant contained a section on mediation analysis with bootstrapping.

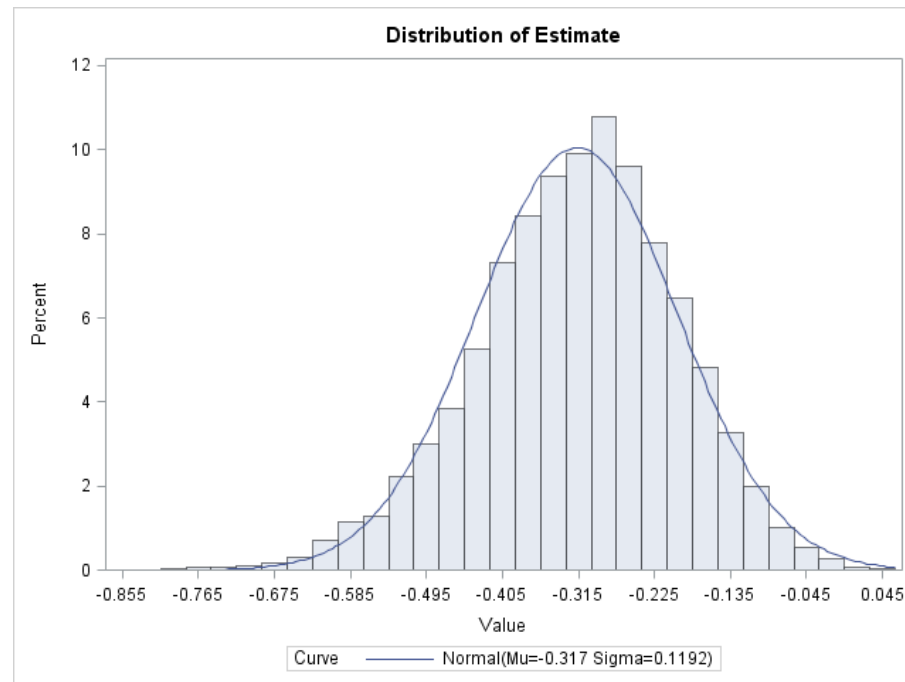


SAS® Code for Bootstrapped Estimates 1 of 2

- ***** Bootstrap Begin ***;**
- ***** First, take 10,000 random samples with replacement ***;**
- PROC SURVEYSELECT data=Brandy.StateEnviro_ForSAS Seed=12212017
method=urs n=268 reps=10000 out=bootsamp10000 outhits; run;
- ***** Run SAS modeling procedure by Replicate ***;**
- proc calis data=BootSamp10000 method=fiml;
- ... Modeling code ... Add "By Replicate" + ODS Output of estimates
- **By Replicate;**
- **ODS Output ParmFunc=ParmFunc1to10000;**
- run;

SAS® Code for Bootstrapped Estimates 2 of 2

- `/* Histograms Descriptive Statistics, P2.5, P97.5 percentiles */`
- `Proc Univariate Data=H1_CourseOnDistress;`
- `Var Estimate; Symbol1 V=Dot;`
- `Histogram / Normal(Mu=Est Sigma=Est Color=Red) CFILL=Blue;`
- `output out=Pctls pctlpts = 2.5 50 97.5`
`pctlpre = PolicyOnDistress pctlname = pctlL median pctlU; run;`



Post-Employment Revise-and-Re-Submit

- Cost effectiveness paper from Diabetes study.
- Revise-and-re-submit came after I finished working on the project.
- Learned about importing datasets from Proc Mixed and creating matrices in Proc IML.
- **Karma:** Publication on cost effectiveness to add to my resume and colleagues impressed that I went the extra mile to help.
- Cost-Effectiveness of a Diabetes Self-Management Education and Support Intervention Led by Community Health Workers and Peer Leaders: Projections From the Racial and Ethnic Approaches to Community Health Detroit Trial.
- Diabetes Care 2021 May; dc200307.
- <https://doi.org/10.2337/dc20-0307>



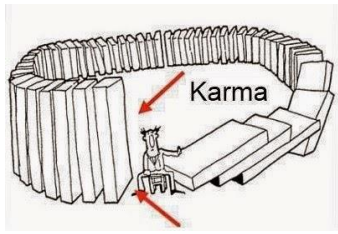
Network for Tech Support + Cost Effective

- Important to have a network of colleagues to discuss technical questions.
- Through the MISUG (Michigan SAS Users Group), met Nancy and Barry.
- Nancy referred me to conference papers to help me get started with Proc Compare.
- Barry responded to my question about converting SAS syntax to SPSS.
- Cost Effective. Training classes, webinars, seminars range in cost from under \$100 to several hundred or more. Volunteer work that leads to knowledge that can be applied in one's current or future job has monetary value.
- People with statistics degrees sometimes end up in jobs, in which they do mostly database programming or other programmer work, but don't use much high-level statistics. Volunteer projects offer a way to keep one's statistical skills polished and expand one's skills. If the volunteer work leads to a conference presentation or a journal article, it can help a person find paid work as a statistician



Type 2 Karma: Networking / Hidden Job Market

- Best way to find a job is through networking.
- Searching for jobs through newspaper ads (20th century) or web postings (21st century) leaves out employment opportunities known only to internal employees at an organization or a company.
- Find out where friends and colleagues, who one meets in volunteer groups and professional societies work, and what their workplace cultures are like.
-
- This is the best way of finding a workplace where one will fit in well.



Finding Paid Jobs Through Volunteer Work

- Connie, found out about website job through friend in volunteer website group.
- Hope met a hiring manager at the University of Michigan MCIT (Medical Center Information Technology) group through the Volunteer Computer Corps and got a job at MCIT.
- My own job at the University of Michigan.






Over-Employment

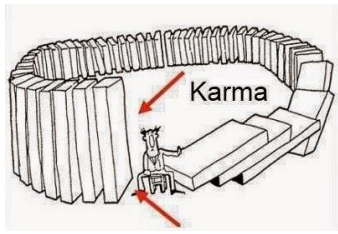
- Like nutrition, protein and vitamin C, employment is essential for survival.
- Just as too much protein or vitamin C can become toxic, so can an excessive level of employment that is far beyond what is needed to pay for a humble home and humble car.
- Over-employment means being pulled into extra jobs that are not part of my main 100% appointment, aka outside consulting or moonlighting.
- I try to avoid over-employment because it prevents me from giving everything I have to give to my main job, where 8 – 5 is sometimes not adequate.
- → Loss of main job by burnout and lower quality of work, or by conflict of interest violation.





Type 3 Karma: Finding Others for Over-Employment Jobs

- Because of the natural consequences of my actions, of my karma, I am connected to a large network of people who do similar work to mine through the SAS user group, the ASA, and my congregation's web volunteer group.
- Some of the people who come to those meetings are between jobs, semi-retired, or who want a second job for weekends or evenings.
- To them, a temporary part-time job would be welcome as a life saver or as supplementary retirement income.
- Even when I'm not dealing with over-employment, I solicit resumes so that I am prepared with referrals when I am faced with over-employment.
-  Monetary value. If I didn't have a network to help me fill over-employment jobs, I might have to pay a recruiter.



Type 3 Karma Examples

- 1) While on my way out of the building after coming in before 8 and leaving after 5, a professor approached me and asked if I wanted an extra job doing statistical analysis.
- I asked if she would consider a referral to someone with excellent qualifications, who didn't already have a job.
- Referred the professor to Anamaria, semi-retired consultant who I had met at the local ASA and SAS user group meetings. Anamaria was thrilled!
- 2) A colleague approached me about teaching an Access database class in the evening.
- I sent out an e-mail to my congregation's web volunteer group. Someone responded, who had conducted Microsoft training and was currently between jobs.
- 3) When Connie (mentioned earlier) took the part-time web job in my department, this was another win-win situation resulting from computer karma. Connie got the part-time job that she wanted and needed, while I didn't have to risk the extra job interfering with my main job

- Considering the non-monetary benefits from statistical and information technology volunteer work, aka computer karma, I recommend this as part of “employment self-defense” – to maximize the probably of continuing to be employed.
- The knowledge, experience, networking, and assistance with over-employment have monetary value, even though there is no income to report to the IRS on a 1099-KARMA form.
- A modest amount of time on volunteer projects can help to ensure continued employment.
- I plan to continue volunteering and expect to paid richly in units of computer karma.



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- Link to MWSUG Paper on Computer Karma:
- <https://mwsug.org/proceedings/2018/BL/MWSUG-2018-BL-28.pdf>