

*Cooperative Research Centers
Post-Graduation
Survival & Success:
An Update & Preliminary Results*

by

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Outline



Industry/University
Cooperative
Research Centers

- Background
- Purpose
- Literature
- Program
- Methodology
- Preliminary Findings

Background



- Federally supported research centers are typically funded for a time-limited period ~ 10 years
 - Concerns about entitlement
- An explicit goal of some programs, cooperative research centers (CRCs), is to create “self-sustaining” centers
- How effective are CRCs in achieving this goal?

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

Literature

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

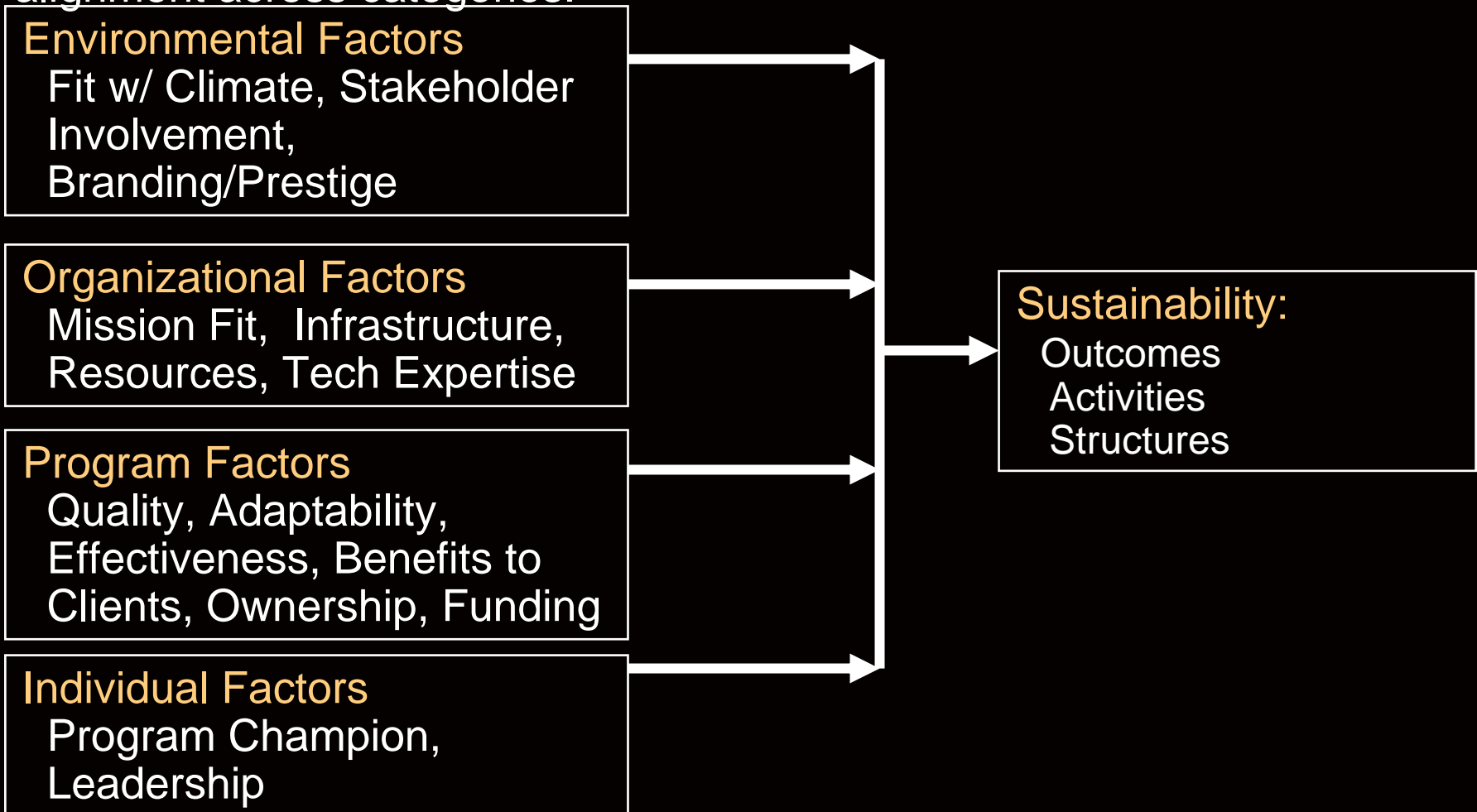
General Model of Sustainability



- Definition (Shediac-Rizkallah & Bone, 1998):
 - Sustainability is understood as continued program activities, continued benefits to stakeholders, & organizational capacity to continue to support the program once initial federal support is exhausted
- Measure
 - Program activities
 - Benefits to key stakeholders
 - Infrastructure

Program Sustainability Model

Four categories of factors that influence sustainability. Emphasis on alignment across categories.



Why NSF's I/UCRC Program?



- NSF-SPONSORED
 - Modest \$ Support (\$130K/YR/CENTER; \$7 MILLION)
 - Receives 90% support from industry, state, other federal
- MODEL
 - University-based (faculty & students) research center
 - Industrial consortium (membership: \$30-50K/YR)
 - Involves multiple sites: 50+; 600+ firms
 - Heterogeneous population: \$300K - \$8M, research focus
 - **Ongoing evaluation:** 30 years of archival data, 70+ Centers graduated
- GOAL
 - “NSF intends to seed partnered approaches to ... research, not to sustain the Centers indefinitely. The Foundation intends for Centers gradually to become fully supported by university, industry, state, and/or other non-NSF sponsors. “ (NSF I/UCRC website)

Research Questions



- What is the status of graduated Industry-University Cooperative Research Centers (I/UCRCs)?
 - Preliminary Results
- What factors (environmental, program, organizational, individual) predict post-graduation sustainability?
 - Preliminary Results
- How much fidelity to the I/UCRC model do graduated Centers maintain?
 - Data analysis planned



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
 - » Population N = 73
 - » Current Sample N = 45
 - Respondents
 - » Key Informants
 - » Hierarchy
 - » Evaluators at the time of transition

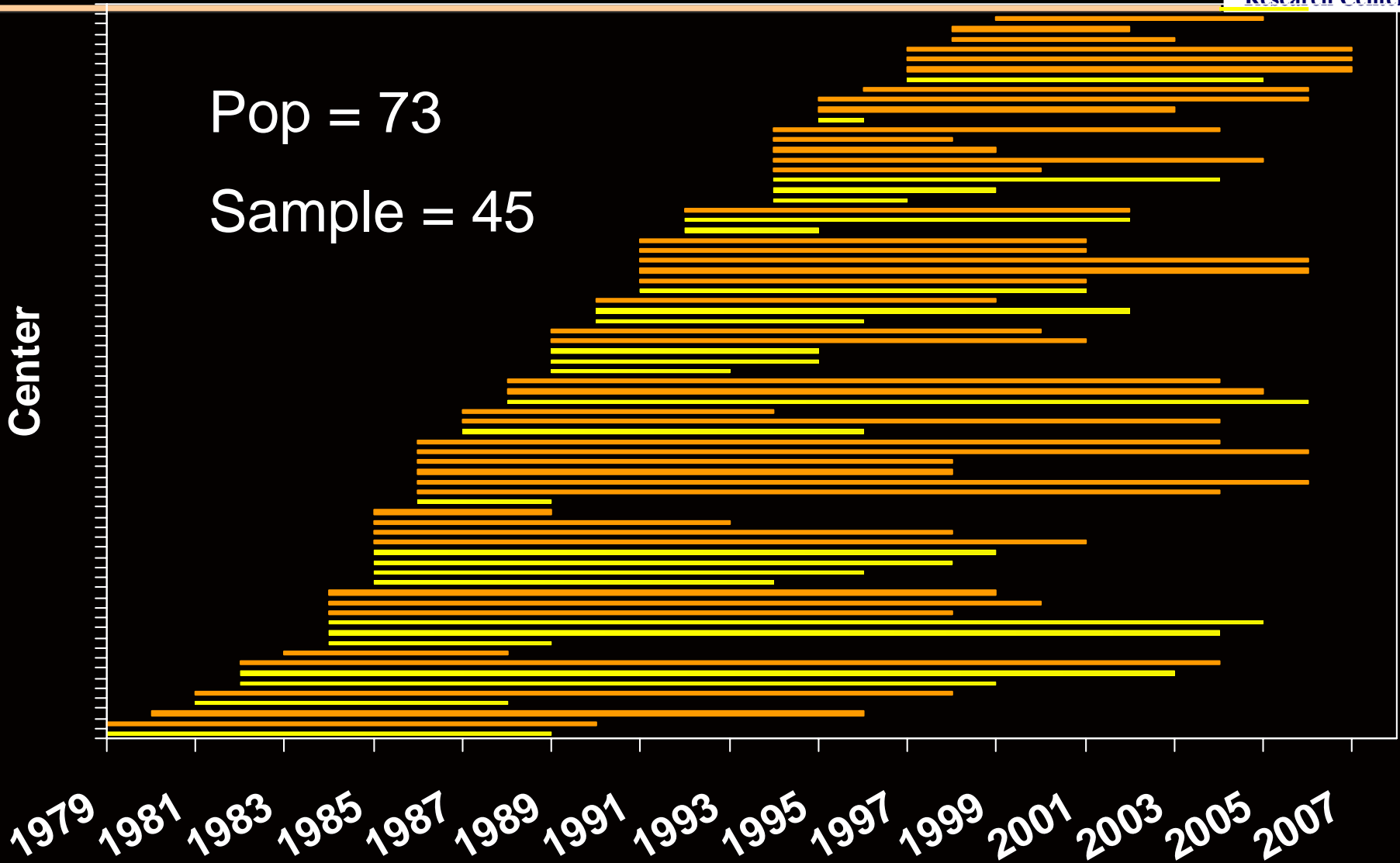
Center Timeline: I/UCRC Funded



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■ Current Sample

■ Data Collection On-Going

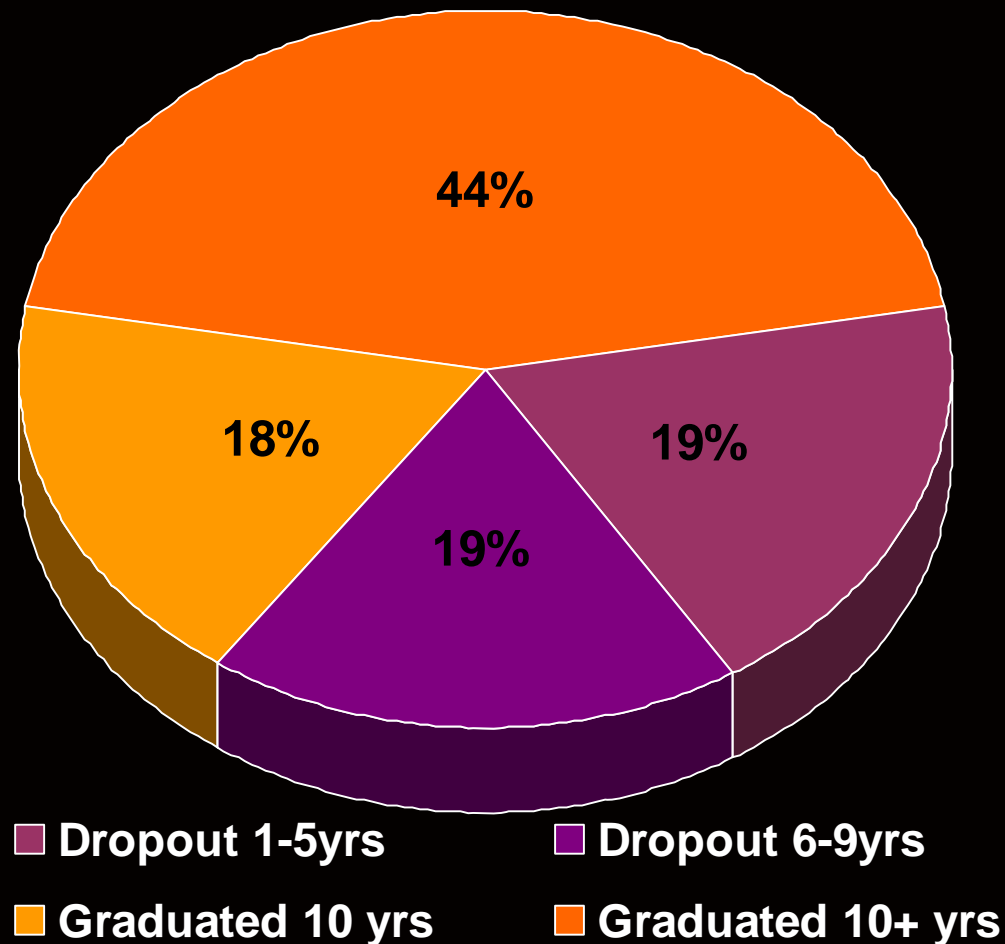


Graduation Status



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- There are 73 Centers that were started and are no longer funded by the I/UCRC Program
 - 38% Do Not Graduate
 - » 19% did not reach 5 year renewal
 - » 19% reached the 5 year renewal, but not 10 yr graduation
 - 62% Graduate
 - » 18% graduate after 10 years of funding
 - » 44% are funded longer than 10 years
 - » 11 - 22yrs



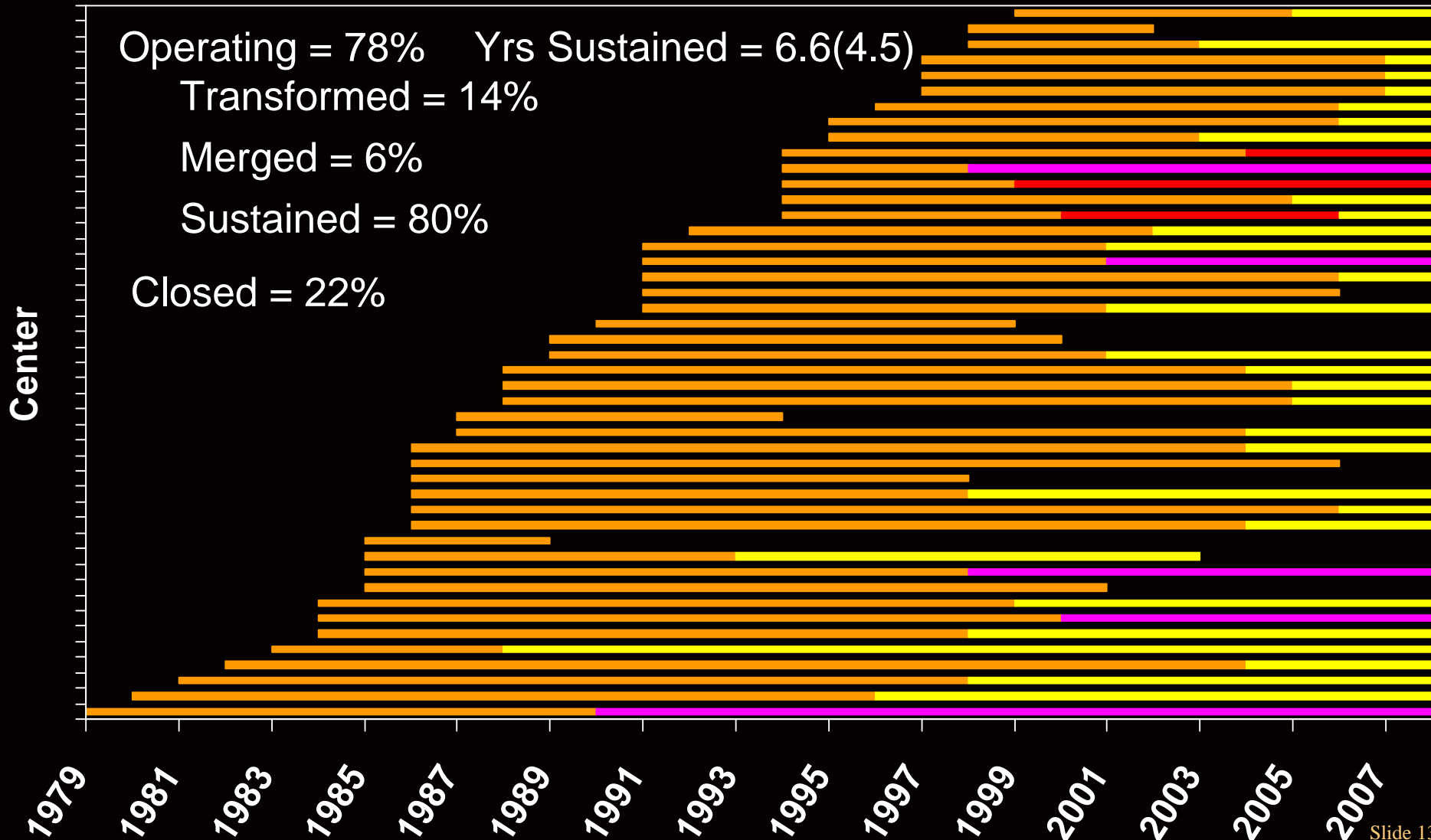
Center Timeline: Sample

$N = 45$



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■ IUCRC Funded ■ Transform ■ Merged ■ Self Sustaining





Computer Center: Sustained

- I/UCRC funded 1982-2004
 - 25th anniversary
- 1 University
- 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%

Agriculture Center: Transformed



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

Agriculture Center: Transformed



- Center Structure

- “Having the support of industry has made us much more attractive for [other] programs.”
- Industry Networking
 - » “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”

BioTech Center: Closed



- IUCRC funded 1985-1990
- 3 Universities
- 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.”

Descriptives



	Operating (N=35)	Closed (N=10)
Years funded	11.7(4.5)	11.6(5.6)
Grad Budget	\$1.59M(\$1.24M)	\$850K(\$756K)
Member Fees	\$560K(\$471K)	\$208K(\$155K)
Add. Industry	\$115K(\$274K)	\$24K(\$60K)
University	\$134K(\$241K)	\$54K(\$57K)
% Admin Budget	15.6%(15.6%)	28.3%(30.1%)
Members	20.0(31.8)	6.9(5.8)
Grad Students	15.2(12.2)	10.6(12.6)
Publications	21.4(29.2)	17.8(21.6)



Predictors of Sustainability

- Strong Stakeholder support
 - Industry voluntarily provided more funding to off-set loss of grant \$
 - Increase # of members
 - “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.”
- Relationship with stakeholders
 - “we hired a full time person whom we designated [to] maintain contacts with our member companies and we also made it a point that a small team directors visits every member company once in 2 years”
- Benefits to Stakeholders
 - “for our industry getting well trained students is a big plus so our member companies have first dibs on our students”
- Research Focus
 - “faculty do research on what’s relevant to the companies.”
 - “the work which we do in the center, our member companies still feel it’s worth putting their money into it.”



Predictors of Sustainability

- Transition planning
 - Start early
 - » “we were organized ... before that and over the years we had revised our operating style ... so there wasn’t much to do at [the time of graduation]”
 - Stakeholder involvement
 - » “we have an IAB and an executive committee...both groups were involved”
 - » “we did involve our sponsored research project office”
- Funding
 - Supplemented I/UCRC \$ with other gov. grants
 - » “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.”
 - Leveraged investment
- University support
 - Continued cost-sharing

Predictors of Non-Sustained



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- Lack of industry buy in
 - Center not perceived as critical to competitive advantage
 - Loss of champion within core member firms
- Research focus
 - “industry was doing a pretty good job of it, in this area, by itself by that time “
 - “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?’.”
- IP
 - Industry wants exclusivity
- Limited resources
 - “there wasn’t a lot of money left for going out and beating the bushes”
 - actually if there were a lot more money upfront, maybe to the 1st 2 or 3 years, then it might have gotten rolling”

Predictors of Non-Sustained



- Minimal university support
 - » “well I think it was okay with them. It was never a big bucks center, they didn’t have to warm up to it”
- Leadership
 - Managing relationships
 - » “I suppose at some extent though I’m not really a people-person, at least my wife tells me that and I didn’t maybe I didn’t take the right approach about going out and working the, I don’t know. I just did my research and uh, uh, I tried but it didn’t work.”
- Lack of fit
 - » “But on the other hand those results may be more practical than we would’ve done otherwise and maybe moved us from the longer term university research to the shorter term practical research, which is an area where I guess is difficult for the university to compete with industry. “

Next Steps

- Data collection on-going
 - Sampling issues
 - Environmental level variables
- Qualitative analysis
 - Coding
- Quantitative analysis
 - Predictive statistics

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