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## Community Attitudes Toward Scientific Research\*

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### What is the Issue?

Attracting new technologies to a region can provide an economic boost; however, not all communities may want to become the “next Silicon Valley.” Community residents’ views about local scientists and their research may affect their support for several areas of emerging scientific technology. In the larger context of economic growth related to these technological developments, questions of fairness and justice (who benefits) and at what cost seem key to address. Information disclosure, community involvement, and treatment of community members also need to be considered.

### Data and Methods

The data for this research were collected in 2006 via a mail survey exploring residents’ attitudes toward scientific research. Cornell’s Survey Research Institute sent introductory letters and eight-page questionnaires to 2,500 randomly selected individuals in both Tompkins and Ontario counties. Approximately 10% (N=495) of the mailings were returned as undeliverable, leaving a usable sample of 4,505. Of these, 29% (N=1,305) completed their questionnaire. The tables below\* provide means and standard deviations to key survey questions.

### Perceptions of fairness or justice

Views about local scientists and their research may affect community support for several areas of emerging science, including agricultural biotechnology, agricultural nanotechnology, and gene therapy. Levels of public trust, as well as broader attitudes towards scientific research, are influenced by perceptions of justice and fairness. To determine how the perceived justice or fairness (we use these two terms interchangeably) of local scientists’ research might relate to respondents’ attitudes toward research, we asked respondents to react to various statements that examined four measures of justice: distributive, procedural, interpersonal, and informational. Survey respondents indicated their relative level of agreement (1 = strongly disagree, 5 = strongly agree) with these measures.

- **Distributive Justice.** Distributive justice refers to whether individuals believe they have received a fair outcome from a decision (Adams, 1965; Adams & Freeman, 1976; Deutsch, 1975). We examined distributive justice in terms of whether people perceived that they received a fair allocation of the risks and benefits from local scientific research. *The results suggested that most respondents view scientific research as a beneficial thing that helps people and*

*the local natural environment more than it hurts. Almost half of the respondents are not sure about the share of risks their community receives.*

Distributive Justice	MEAN	SD
1. Members of my community receive a fair share of the benefits of scientific research.	3.50	.85
2. Scientific progress helps more people in my community than it hurts.	3.90	.83
3. Scientific research in my community has been bad for the local natural environment.	2.33	.87

- **Procedural Justice.** Procedural justice focuses on the importance of unbiased and correctly enacted procedures, including individuals’ ability to have a voice in a decision-making process that affects them (Folger, 1977; Lind, Kanfer, & Earley, 1990; Tyler, Rasinski, & Spodick, 1985). We examined procedural justice in terms of whether people believed they shared some control over the decisions made about local scientific research. *Most respondents have reservations about their capacity to influence decisions regarding controversial scientific research in their community, but they do believe they can express views to the scientists in charge if necessary.*

Procedural Justice	MEAN	SD
1. Local scientists don’t care what the average person thinks about the ethics or morality of their research.	3.53	.89
2. If I wanted to, I could influence whether or not controversial scientific research would take place in my community.	2.87	.94
3. The procedures that protect public health and the environment from potential risks of scientific research in communities like mine have been developed in an unbiased way.	3.05	.74
4. If a decision had to be made about doing controversial scientific research in my community, I would be able to express my views to the scientists in charge.	3.24	.90
5. If a decision was made to do scientific research that I did not support in my community, there are procedures in place to allow me to make an appeal.	3.27	.75

- **Interpersonal Justice.** Interpersonal justice highlights the need for authorities (here, scientists) to treat individuals with dignity and respect (Tyler, Degoe, & Smith, 1996; Tyler & Lind, 1992). *In general, respondents believe that local scientists are likely to treat them with respect.*

Interpersonal Justice	MEAN	SD
1. If I were to speak with a scientist in my community, he or she would treat me in a polite manner.	3.80	.77
2. If I were to speak with a scientist in my community, he or she would treat me with respect.	3.87	.70
3. If I were to speak with a scientist in my community, he or she would treat me with dignity.	3.73	.74

- **Informational Justice.** Informational justice focuses on the degree to which individuals feel that authorities have provided appropriate explanations and disclosure during decision-making processes (Colquitt, 2001; Coyle-Shapiro, 2002; Greenberg, 1993). *On average, respondents are divided about whether or not the information they receive on local scientific research is accurate; but respondents were somewhat more likely to agree that local scientists would communicate potential impacts about their research in a candid and timely manner.*

Informational Justice	MEAN	SD
1. Local scientists are usually candid in their public communication about potential impacts of their research on communities like mine.	3.30	.83
2. Procedures are in place to ensure that communities like mine have accurate information about local scientific research that might affect them.	3.03	.80
3. Scientists working in my community would communicate potential public health or environmental hazards in a timely manner.	3.42	.80

## Satisfaction with local research

We conducted further analysis to examine whether respondents' perceptions of justice were related to their satisfaction with local research. The results\* showed that all four justice measures were statistically associated with the degree to which local residents said that the research was appropriate for their communities and their willingness to support plans to attract more scientific research to their communities. These results suggest that support for research in these two counties is contingent on respondents' beliefs that (a) the research benefits the community, (b) they are being adequately informed by scientists about the impacts of their research, (c) there are unbiased procedures in place that would allow them to have

some influence over the research that is being conducted in their community, and (d) local scientists would treat them with dignity in interactions and be respectful of their rights as citizens.

## Concerns about technology

In comparison, only distributive justice consistently predicted concerns about technology, including whether residents believed the risks outweighed the benefits or the technology posed a public health risk. That is, local residents who believed that their communities received a fair share of the benefits of local research also expressed less concern about the risks of biotechnology, nanotechnology, and gene therapy. For biotechnology and nanotechnology, informational fairness also predicted technology concern, meaning that respondents who believed local scientists were candid and forthcoming in their communication about the potential impacts of their research were also less concerned about the technologies. Procedural justice (whether or not scientists were perceived as giving voice to residents in the decision-making process) and interpersonal justice (whether or not scientists were perceived as treating local residents with respect and dignity) did not significantly relate to technology concern.

## Conclusions

In sum, our findings suggest that community residents care about the fairness of outcomes, procedures, treatment, and explanations in relation to local scientists' behavior and these perceptions relate to satisfaction with local research. Further, the perceived fairness of the distribution of outcomes (benefits vs. risks) was related to technology concern. That is, respondents were less concerned when they perceived a favorable share of the benefits. When evaluating the riskiness of hosting new technologies, residents may consider whether the research will give a fair share of its benefits to their community, minimize adverse impacts on the environment, and do more good than harm in their community. The degree to which explanations about the science and its potential impacts are considered to be forthright, timely, and accurate, is also important. In the larger context of economic growth related to technological development, these findings suggest that universities and/or industries should discuss their plans with the public before they seek to expand technology in their communities and regions. In particular, questions of who benefits and at what cost seem key to address, as well as issues related to information disclosure, community involvement, and treatment of community members. ▲

\*References and supporting data tables are available on the CaRDI website with this publication. For more information on this research, readers can request a copy of McComas, Besley, and Yang, (2008), "Risky Business: Perceived Behavior of Local Scientists and Community Support for their Research," *Risk Analysis*, by sending an email to kam19@cornell.edu. This research was supported by funds from the National Science Foundation (0551047), the Joint Institute for Food Safety and Applied Nutrition, and Cornell University Agricultural Experiment Station federal formula funds, Project No. NYC-131457 received from Cooperative State Research, Education and Extension Service, U.S. Department of Agriculture.

