

# Collaboration and Productivity Outcomes for Pilot Grant Awardees

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## RESEARCH QUESTIONS

As part of the multiyear evaluation of the Center for Clinical and Translational Science (CCTS) at the University of Illinois at Chicago (UIC), we are interested in collaboration and productivity outcomes for pilot grant awardees over the period of approximately five years. Our questions include:

- 1) Does the pilot grant award program establish new collaborations at UIC?
- 2) Do pilot grant awardees produce more publications than non-awardees?

## METHODS

Data used in this analysis include bibliometric data obtained from PubMed databases and pilot grant data on awardees (26) and non-awardees (202) obtained from CCTS administration. These data were cleaned and merged by the name of each Principal Investigator (PI). This data file, in which each unique row is an award or non-award, was transformed into a partial matrix in which each row represents a PI/Co-PI connection. The research investigates collaboration on publications among PI/Co-PI pairs. We are able to compare collaborations across years and between awardee and non-awardee team pairs, investigating outputs into pre-award and post-award periods.

## OVERVIEW OF THE PILOT GRANT PROGRAM

The purpose of the UIC CCTS Pilot Grant Program is to provide funding and core services to support pilot clinical and translational research at UIC. In particular, pilot funds are targeted at three types of research:

- 1) Generation of preliminary data for submission of grant applications
- 2) Research that improves clinical design, biostatistics, clinical research ethics, informatics, or regulatory pathways
- 3) Research that develops new technologies

Clinical and translational pilot studies were first funded in 2006, prior to CCTS funding. They were funded again in 2008.

## DOES THE PILOT GRANT AWARDS PROGRAM ESTABLISH NEW COLLABORATIONS AT UIC?

The pilot grant program has awarded 26 grants to teams of clinical and translational scientists over the period of approximately five years (2008-2012). The majority of awards over the past five years have been made to teams in which the PI had not previously published with other Co-PIs. For example, in 2008 and 2009 only 27% of all PI-Co-PI pairs had published together (Table 1). These numbers dropped to 12%, 18% and 4% across the next three years. These results indicate that the awards have generally been made to teams where the PIs and Co-PIs were not currently co-authoring, thus indicating possible new collaborations.

Comparing pre-award awardees and non-awardees, pilot grants have generally been given to more senior teams and to teams that have more experience working with each other (Table 1). For example, in all years, more senior teams (in terms of PI rank) were given pilot awards.

In terms of prior work experience, in three of the first four years of the pilot program, pilot grants were awarded to teams that had higher prior co-authorship levels, as compared to non-awardees. For example, in 2008 27% of PI/Co-PI ties on awardee teams had co-authored together, while 15% of the PI/Co-PI ties on non-awardee teams had done so. The last year of the pilot grant program, this trend is reversed such that 4% of PI/Co-PI ties on awardee teams had published together while 22% of those ties on non-awardee teams had done so.

Table 1: Pre & Post-Award Collaborations: Comparison of Pilot Grant Awardees and Non Awardees

Year	Award Status	Experience	% of co-PIs with whom the PI co-authored through the pilot grant year	% of co-PIs with whom the PI co-authored after the pilot grant year
2008	Awarded	2.86 (0.69)	27%	36%
	Not Awarded	2.83 (0.88)	15%	11%
	Difference	ns	ns	**
2009	Awarded	3.14 (0.90)	27%	27%
	Not Awarded	2.63 (0.84)	13%	5%
	Difference	ns	ns	**
2010	Awarded	4.00 (0)	12%	0%
	Not Awarded	3.50 (0.57)	12%	1%
	Difference	ns	ns	ns
2011	Awarded	3.00 (1.41)	18%	0%
	Not Awarded	2.45 (0.85)	13%	0%
	Difference	ns	ns	ns
2012	Awarded	2.86 (0.90)	4%	0%
	Not Awarded	2.79 (0.88)	22%	0%
	Difference	ns	ns	ns

\* Experience: Rank of PI where Instructor=1, Assistant=2, Associate=3, Full=4, unless noted Director's are considered as full professors.

\*Percent Prior Publication Pairs: percent of Co-PI's with whom the PI co-authored prior to and including the pilot grant year.

\*\*ns=not significant; \*\* p < 0.05; \* p < 0.10

## DO PILOT GRANT AWARDEES PRODUCE MORE PUBLICATIONS THAN NON AWARDEES?

Table 2 compares the pre-award publication activities of pilot grant applicants from 2008 through 2012, noting pilot grant team size and mean number of publications for those who were awarded pilot grants and non-awardees. In terms of pre-award awardees and non-awardees, for four years out of five, pilot grants were awarded to PIs with a lower mean number of publications than those who were not awarded pilot grants. The exception is 2009, where publications were statistically significantly higher for awardees (3.29) than non awardees (0.89) (p<0.05).

Table 2: Pre-Award Productivity: Comparison of Pilot Grant Awardees and Non Awardees

Year	Award Status	Pre-Award team publication activity		
		Pilot Grant Team Size	Mean number of PI publications with at least one co-PI prior to pilot grant application	Mean number of co-PIs the PI published with through the pilot grant year
2008	Awarded	2.57 (1.27)	1.43 (1.99)	0.71 (0.95)
	Not Awarded	2.71 (1.60)	1.47 (4.07)	0.46 (0.76)
	Difference	ns	ns	ns
2009	Awarded	3.14 (2.19)	3.29 (5.16)	0.86 (1.22)
	Not Awarded	3.26 (2.01)	0.89 (1.56)	0.41 (0.75)
	Difference	ns	**	ns
2010	Awarded	2.67 (1.53)	0.33 (0.58)	0.33 (0.58)
	Not Awarded	5.42 (2.43)	0.83 (1.27)	0.67 (0.99)
	Difference	*	ns	ns
2011	Awarded	8.50 (7.78)	1.50 (0.71)	1.50 (0.71)
	Not Awarded	4.29 (3.14)	1.50 (2.89)	0.55 (0.86)
	Difference	*	ns	ns
2012	Awarded	3.71 (3.20)	0.14 (0.38)	0.14 (0.38)
	Not Awarded	3.48 (2.28)	3.32 (4.77)	0.76 (0.97)
	Difference	ns	*	ns

\* ns=not significant; \*\* p < 0.05; \* p < 0.10

\*Prior Publications: Number of Publications published prior to Pilot Grant application by the PI with at least one Co-PI as a co-author.

\*Prior Publication Pairs: Number of Co-PI's the PI published with prior to and including the pilot grant year.

Table 3: Post- Award Productivity: Comparison of Pilot Grant Awardees and Non Awardees

Year	Award Status	Post-Award team publication activity		
		Pilot Grant Team Size	Mean number of PI publications with at least one co-PI prior to pilot grant application	Mean number of co-PIs the PI published after the pilot grant year
2008	Awarded	2.57 (1.27)	0.43 (0.79)	0.43 (0.79)
	Not Awarded	2.71 (1.60)	0.63 (1.35)	0.35 (0.66)
	Difference	ns	ns	ns
2009	Awarded	3.14 (2.19)	0.86 (1.21)	0.86 (1.22)
	Not Awarded	3.26 (2.01)	0.30 (0.91)	0.15 (0.46)
	Difference	ns	ns	**
2010	Awarded	2.67 (1.53)	0	0
	Not Awarded	5.42 (2.43)	0.08 (0.29)	0.08 (0.29)
	Difference	*	ns	ns
2011	Awarded	8.50 (7.78)	0	0
	Not Awarded	4.29 (3.14)	0	0
	Difference	*	ns	ns
2012	Awarded	3.71 (3.20)	0	0
	Not Awarded	3.48 (2.28)	0	0
	Difference	ns	ns	ns

\*\*ns=not significant; \*\* p < 0.05; \* p < 0.10

Table 3 outlines the post-award publication activities of pilot grant awardees and non-awardees for 2008 through 2012. In terms of post-award journal article productivity, 2008 and 2009 awardee team pairs have collaborated on more publications (as of February 2012) than non-awardee teams (p<0.05). Looking at the pilot grant team size, non awardees had higher mean number of co-PIs in years 2008, 2009 and 2010 whereas in 2011 and 2012 these numbers reversed. This may indicate a lagged effect of pilot grant awards on journal article outputs by funded teams.

## POLICY IMPLICATIONS

The analysis presented here demonstrates the need for complex longitudinal data to accurately assess even the most concrete program activities conducted by CTAs.

Findings indicate that programmatic goals and emphasis may change over time resulting in substantial challenges to evaluation. For example, there were shifts in emphasis over the five years of the pilot grant program from funding more senior teams with more experience working together to funding the establishment of new teams.

Publication lags appear to be at least two years. This means that critical programmatic and funding decisions that use publication data as a guide do not capture the most recent program changes. While programmatic changes are often made for good reasons, these continuous changes represent a constant challenge for evaluation.

Substantial lags in publication outputs make it important to examine other non-publication outputs and near term outcomes such as grant proposal submissions or awards. Future work should examine these and other outputs, including clinical or translational outputs and outcomes.

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