



Industry/University
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Research Centers

Predictors of Cooperative Research Centers Post- Graduation Success: Update

by

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Outline



- Background & Purpose
 - Sustainability Model
- Methodology
 - Research Questions
 - Study Design
 - IVs & DVs
 - Key Informant Interview
- Case Studies
 - CACC, IPM, CAPPS, LTC
- Transition Planning
- Post-I/UCRC Impacts
- Sustainability Factors
- Next Steps

Purpose of Research



- To assess the extent to which graduated Centers become self-sustaining
- To determine what factors predict Center sustainability post graduation from NSF support
- To assess the extent to which graduated Centers maintain fidelity to their program model

What do we know about sustainability?

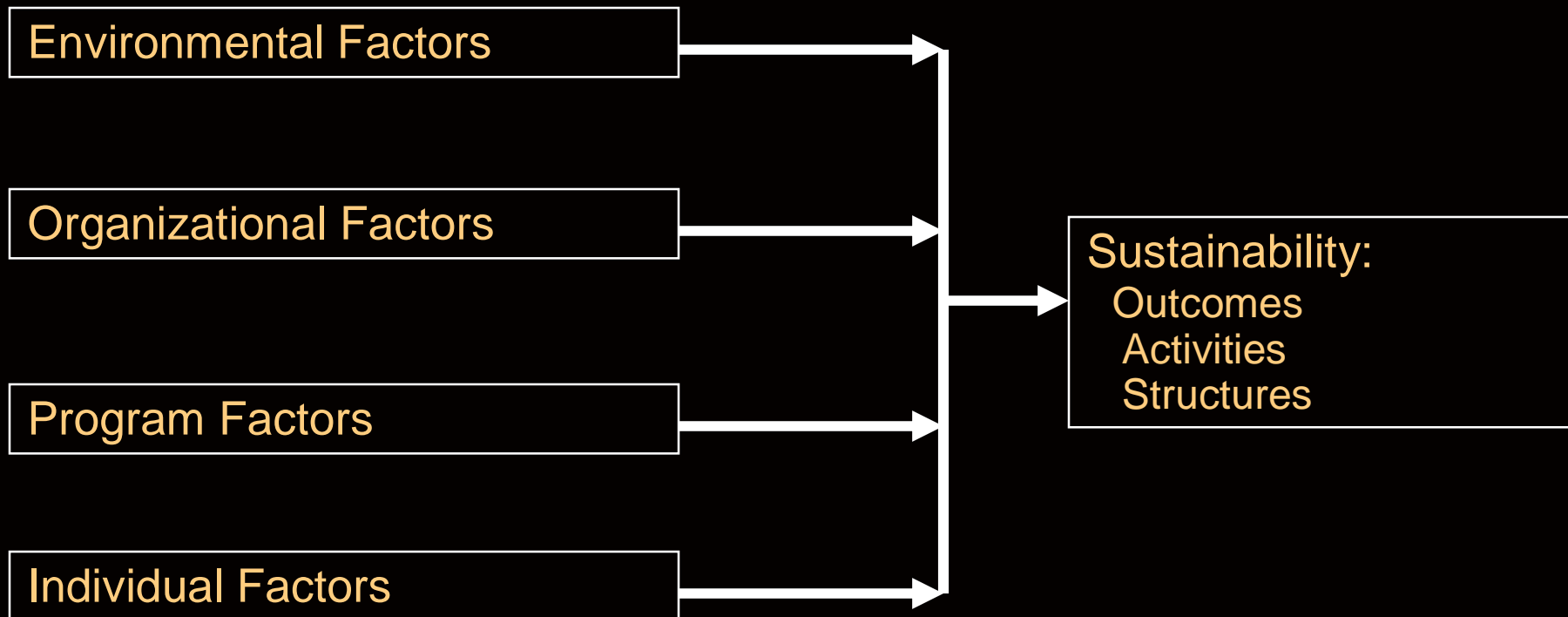


- Very little
 - Centers
 - » Tiny, inconclusive literature based on ERCs
 - » Ailes, Roessner, & Coward (2000): data collected at graduation
 - » Mudjamar (2005): ~ informal survey with 50% response rate
 - General literature
 - » Modest literature on program sustainability primarily from public health literature
 - » Meta analysis (Scherier, 2005)
 - » 19 studies; 2 multivariate

Program Sustainability Model



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Research Questions



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Descriptive

1. What is the status of I/UCRCs post-graduation?
2. How much fidelity to the standard I/UCRC model do sustained centers exhibit?
3. To what extent has the center sustained itself in terms of continued program activities, structures, and outcomes?

Predictive

4. What environmental, organizational, program, and individual variables predict center status?
5. What environmental, organizational, program, and individual variables predict fidelity to the IUCRC model?
6. What environmental, organizational, program, and individual variables predict center sustainability?

Exploratory

7. What issues do key informants think are critical for I/UCRC sustainability?

Method



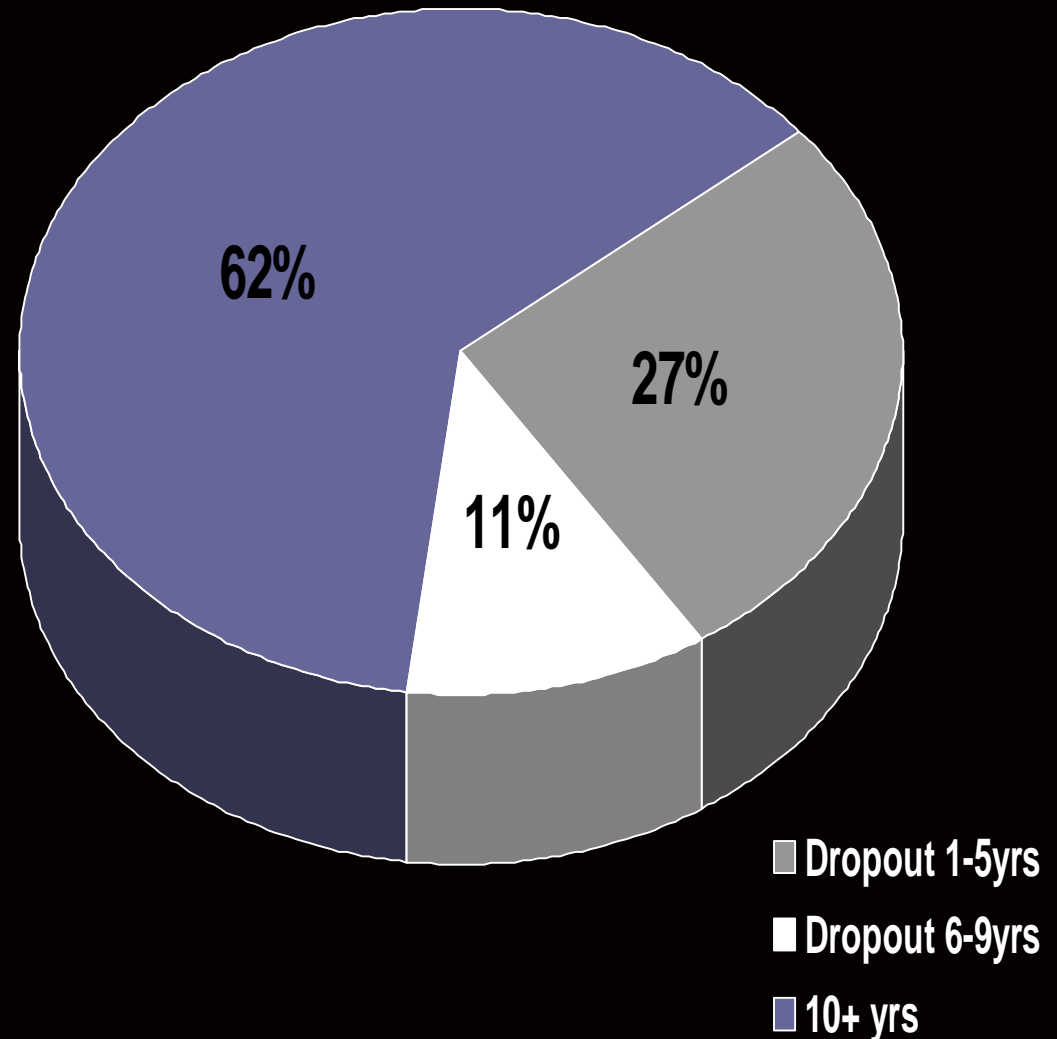
- Design
 - Descriptive & Predictive Correlational Design
 - » Time 1 IVs → Time 2 DVs
- Participants
 - Sampling Criteria
 - » Center received an NSF I/UCRC operating grant
 - » Center no longer funded by an NSF I/UCRC operating grant
 - » Center graduated and merged with a newer Center
 - » Center has not received NSF I/UCRC money for at least 1 year
 - » **N = 77**
 - Respondents
 - » Key Informants
 - » 1) current director; 2) recent director; 3) director at the time of transition, 4) secondary site director, 5) University official to whom the director reported, and/or 6) anyone else at the university who was/is involved with the Center
 - » Evaluators at the time of transition

Post-Graduation Status: Preliminary Results



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- There are 77 Centers that were started and are no longer funded by the I/UCRC Program
 - 38% did not reach 10 year graduation
 - » 27% did not reach 5 year renewal
 - » 11% reached the 5 year renewal, but not 10 yr graduation
 - Post funding status determined based on on-going data collection



Measuring Center Sustainability: DVs



DV	Operationalization	Coding	Data Source
Status	Graduated (> 10 years) Drop out (< 10 yrs)	Yes/no	CD Report
	Survival: exists as a research entity with some extramural support and at least 3PIs and 1 student	- Alive, dead, merged - Years survived	Key Informant Interviews
Sustainability - Activities - Outputs	Funding Members Faculty Students Graduates Papers Presentations IP	Yes/no	Key Informant Interviews

DVs measured at present or last year of operation

Measuring Center Sustainability: DVs



DV	Operationalization	Coding	Data Source
Fidelity	Core: University based industrial support consortia external finding multidisciplinary stakeholder meetings	Yes/no	Key Informant Interviews
	Secondary: LIFE external evaluation industry selects research	Yes/no	Key Informant Interviews

DVs measured at present or last year of operation

Predicting Center Outcomes: IVs



IV	Operationalization	Coding	Data Source
Environmental	Economic indicators R&D trends Academic research funding	\$	S&E Indicators
Organizational	Cost-sharing Direct university funding University R&D University type	% \$ \$ nominal	CD Archive University Records
Program	Transition planning Implementation Quality Total funding in final year # university partners, members, & personnel Satisfaction & benefits ratings	Qual Qual \$ # scale	Key Informant Evaluator CD Archive PO Archive
Individual	Leadership dimensions	Scale	Eval. Interview

IVs measured at last year of I/UCRC grant

Key Informant Interviews



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- Goal: To find out what happened to the Center after the IUCRC grant ended, discuss the transitions process, and factors that lead to current center status.
- Semi-structured interview
- Audio-recorded
- Data Collection:
 - Underway, quasi-pilot with local friendly centers
 - 20-90 minutes

Center for Advanced Computing & Communications



- I/UCRC funded 1982-2004
 - 25th anniversary
- NCSU
- Current Status: Operating
- Sustainability
 - \$400k/year, 6 members, 35 faculty, 9 students, 26 projects
 - Computer Science, Electrical Computer Engineering, Physical & Math Science, College of Management: Services Science
- Fidelity
 - IAB
 - » \$50K & \$20K
 - » Consortial
 - » Weighted voting
 - » Shared results
 - » 1 year funding cycle
 - No evaluator
 - » Alternative evaluation
 - Service Enhancements
 - University Cost Sharing
 - » Typical: 48.5%
 - » Negotiated: 26%

Center for Integrated Pest Management



- IUCRC funded 1992-2002
- NCSU
- Current Status: Operating
- Sustainability
 - \$7.5 mill/year, 16 members
 - Entomology, plant pathology, crop science, economics animal science, horticulture, computer science
- Fidelity
 - IAB
 - » \$5K & \$25K
 - University cost-sharing
 - » Typical: 27.3%
 - » Negotiated: 9.5%
 - 3 priorities
 - » Communications in IPM
 - » USDA consulting
 - » APHIS information management

Center for Integrated Pest Management



- Center Structure

- “Having the support of industry has made us much more attractive for [other] programs.”
- Communications in IPM
 - » “We bring leaders from an area that’s new or there is some controversy and we’re bringing folks together to talk with each other. We don’t produce a white paper, we don’t put out anything. The idea is to let people get in the room and say what’s really on their mind and talk to each other and learn something.”
- Consulting/Program Management
 - » “all this networking has a big big impact, but maybe not like you’d think. ...[we] give USDA lists of priorities that then become the priorities in RFAs that USDA writes. ... It’s not like we are deciding US policy, but we have a lot of impact.”
- Contract
 - » “we do a huge amount of computer based research... in developing the software and tools that people use in pest management... That combination of agriculture and computing makes us very valuable”

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Center for Advanced Processing & Packaging Studies



- IUCRC funded 1987-2004
- OSU, NCSU, UC Davis
- Current Status: Operating
- Sustainability
 - \$600k/year, 10 members, 16 faculty/researcher, 6 students, 4 post-docs, 4 projects
 - 9 students hired by members
 - Food S&T, Chemical Engineering, Food Ag and Bioengineering
- Fidelity
 - IAB
 - » \$20K & \$35K
 - » Projects selected by LIFE
 - » Exploratory projects
 - On-site evaluator
 - University cost sharing
 - » Typical: 50%
 - » Negotiated: 0%

Lymphocyte Technology Center



- IUCRC funded 1985-1990
- UNC, Duke, NCSU
- Current Status: Not Operating
- Sustainability: None
- Closed with 2 members, \$320K, university cost sharing, 14 researchers, 10 students
- Reasons for closing
 - Maturation of the field
 - Director time allocation
 - Lack of host support

“The technology became much more generic. By the time the center ended it was just another technique. So it would have meant changing the general thrust of the center. ... But if you did that you’d have to go out and be very aggressive about getting more companies involved. ... Also I didn’t really feel that I could devote the time that would have been necessary.”

Transition Planning



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- Plan early and often
 - “you want to start year two or three thinking about the end cause it’s a slow process.”
 - “about every five years you have to kind of reinvent yourself. [this research area] is not new, it’s been around a while. So we are trying to refocus, modernize and push our selves as part of this whole [new] movement. New ideas new concepts come up companies wanting to push themselves... We are having to reinvent ourselves in that way and that’s probably what we are going to spend the next year doing. This is a change in the research projects we’re doing and even the audiences.”
- Stakeholder Involvement
 - “The best sales is when a company, ... decides that this is such a good thing that we want our competitors to join. You need to co-opt your industrial members to help you get more industrial members. Because a company will always know far more about [the industry] than I will. And they can actually pick out the people they want to work with and that’s important. I mean if you try to attract somebody [they] cant stand... you can talk till you’re blue in the face about how well it all works, but they’re not going to sit there”

Transition Planning



- Maintain Industry relevance of research
 - “the thrust of [the field] had changed. That had become a generic technique and now it’s become ‘what can you do with the technology?’.”
 - “faculty do research on what’s relevant to the companies. They go where the money is, as they should.”
- Consider alternatives for funding
 - “Get buy-in from the members as to whether they are willing to put their research dollars toward administrative costs.”
 - “we go after money anywhere I can find it. I’ve learned to become very entrepreneurial and that continues on with my staff. We are always looking for new ideas new projects new ways to do things.”

Transition Planning



- Maintain I/UCRC model
 - “Don’t focus on the fact that you’re loosing NSF funding. Because if you’ve done the job right that funding won’t be critical. The value that NSF has provided is not just the money...There is a whole set of rules and guidelines that you have operated by that make the center what it is. So keep those in force. The best thing I did was just not try and throw out the cooperative agreement and bylaws and rewrite everything. No we kept them. So what we lost was not a lot of money.

Post-IUCRC Impacts



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- Faculty
 - The center “provides grants for younger faculty, smaller grants so they can start their research programs, get some data, publish some papers, get some feedback on industry relevance. It helps them generate more grants say for competitive national research initiatives.”
 - “I think the NSF presence was, and still is very important. That’s an opportunity for professional development for faculty and directors to interact with other center directors.”
- Students
 - “Our best tech transfer is the hiring of our students by our membership.”
 - “I work with people now who used to be my students, I gave them grants”
- University
 - “Our dean loves this program. He thinks it’s great working with the industry... Our college has always been about out reach, working with economic development.”
 - External funding to the university
 - “I’ve been told we are the crown jewel of the college”

Post-IUCRC Impacts



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- Industry
 - “A lot of the companies take things in house so we don’t know. But if they didn’t see the benefits, we’re told they wouldn’t be there. They wouldn’t come back.”
 - “In recent years... we have sponsored some initiatives... And the way that came about was in one of our IAB meetings as couple of the members said we ought to be doing more to encourage young people to go into the science fields and so we followed up on that. So I think of that as a service that we provided beyond the normal research work. And we’ve held an international conference on security. We’ve used the center to launch a new initiative where we got a substantial amount of federal funding...so there is more to the center in the way we look at it than you might normally.”
 - “one of our scientists had an absolutely super marvelous wonderful idea and ... he worked with one of the companies on this idea. The ... CEO of the company ... saw the value of it. ... the company realized they’d cropped up something that [was] extremely valuable.”
- New Centers
 - Slightly different research, same members
- National policy

Sustainability Factors



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- Accountability to stakeholders
 - Research
 - Membership
- Maintaining cutting edge research
- Willingness of industry to fund admin costs
- Using the center to leverage other grants
- Long-term relationships developed over the course of the grant
 - Industry, students & faculty
- Maintaining continuity / Infrastructure
 - “I think it’s very very critical that we have sold ourselves as a center. We are not a grant we are a center. And I know the fact that we were a legal entity within the university ... provides continuity.”
- University support

Reflections on Data Collection



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- IRB
 - Slow...
- Finding respondents
 - Ok so far but some “attrition” noticed
- Conducting interviews
 - Friendly, engaged
 - Spontaneous, need to capture digressions

Timeline



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- Approved - COMPLETE
- Archival Data Cleaning – COMPLETE
- Sample Identification - COMPLETE
- Literature review – COMPLETE
- Methods - COMPLETE
- Proposal Defense - COMPLETE
- Data Collection: 6-8/08
- Analysis: 9/08
- Defend: 10/08

	Complete	In Progress	To Do
Key Informant Interview	4	8	65: 7- 8/08
Evaluator Interview	0	30ish	7/08
Archival data	77	0	0