Federal Grants, Universities and the Academic Pipeline

Cal Tech

October 27, 2010

Mary Ann Mason, Marc Goulden, Karie Frasch
University of California, Berkeley
Large San Francisco Law Firm

Women
- Shareholder Partners: 51
- Associates: 155
- Part-time: 14

Men
- Shareholder Partners: 21
- Associates: 195
- Part-time: 7

N=1117

Part-time
Survey of Doctorate Recipients (SDR)

- A national biennial longitudinal data set of PhD recipients’ post-degree employment experiences funded by the NSF and others, 1973 to present (NEH funded the Humanities, 1977-1995).
- Includes a ~10% sub-sample of PhD recipients drawn from the Survey of Earned Doctorates (SED) each year -- and individuals are resurveyed until they reach age 76, leave the country, or refuse to participate (over 160,000 individuals have participated).
- Response data is weighted based on sampling design and re-weighted each survey cycle, based on attrition (e.g. gender, ethnicity) to reflect US PhD population.
- Starting in 1979 and 1981, respondents were asked about their marital status (1979) and the number of children (1981) living in their household (under 6, 6-18, etc.).
- Arguably the best employment dataset in the country.
Heads and Necks of Science PhD Recipients

Women, Early Babies
- Tenured Professors: 53% (N=2848)
- Second Tier: 47%

Women, Late or No Babies
- Tenured Professors: 65% (N=3057)
- Second Tier: 35%

Men, Early Babies
- Tenured Professors: 77% (N=13058)
- Second Tier: 23%

*PhDs from 1978-1984 Who Are Working in Academia 12 to 14 Years Out from PhD

Note: The use of NSF Data does not imply the endorsement of research methods or conclusions contained in this report.
Heads and Necks of Humanities and Social Science PhDs*

Women, Early Babies:
- Tenured Professors: 58% (N=2973)
- Second Tier: 42%

Women, Late or No Babies:
- Tenured Professors: 71% (N=4155)
- Second Tier: 29%

Men, Early Babies:
- Tenured Professors: 78% (N=7452)

*PhDs from 1978-1984 Who Are Working in Academia 12 to 14 Years Out from PhD

Note: The use of NSF Data does not imply the endorsement of research methods or conclusions contained in this report.
Major Findings: Family ➔ Career

- Overall, **men** with “early babies” are 38% more likely than **women** with “early babies” to achieve tenure.
- **Women** with “early babies” leave academia before obtaining their first tenure track job.
- Single **mothers** are more successful than married mothers.
- **Women** with “late babies” do as well as women without children.
- Having no babies at all is the dominant success mode for **women**.
- **Men** who have “early babies” do very well. In fact, they do better than all others, including single **men** and **women**.
- A high percentage of **mothers** slide into the second tier, the part-time, adjunct and lecturer corps: the “gypsy scholars” of the university world.
- Many **women** change their career course in graduate school or as postdocs because of family concerns.
Family Status of Tenured Faculty, All Fields*

Women

- Married with Children*: 44%
- Married without Children: 19%
- Single without Children: 26%

N=10,652

Men

- Married with Children*: 70%
- Married without Children: 15%
- Single without Children: 4%

N=32,234

*PhDs from 1978-1984 Who Are Tenured 12 Years out from PhD.
**Had a child in the household at any point post PhD to 12 years out.

Note: The use of NSF Data does not imply the endorsement of research methods or conclusions contained in this report.
Family Status of Tenured Faculty in the Sciences*

Women

- Married with Children**: 53%
- Single without Children: 25%
- Single with Children**: 8%

Men

- Married with Children**: 73%
- Single without Children: 9%
- Single with Children**: 4%

N=3109
N=19,074

*PhDs from 1978-1984 Who Are Tenured 12 Years out from PhD in STEM & Bio. Sciences.

**Had a child in the household at any point post PhD to 12 years out.

Note: The use of NSF Data does not imply the endorsement of research methods or conclusions contained in this report.
Getting Divorced after the First SDR*

*For individuals who were married at first post-PhD SDR survey. PhD recipients 1978-1992.

**Non-Tenure Track, Part Time, or Not Working.


Note: The use of NSF Data does not imply the endorsement of research methods or conclusions contained in this report.
Major Findings: Career ➔ Family

- Only one in three women without children who takes a fast-track university job ever become mothers.
- Women who achieve tenure are far more likely than men who achieve tenure to be single 12 years out from the PhD — more than twice as likely.
- If married, women are significantly more likely than men to experience divorce or separation.
- Women faculty were more than twice as likely as men faculty to indicate they wished they could have had more children — a full 38% of women said so in comparison to 18% of men.
Everybody is Very Busy
(UC Faculty, All Fields)

Everybody is Very Busy
(UC Faculty in the Sciences)

<table>
<thead>
<tr>
<th>Category</th>
<th>Professional</th>
<th>Housework</th>
<th>Caregiving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women with Children</td>
<td>53.7</td>
<td>14.5</td>
<td>27.1</td>
</tr>
<tr>
<td>Men with Children</td>
<td>56.2</td>
<td>11.1</td>
<td>14.7</td>
</tr>
<tr>
<td>Women without Children</td>
<td>62.3</td>
<td>11.3</td>
<td>7.5</td>
</tr>
<tr>
<td>Men without Children</td>
<td>58.9</td>
<td>9.8</td>
<td>7.9</td>
</tr>
</tbody>
</table>

UC Faculty's Average Hours Per Week Providing Care by Gender, Children, and Age at Survey


Women w. Children, N=671  Men w. Children, N=1796
Women w/o Children, N=485  Men w/o Children, N=1108
The Baby Lag for UC Women Faculty in Pursuit of Tenure, All Fields

N=2339 Men
982 Women

*Year 0 represents Assistant Professor Hire Date

The Baby Lag for UC Women Faculty in Pursuit of Tenure in the Sciences*


N=1164 Men
265 Women

**Year 0 represents Assistant Professor Hire Date

New Family Friendly Initiatives for UC Berkeley Ladder-Rank Faculty

- **Active Service-Modified Duties (ASMD)** — Provides teaching relief for parents with “substantial” caregiving responsibilities for a newborn or new adoptee: two semesters/quarters for birth mothers. Funded centrally to defray the cost to departments. *An entitlement.*

- **Tenure-Clock Stoppage** — Adds one year extension to the tenure clock for tenure-track faculty parents with “substantial” caregiving responsibilities for a newborn or new adoptee (one year per birth/adoption event, with a two-year cap). *An entitlement.*

- **Flexible Part-time Option** — To allow tenure-track faculty, pre- and post-tenure, to go from full- to part-time as life needs arise (i.e. caregiving responsibilities). Would encourages departments to take into account part-time status in advancement decisions.

- **School for Chairs** — Promotes the use of family friendly policies, resources and benefits.
Graduate Student Parent Resources at UC Berkeley

New Initiatives

• Paid Childbirth Leave (approved February 2007)
• Expanded infant/toddler/preschool slots in a new Child Development Center (opened January 2007)
• UC Families: an online newsletter and resource for students, staff, and faculty at all UC campuses who seek to balance academic goals or careers with family life. See http://parents.berkeley.edu/ucfamilies
• ‘Stopping the Clock’: Extensions to academic milestones (preliminary exams, qualifying exams, Normative Time completion)

Continuing Initiatives

• Family Student Housing (two large complexes)
• Children’s Center & Family Resource Center (located in Family Housing)
• Student Parent Center (located in Student Center)
• Breastfeeding Support Program (Student Health Center & campus locations)
• Graduate Student Parent Grant (funded by Graduate Division, administered by Financial Aid Office)
Creating a Family Friendly Department: Chairs and Deans Toolkit

Chairs and Deans Toolkit

UC Faculty Family Friendly Edge

Excerpts:

Legal case examples

- In a tenure-denial lawsuit involving a reported tentative settlement of $495,000, the provost at the University of Oregon allegedly told another professor that the mother’s decision to “stop the clock” was a “red flag;” the department chair also wrote in a memo that she “knew as a mother of two infants, she had responsibilities that were incompatible with those of a full-time academician.” [ref: Joan C. Williams, 2004. “Hitting the Maternal Wall,” Academe, 90(6)8-12.]

Faculty quotes about negative responses from chairs to requests for family accommodations

- “I want to emphasize that the greatest source of work-related stress in relation to having a child has been the hostility and recalcitrance of my chair who announced that he thought of ASMD as a ‘special privilege’ and who fought it all the way.” – Female faculty member
Women as a Percent of Doctoral Recipients in the United States (U.S. Citizens Only), Sciences, 1966-2006

Source: National Science Foundation (NSF), Survey of Earned Doctorates, retrieved from WebCaspar, 4/15/2009.
Problems in the Pipeline: Women as a Percent of NIH and NSF Awards*, by Level of Award (2007)

* The postdoctoral award information for NSF is missing significant data (39% of awards were to women, 47% to men, and 14% of the sample was unknown in 2007). We chose not to include the data point because it is not comparable to the others. Source: Fae Korsmo, Senior Advisor, Office of the Director, NSF.
Leaks in the Pipeline to Tenure for Women PhDs in the Sciences*

*Results are based on survival analysis of the Survey of Doctorate Recipients (a national biennial longitudinal data set funded by the National Science Foundation and others, 1981 to 2003) in all sciences, including social sciences. The analysis takes into account discipline, age, ethnicity, PhD calendar year, time-to-PhD degree, and National Research Council academic reputation rankings of PhD program effects. For each event (PhD to TT job procurement, or TT job to tenure), data are limited to a maximum of 16 years. The waterline is an artistic rendering of the statistical effects of family and gender. Note: The use of NSF Data does not imply the endorsement of research methods or conclusions contained in this report. Person-year N for entering tenure track=140,275. Person-year N for achieving tenure=46,883.
Career Goal at Start of PhD

Men

- Prof. (teach): 17%
- Prof. (rsrch)*: 45%
- Bus., Gov., Other: 37%
- Other Acad.: 8%

Women

- Prof. (teach): 22%
- Prof. (rsrch)*: 38%
- Bus., Gov., Other: 36%
- Other Acad.: 4%

Current Goal

Men

- Prof. (teach): 15%
- Prof. (rsrch)*: 34%
- Bus., Gov., Other: 48%
- Other Acad.: 3%

Women

- Prof. (teach): 21%
- Prof. (rsrch)*: 25%
- Bus., Gov., Other: 49%
- Other Acad.: 5%

Changing Career Goals

UC PhD Students: Sciences*


N=3067

N=3033

N=2816

N=2769
## Reasons Most Commonly Cited by UC PhD Students in the Sciences* for Shifting Career Goal away from Professor with Research Emphasis

<table>
<thead>
<tr>
<th>% Citing Factor As “Very Important**” in Career Goal Shift</th>
<th>Total</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Negative experience as PhD student</td>
<td>44%</td>
<td>44%</td>
<td>45%</td>
</tr>
<tr>
<td>2 Other life interests</td>
<td>42%</td>
<td>35%</td>
<td>48%</td>
</tr>
<tr>
<td>3 Professional activ. too time consuming</td>
<td>41%</td>
<td>35%</td>
<td>47%</td>
</tr>
<tr>
<td>4 Issues related to children</td>
<td>34%</td>
<td>20%</td>
<td>44%</td>
</tr>
<tr>
<td>5 Geographic location issues</td>
<td>33%</td>
<td>27%</td>
<td>37%</td>
</tr>
<tr>
<td>6 Feelings of isolat./alienation as PhD stud.</td>
<td>31%</td>
<td>30%</td>
<td>31%</td>
</tr>
<tr>
<td>7 Career advancement issues</td>
<td>30%</td>
<td>33%</td>
<td>27%</td>
</tr>
<tr>
<td>8 Job security</td>
<td>28%</td>
<td>28%</td>
<td>28%</td>
</tr>
<tr>
<td>9 Bad job market</td>
<td>27%</td>
<td>27%</td>
<td>27%</td>
</tr>
<tr>
<td>10 Monetary compensation (e.g. salary, ben.)</td>
<td>26%</td>
<td>31%</td>
<td>22%</td>
</tr>
<tr>
<td>11 Spouse/partner issues or desire to marry</td>
<td>26%</td>
<td>21%</td>
<td>29%</td>
</tr>
<tr>
<td>12 Other career interests</td>
<td>24%</td>
<td>22%</td>
<td>26%</td>
</tr>
</tbody>
</table>

*Phys., Bio., & Soc. Sc. **Not applicable is excluded from analysis.


Yellow shading indicates the group’s response is significantly higher than the other group’s response (P<.01).
Shifting Goal away from Professor with Research Emphasis: Selected Quality-of-Life Related Explanations by UCB Men & Women Doctoral Students

• “I feel unwilling to sacrifice a healthy family life and satisfying personal life to succeed in academics, and thus industrial options have become more appealing.”
• “Fed up with narrow-mindedness of supposedly intelligent people who are largely workaholic and expect others to be so as well.”
• “I look at the lives of the professors I see every day, and I want to emulate none of them.”
• “I really want to be a mom. This seems like an extremely difficult goal to align with the goal of being a faculty member at a top university in engineering.”
• “Since beginning my doctoral work, I have become convinced that very few, if any, female professors are able to have stable, fulfilling family lives of the sort that I wish for (a stable marriage and children).”
• “Academia is not very supportive of women. There are challenges at every step of the way in terms of having to make choices. I want to be able to have a family, have children and enjoy being a mother and wife which are close to impossible when one chooses academia. The clock is ticking and it does not stop for anything or anyone.”

Changing Career Goals

Changing Career Goals

Shifting Career Goal away from Professor with Research Emphasis: UC Postdoctoral Scholars, by Gender and Family Status/Future Plans

Percent of Postdocs with Professor with Research Emphasis Goal at Start Who Shifted Career Goal to Another by Time of Survey

- **No children, no future plans**: 19% (Women) vs. 20% (Men)
- **No children, future plans to have children**: 17% (Women) vs. 28% (Men)
- **Children previous to postdoc**: 19% (Women) vs. 32% (Men)
- **New children since postdoc**: 20% (Women) vs. 41% (Men)

Provision of Paid Maternity Leave for Academic Populations at Association of American Universities (AAU) (62 total)

% of AAU institutions

Grad. Stud. Researchers
- Black: 13%
- Blue (42%): 42%
- Light Blue (2%): 2%
- Turquoise (43%): 43%

Postdoctoral Fellows
- Black: 23%
- Blue (37%): 37%
- Light Blue (13%): 13%
- Lighter Blue (15%): 15%

Academic Researchers
- Black: 18%
- Blue (43%): 43%
- Light Blue (20%): 20%
- Lighter Blue (16%): 16%
- Lightest Blue (2%): 2%

Faculty
- Black: 58%
- Blue (21%): 21%
- Light Blue (11%): 11%
- Lightest Blue (10%): 10%

Black = Entitlement to at least 6 weeks of paid leave.
Blue = Limitations to paid leave (e.g., only for particular groups, partial pay, less than 6 weeks, requirements for previous service time, etc.).
Turquoise = Paid leave depends on sick and/or vacation leave accruals.
Lighter Blue = Delay in availability of sick and/or vacation leave accruals, ie., FMLA.
Lightest Blue = Less, ad hoc, or no paid leave available.

Provision of Paid Parental Leave for Academic Populations at Association of American Universities (AAU) (62 total)

% of AAU institutions

<table>
<thead>
<tr>
<th>Category</th>
<th>3%</th>
<th>29%</th>
<th>2%</th>
<th>3%</th>
<th>63%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grad. Stud.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researchers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postdoctoral</td>
<td>8%</td>
<td>16%</td>
<td>24%</td>
<td>21%</td>
<td>31%</td>
</tr>
<tr>
<td>Fellows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researchers</td>
<td>10%</td>
<td>13%</td>
<td>31%</td>
<td>31%</td>
<td>15%</td>
</tr>
<tr>
<td>Faculty</td>
<td>16%</td>
<td>24%</td>
<td>19%</td>
<td>18%</td>
<td>23%</td>
</tr>
</tbody>
</table>

Black = Entitlement to at least 1 week of paid leave.
Blue = Limitations to paid leave (e.g., only available to primary caregiver, only for particular groups, partial pay, requirements for previous service time, etc.).
Turquoise = Paid leave depends on sick and/or vacation leave accruals.
Lighter Blue = Delay in availability of sick and/or vacation leave accruals, ie., FMLA.
Lightest Blue = Less, ad hoc, or no paid leave available.

Title IX: Pregnancy & Family Status Discrimination

“No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance.”

(a) General. A recipient shall not apply any policy or take any employment action:

(1) Concerning the potential marital, parental, or family status of an employee... which treats persons differently on the basis of sex; or

(2) Which is based upon whether an employee or applicant for employment is the head of household or principal wage earner in such employee's or applicant's family unit.

(b) Pregnancy. A recipient shall not discriminate against or exclude from employment any employee or applicant for employment on the basis of pregnancy, childbirth, false pregnancy, termination of pregnancy, or recovery therefrom.

... 

(d) Pregnancy leave. In the case of a recipient which does not maintain a leave policy for its employees, or in the case of an employee with insufficient leave or accrued employment time to qualify for leave under such a policy, a recipient shall treat pregnancy, childbirth, false pregnancy, termination of pregnancy and recovery therefrom as a justification for a leave of absence without pay for a reasonable period of time, at the conclusion of which the employee shall be reinstated to the status which she held when the leave began or to a comparable position, without decrease in rate of compensation or loss of promotional opportunities, or any other right or privilege of employment.

2 45 C.F.R. 618.530 (National Science Foundation); 45 CFR 86.57 (Department of Health and Human Services, including the National Institutes of Health); 10 CFR 1040.53; (Department of Energy).
AAU Survey: Examples of Family Responsive Policies, Benefits, & Resources

• **Time-based policies/benefits** (and associated review criteria)
  – Stopping the clock/extension of acad. progress timelines & funding
  – Reentry rights
  – Flex time and flexible scheduling
  – Part Time/Unpaid Leaves
  – Modified Duties
  – Sabbaticals and Leave of Absence

• **Childcare**
  – On and off-campus centers
  – Subsidies
  – Referral services
  – Emergency backup

• **Monetary supplements/benefits**
  – Tuition remission
  – Health care, continued coverage, and dependent healthcare
  – Dependent care expenses (pretax) and dependent care travel funds
  – Adoption reimbursement

• **Other resources**: Lactation rooms, family housing, caregiver groups, resources lists, etc.

**Possible Family Friendly Offerings by Federal Agencies to Support Researchers Paid Off of Grants/Contracts and PIs**

<table>
<thead>
<tr>
<th>Possible Offering</th>
<th># offer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No-Cost Extensions</td>
<td>8</td>
</tr>
<tr>
<td>2. Supplements to support family accommodations</td>
<td>3</td>
</tr>
<tr>
<td>3. Gender equity workshops</td>
<td>3</td>
</tr>
<tr>
<td>4. Formalized agency policy or statement supporting women in the academic pipeline</td>
<td>2</td>
</tr>
<tr>
<td>5. Part-time effort on fellowship or grant to accommodate family caregiving needs</td>
<td>2</td>
</tr>
<tr>
<td>6. Extend fellowship period for caregiving</td>
<td>2</td>
</tr>
<tr>
<td>7. Defer start of fellowship period for caregiving</td>
<td>1</td>
</tr>
<tr>
<td>8. Website(s) with clear information on support for family accommodations</td>
<td>1</td>
</tr>
<tr>
<td>9. Clear policy expectations for various classes of researchers (ie., not ad hoc)</td>
<td>1</td>
</tr>
<tr>
<td>10. Allow dependent care expenses to be charged to grants for conferences or meetings</td>
<td>1</td>
</tr>
<tr>
<td>11. Re-entry grants for those who have stopped out for family caregiving needs</td>
<td>1</td>
</tr>
<tr>
<td>12. Discount caregiving gaps in grant reviews</td>
<td>0</td>
</tr>
<tr>
<td>13. Provide instructions to peer reviewers on family accommodations</td>
<td>0</td>
</tr>
<tr>
<td>14. Data collection on gender and family status</td>
<td>34</td>
</tr>
</tbody>
</table>

Possible Policy Recommendations

1. Promote clear, well-communicated, base-line family accommodation policies for all classes or researchers.
   • Federal Agencies can play a role in this by setting clear policies for various classes of researchers (e.g. NIH Kirchstein Fellows).
   • Universities can be more proactive (draw on best practices).

2. Provide Federal Agency or University supplements to offset family event productivity loss and help PIs.
   • Use some stimulus money or other sources to fund supplements.
   • Explore funding models: University direct costs vs. indirect costs.

3. Collaboratively, move toward a full package of family friendly policies/resources that take into account the career/family life-course.

4. Remove time-based criteria for fellowships and productivity assessments that does not acknowledge in a meaningful way family events and their impact on career timing (start and end dates).
   • Discount resume gaps due to family issues.
   • Provide relevant instructions to peer reviewers.

5. Collect and analyze the necessary data to assure Title IX compliance and assess the efficacy of existing and future policy initiatives.
Sources: “UC Berkeley Faculty Climate Survey,” 2003; “UC Berkeley Faculty Climate Survey,” 2009.