

Santa Clara Valley Medical Center: My Fall 2014 Internship

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Internships: Where to begin?

- Where are opportunities available?
- How are interviews structured?
- What do clinical trial statistics interns do?

The search

- **Challenge – Reaching the hidden job market:** Most positions aren't posted, but found by networking. Advertised openings are oversubscribed.
- **Tip 1: Apply to SCVMC!** Our group is seeking interested student interns. I found the position from the department after having applied elsewhere.
- **Tip 2: Use conference placement services:** Did you know the American Statistical Association, Conference on Statistical Practice, INFORMS, and Joint Statistical Meetings let you search jobs and post resumes?
 - **Why use this approach?**
 - (1) Employers respond
 - (2) Networking for statistics jobs
 - **The downside:**
 - (1) Posting fees
 - (2) Many jobs outside California

What I like:

- 36 people viewed my resume at JSM. Some contacted me.
- One interviewer said JSM is a good place to find statisticians

The search

- **Tip 3: Try multiple standard resources**

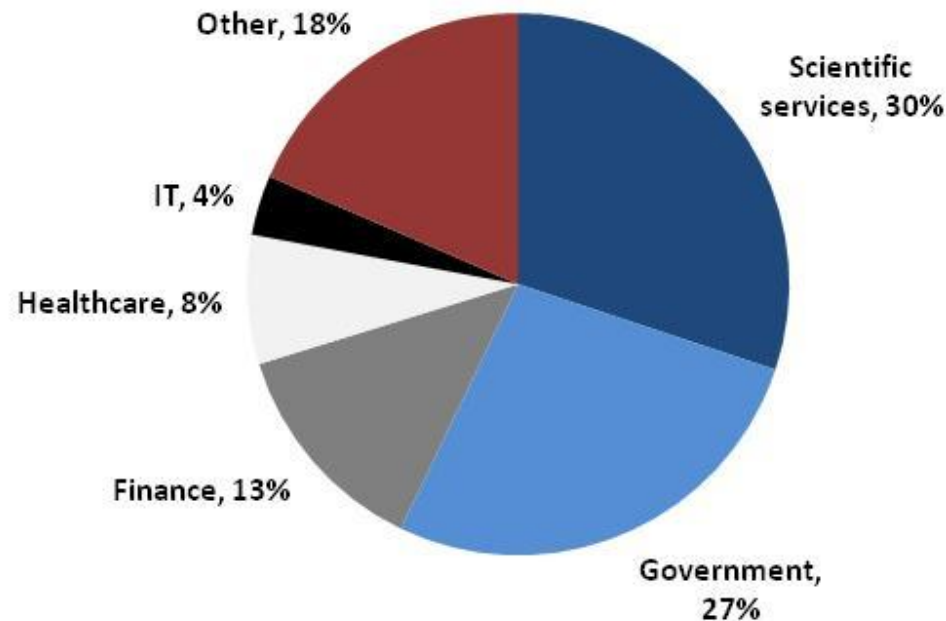
Approach	Resources
Networking	<p>Campus: Classmates, internship talks, job fairs, professors</p> <p>Area groups: ASA (join their sections and Young Professionals Group), BAD Math/BAMBA meets, Bay Area R and SAS Users Groups</p>
Job boards	<p>Campus: Internship mailing list, Nacelink, SpartaJobs</p> <p>General: CalJOBS, Craigslist, Glassdoor, Indeed, LinkedIn</p> <p>Internships: Internbound, Internmatch</p> <p>Technical: Magazines/journals (<i>Amstat News</i>), Icrunchdata</p>

The search

- **Tip 4: Consider finance, health, or IT firms**

Statisticians by sector

Source: BLS

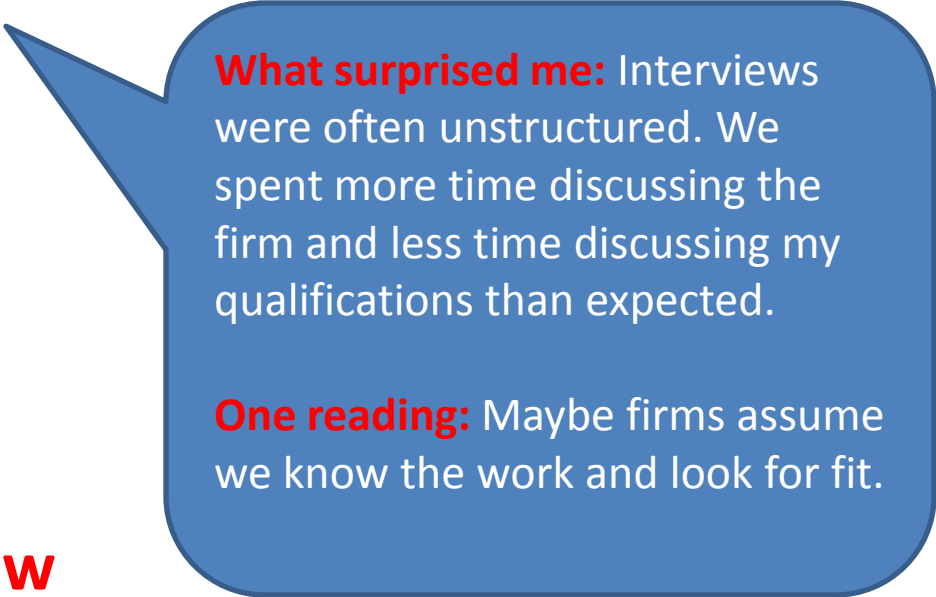


Great reading: *A Career in Statistics: Beyond the Numbers* (Hahn and Doganksoy)

Interviews

- **The fit interview**

- Company
- Resume
- Teamwork
- Goals/why this job?
- My questions



What surprised me: Interviews were often unstructured. We spent more time discussing the firm and less time discussing my qualifications than expected.

One reading: Maybe firms assume we know the work and look for fit.

- **The technical interview**

- **p-values**
- **Regression (linear, logistic):** Assumptions, model adequacy/residual plots, nonconstant variance, R^2
- **Data mining:** Supervised vs unsupervised algorithms

Projects

- **First project:** Revise a paper to satisfy three reviewers' comments
- **Problem:** Does walking reduce fatigue after traumatic brain injury?

To quote: (1) "Had [certain specified] differences been adjusted in the statistical analysis (ANCOVA rather than ANOVA), the results may have been quite different."
(2) "Re-analyze the data so that the primary analyses focus on walking versus nutrition [our control]."

- **Approach:**

Step	Thought process
Run ANCOVA	Choose covariates from ten candidates using stepwise selection. Rule out multicollinearity.
Run contrasts	If simple contrasts (time * order, baseline to the end of treatment) have $p < 0.05$, conclude walking and nutrition effects are different.

Projects

- **Second project:** Prepare a power study for a grant application
- **Problem:** What sample size gives 90% power in a trial of Ekso™ exoskeletons?

To quote: “We intend to utilize a single-blind, multiple-baseline, randomized, pretest and posttest, control group design to enroll xxx study participants.”

- **Approach:**

Step	Thought process
Find a model	Mixed ANOVA captures pre-post test repeated measures
Estimate effect sizes	Find data from pilot studies or literature reviews. Compute Cohen's f for each primary outcome variable.
Compute sample sizes	Feed α , Cohen's f , and power into calculators like GPower (under the hood: hypothesis testing, noncentral F distribution)

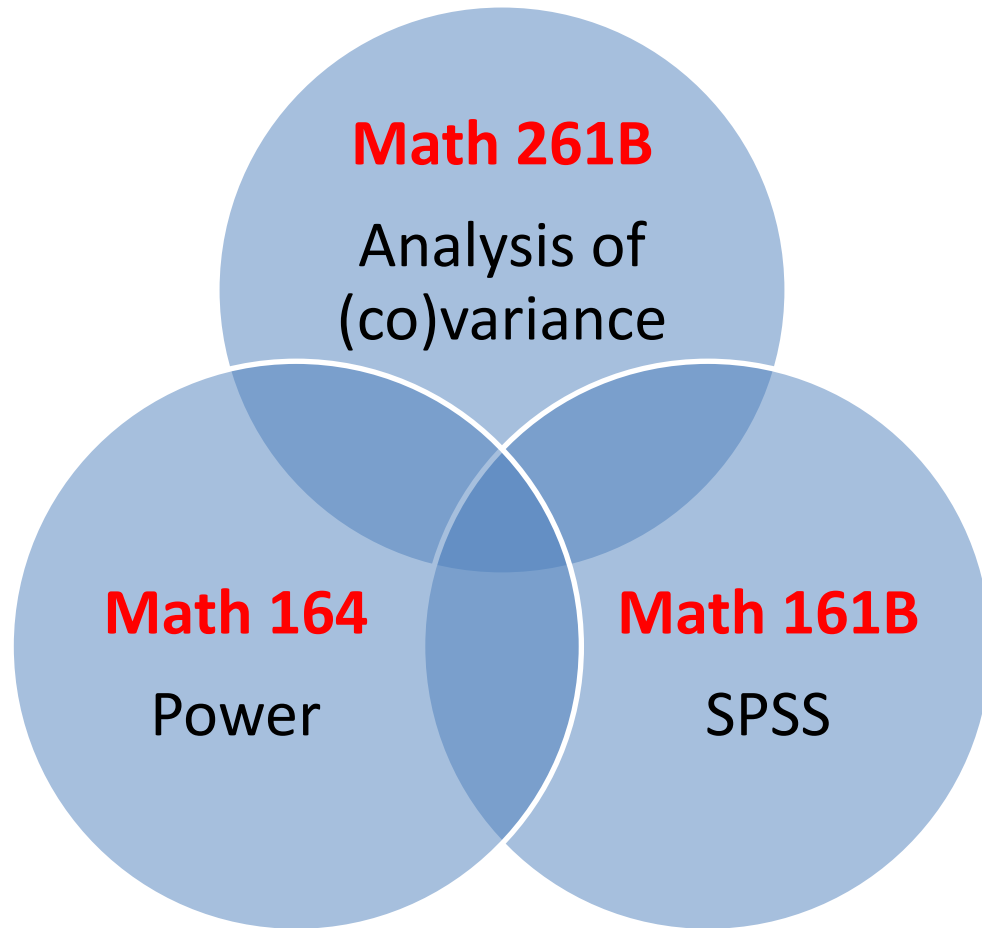
Projects



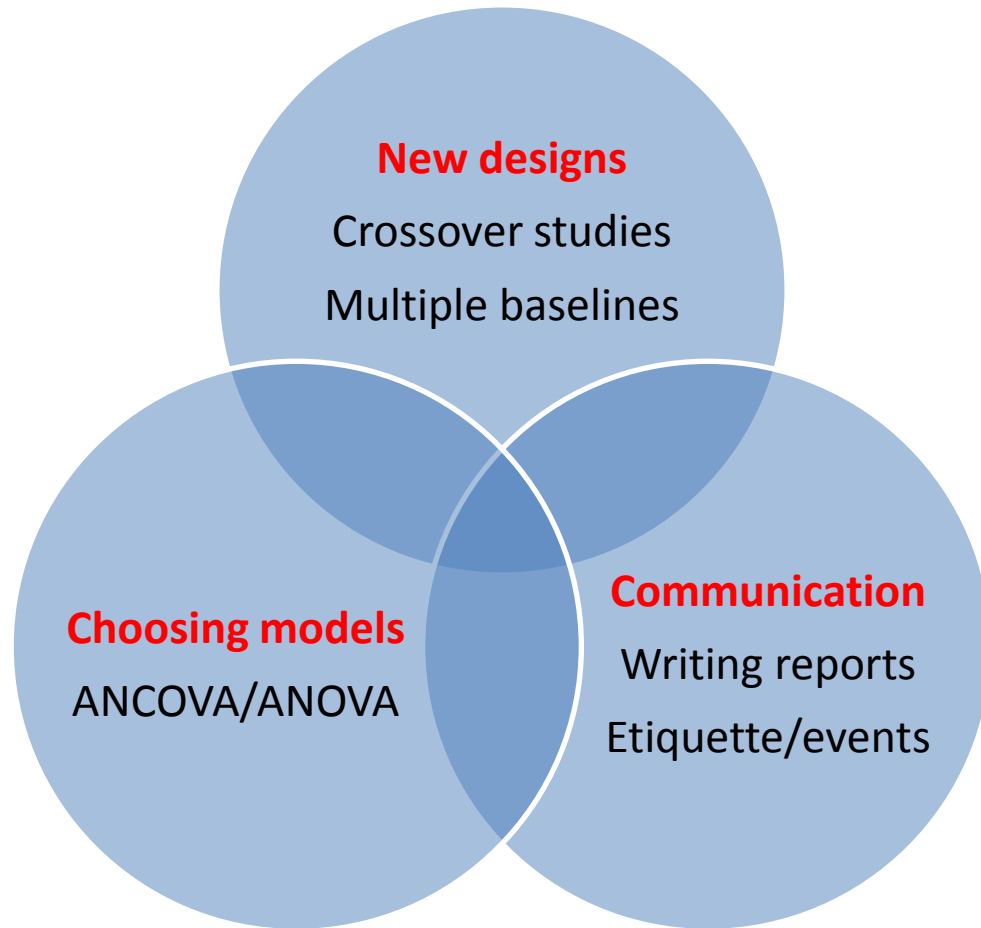
Device of the future?

- Ekso Bionics™: Founded 2005 out of Berkeley's Robotics and Human Engineering Laboratory
- **Not for amateurs:** *Time's* top 50 inventions, *Wired's* Top 10, 2010! But costs \$100K+, trials underway.

Class learning



On-the-job learning



Contact information

- **Internships open at the Rehabilitation Center:**
Please see Dr. Bremer to apply

Research area	Available projects
Spinal cord injury: Challenges	Communication, depression, and nerve issues
Spinal cord injury: Treatments	Drug-based, myofascial, and tai chi

- **Rehabilitation Center site:** scvmcrehab.org
- **Volunteer site:** scvmc.org/services/Pages/Volunteer-Services.aspx