Urban Bird Gardens Final Report
www.birds.cornell.edu/urbanbirdgardens

The goal of Urban Bird Gardens is to develop a new model for bringing meaningful and relevant participatory science education to Latino families.

Project Collaboration

Project Management

Leaders:

a. **Principal investigator** Janis Dickinson is Associate Professor of Natural Resources and Director of Citizen Science at the CLO. Dr. Dickinson has a 21-year track record of NSF-funded research and publication in the fields of ornithology and ecology at UC Berkeley, and has directed the development of several new citizen science projects at CLO including NestWatch, CamClickr, Celebrate Urban Birds!, MyYardCounts, and Personality Profiles. She directs a staff of 12, including three project directors, four project assistants, a research associate, two postdoctoral associates, two application developers, and a web designer.

b. **Co-principal investigator** Rick Bonney is the Lab’s Director of Program Development and Evaluation and has been PI or co-PI on six prior NSF awards to develop citizen science projects in informal settings. His current position at CLO reflects the institution’s commitment to impact evaluation and feedback of evaluation results into the CLO projects.

c. **Project Director** Karen Purcell has been working with CLO’s Urban Bird Studies for seven years, the last three as project director. A former classroom teacher and Spanish/English translator, she grew up in Chile and has dedicated her career to helping scientists identify and overcome language, cultural, and socioeconomic barriers to education. She was a creative force behind the design of Celebrate Urban Birds!, a citizen science project that in less that 2 years built partnerships with 4,000 community organizations to deliver citizen science to over 100,000 participants.

Research was led by Cecilia Garibay of Garibay Group, Chicago Cecilia Garibay is principal of Garibay Group, where she leads audience research and evaluation. Her research focuses on exhibits and programs in informal learning environments, particularly those aimed at reaching underrepresented audiences. Some of her recent efforts have involved research with Latino and immigrant communities—particularly regarding leisure
values and informal learning, conceptions of museums, and perceptions of science. She brings a bicultural/bilingual perspective to her work and specializes in culturally responsive and contextually relevant research and evaluation approaches. Ms. Garibay served on the National Research Council committee on informal science learning. She also served as a panelist and author on the NSF framework for evaluating the impact of informal science learning projects.

City Partners:

The Urban Bird Gardens partners included

1) Corazón Community Services in Chicago offers a comprehensive set of programs in the ‘settlement house’ style using a bilingual/bicultural approach. Programming focuses on a positive youth development approach offering educational support, practical skills, creative outlets, diverse opportunities, and mentors. Leaders include Adam Alonzo, Executive Director and Edith Soto, Manager of Prevention Programs

2) The Children’s Museum of Houston/ Community Science Workshop/Community Family Centers in Houston. Funded by the National Science Foundation, The Children’s Museum of Houston’s Science Workshop at Edison Middle School promotes and supports inquiry-based science for children, parents and teachers in Houston East End. Community Family Centers provides services for families to better address the root causes of poverty. CFC offers a network of services to care for the men, women and children placed at risk at Houston’s East End. By providing counseling, food, ESL and GED classes, HIV prevention education, early childhood education, dropout prevention programs and more, CFC supports the disadvantaged and identifies their needs. Leaders include Cheryl McCallum, Director of Education, Andrea Hernandez Site Coordinator and Robert Galan Program Coordinator.

3) Chicanos Por la Causa, Inc., in Phoenix is a statewide development corporation committed to building stronger, healthier communities as a lead advocate, coalition builder and direct service provider. CPLC promotes positive change and self-sufficiency to enhance the quality of life of those they serve in Arizona’s socially and economically deprived communities. Leaders include Maria Parra, Director of Prevention Services and Renato Ramos, Community /Prevention Specialist.

4) ASPIRA of Florida, Inc. in Miami. ASPIRA is a community-based organization dedicated to youth leadership development. ASPIRA of Florida provides community based guidance, counseling and leadership development opportunities to placed-at-risk young people. Students are identified and recruited directly from school computer profiles of potential dropouts, as well as from school counselors, teachers, parents, juvenile court and fellow peers. ASPIRA has also developed program initiatives in the areas of youth gang avoidance, drug prevention, alternative middle school education, community service, mentoring opportunities and charter schools.
Leaders include Raúl Martínez, President and CEO ASPIRA of Florida, Inc, and Fernando Lopez, Principal of ASPIRA Eugenio Maria de Hostos Youth Leadership Charter School

5) The Youth Policy Institute (YPI) in Los Angeles provides education, training and technology services for low income families. Youth Policy Institute serves families in Los Angeles at 85 sites throughout the city. YPI offers families education and training resources in the areas of afterschool, job training, early childhood education, physical education, adult literacy and ESL, computer literacy, charter schools, and college preparation. Each year, YPI helps more than 20,000 youth and adults through these programs. Leaders include Dixon Slingerland, Executive Director Youth Policy Institute, Ana Cubas Deputy Director (no longer at her post as of March 2009), and Mercedes Perez, Project Director, Belmont Full-Service Community Schools.

6) New York Restoration Project (NYRP) in New York. NYRP is now one of the leading partners of the New York City Department of Parks & Recreation in developing underused and new parkland. Through park and garden restoration, environmental education, and public programs, NYRP has become an important catalyst for sustainable community development. The goal at NYRP is to ensure that parks and other open spaces in less privileged neighborhoods become the "Central Park" of those communities, where recreational, educational, and environmental programs become part of the fabric of the neighborhood. Leader is Akiima Price, Chief of Education & Programs

Advisors:

**Dr. Francisco Villarruel, Michigan State University** Dr. Francisco Villarruel, Professor of Family and Child Ecology, Michigan State University. Dr. Villarruel is Director of the Julián Samora Research Institute at MSU and specializes in family relations and risk factors for Latino youth.

**Sofia Villenas, Associate Professor of Education, Cornell University** Dr. Villenas is affiliated with the Latino/a Studies Program at Cornell, was a bilingual school teacher, and teaches and publishes on educational anthropology, Latino education, multiculturalism, language issues, and the social/political context of education

Collaborators

DiOnetta Jones, Director of Diversity Programs, College of Engineering, Cornell University
Project Research Strategy
(from Garibay Group Report)

Garibay Group worked with CLO staff to conduct front-end research with targeted Latino communities. The goal of this research was to gain an in-depth understanding of partner communities, including both Latino families living in these communities and of organizational partners. Specifically, research focused on understanding Latino families’ cultural values and norms regarding leisure choices, attitudes toward science, use of technology, and responses to and interested in citizen science.

Methods for this study included the development of community profiles, focus groups with parents and youth, and community partner interviews. This research was grounded in culturally responsive approaches (Frierson, Hood, and Hughes, 2002). In culturally responsive research and evaluation, the researcher considers the culture and context of participants and of the program as critical dimensions that inform every aspect of the research project. An important aspect of this approach is the inclusion of stakeholder groups in as authentic a way as possible throughout the project—in this case families from the six communities and community partners.

Research strategy included development of community profiles, community partner interviews, and focus groups with parents and youth:

1) Community Profiles (from Garibay Group Report)
As a first step in the research, Garibay Group staff developed “community profiles” from census data and other published research on Latino communities in the six target communities. Much of this research, while demographic in nature, was important in teasing out the nuances among the significantly diverse Latino communities in the U.S. and ensuring that a general understanding of community contexts, including similarities and differences. This component of the research, for example, provided data on the percentages of Latino sub-groups in the area by nationality, education levels, and other, socio-economic factors.
2) Community partner interview (from Garibay Group Report)

This study also involved in-depth phone interviews with staff from each of the community partners. Interviews focused on learning partners’ perspectives about their communities and drew on their experience in understanding the lived experience and context of Latino families in the six communities. Interviews were also meant to develop relationships between CLO and community organizations, including having in-depth discussions about what it meant to engage in authentic collaboration and to exchange ideas about partners’ expectations and expertise. For this reason, a CLO staff member, Karen Purcell, Project Director, led the interviews with Garibay Group staff providing guidance (including developing interview protocols) and co-facilitating some interviews as appropriate. The number of staff interviewed varied, but generally involved between one to three staff members who had deep experience working directly with the Latino community in their area.

We originally were going to review and analyze existing community partner interviews conducted in 2006. However we decided to conduct new interviews so that we could probe more in depth, expand the range of topics, and get the perspective of new staff members and organizations. Purcell conducted the phone interviews with partners in Phoenix in August 2008, Houston in September 2008, Chicago in November 2008, New York in December of 2008, Miami in March 2009, and Los Angeles in January 2009 and then again in May 2009 (due to change in staff). Purcell interviewed staff at each of the participating partner organizations about a range of topics including:

- Services and Resources
- Community Snapshot
- Partnerships
- Citizen Science

Interviews were analyzed by Garibay Group. The review identified both commonalities and unique traits among communities, which formed the basis for discussion among community partners and allowed us to identify factors to consider in developing a citizen science model appropriate for Latino audiences within the sampling of communities we focused on.

Selected Community Partner Interview Findings

Community Snapshot:
Partners described their communities as poor, isolated (because of fear and immigration status), with very strong family ties. Green spaces are lacking and violence is high. Furthermore they stated that their communities had very low educational levels and low literacy skills. Partner interviews indicate that these are very low income neighborhoods. The majority of the partners indicated that the average household income was less than $20,000 per family. All partners indicated that the dominant language in these communities is Spanish.
Major **issues affecting** the community (pressing needs) included gang violence, lack of jobs, undocumented status, poverty, fear, drugs, health (accessing healthcare), and basic needs (food, healthcare, housing). Racism, feeling disempowered, teen pregnancy, school dropout rates, vandalism, and improving educational opportunities were also mentioned. An interesting common theme among partners was the view that families lacked knowledge of the US educational system. One partner mentioned a poor transit system and being a critical issue in the community.

Main **assets and strengths** in the community included family unity, hard work ethic, resilience, determination, strong culture/traditions, willingness to participate/strong parental engagement, resourcefulness, desire for a better life, and families caring for each other. Some partners highlighted community gardens as a place where communities connected.

Partners characterized **values important to parents** as education, safety, family, having basic needs met.

Although most partners mentioned mental health problems in the community, mental health was “a touchy topic” or “taboo” as some partners described it. Partners indicated that many families refuse help and are offended by offers of help.

**Partnerships**

All partners felt that partnerships benefitted the community, providing greater opportunities and shared resources.

**Critical components of good partnerships** included common goals, a shared strategic vision, and shared values, and trust. Strong buy-in and commitment was also mentioned. Some partners mentioned follow-through, consistency, and completion as being critical. Transportation was mentioned as important in successful partnerships in the community.

One interesting comment from Fernando Lopez of ASPIRA of Florida, Inc. was that ‘sincerity’ was important. When partnering with a college that wasn’t in their community “our kids felt that the college students were participating for just the grades. There was no sincerity.” Several partners believed that it was important that partners (staff/mentors) understood the realities of their urban world. Experience and really understanding the community are critical. Science is only a part of the outcome. Relevancy is important.

The ability to showcase and receive public recognition for work done in partnerships was viewed very positively by one partner.

Group leaders felt that **partnerships did not work** well when there wasn’t good communication, and when asked to do more than they could with available
resources. Unclear roles, high turnover, and unfocused agendas were viewed negatively. No buy-in and a lack of ownership were mentioned as contributing to failed partnerships. Competition and ‘too many cooks in the kitchen’ were also mentioned as negatives.

**Citizen science:**
All partners see benefits and show enthusiasm for participating in citizen science. Partners could see relevance for their youth and community and felt they could integrate projects within their programming. All partners felt that they could fit in citizen science with their organization’s focus.

Chicanos por la Causa felt that citizen science would provide an exciting way to improve analytical skills and saw it closely tied with the creation of a community garden. Many partners felt that citizen science would be a long-term project – and they viewed this positively. Some partners felt that participation would be fun and interesting. Many described citizen science as ‘hands-on’ and active. Most partners felt that citizen science would bring the community together and promote parental engagement. One partner felt that they could use a citizen science project as a culmination of thematic learning.

“I almost see it as a fun engaging way to organize parents and have them involved in a hands-on way in their kids’ educational and have them be supportive of that aspect”
~Los Angeles.

“I think kids would really enjoy it...Citizen science exposes them to different things that they couldn’t have done”~ Houston

Some **barriers and challenges** to participation in a citizen science project included lack of staffing, not having enough knowledge, and vandalism. Awareness of community needs and realities were mentioned as important – making it important to make it relevant to the community. Single parents and heavy work schedules were mentioned as difficulties for parental participation.

**Support needed** to participate in citizen science included resources and support (monetary, knowledge, materials, and technical). One partner mentioned that science can be seen as complex and can be intimidating and wondered if Cornell could provide staff to ‘demystify’ the science process. Another partner spoke of how difficult it is to get parents involved in programming. Some partners expressed that it was very important that the project not be ‘too complicated’. If a project takes a great deal of staff time to interpret and is not engaging to the youth then it cannot be successful.

Many partners felt that it would be critically important to make the program completely free to the community.
Partners strongly felt that their communities would participate in citizen science.

All partners felt that cross-curricular activities such as gardening, art, and math would provide exciting opportunities and would be good tools of engagement.

It is clear that in order to support these partners we must understand that they have a complex agenda and we should facilitate the process so that it maps directly to their needs and goals. Offering a tiered project optimized for different strengths, needs and goals would be ideal. Relevance to the needs of the partners and community is key.

3) **Focus groups with members of target communities (from Garibay Group Report)**

Focus groups are a type of social research that relies and draws on respondents’ personal experiences in order to understand participants’ perspectives, attitudes, and ideas about a topic or issue (Krueger, 1998; Powell and Single, 1996). A strength of this approach is that it provides community members opportunities to share their lived experiences and view points with each other, helping the research understand salient issues community members as a whole may feel are important. Thus, focus groups allowed us to speak with respondents from a variety of communities in depth and gain an understanding of their perspectives, both from an individual level and as part of members of specific communities.

Garibay Group staff led the focus group research with Latino families. Karen Purcell, Project Director from CLO was also involved in focus groups both to hear first-hand from participants, develop relationships with partner organization, and to help facilitate focus groups discussions as appropriate. Although funding was for focus groups in three cities, the Garibay Group/CLO team conducted 8 focus groups with adults in four cities (two per city in Chicago, Los Angeles, Miami, and Phoenix) involving a total of 72 participants and four focus groups with youth involving 37 participants total.

Focus group participants were purposively selected. A purposive sample is a type of non-random sample in which specific types of respondents are sought out (Totosy de Zepetnek, 2000). In addition to drawing on families who were already involved in some activity at the community partner organization, the primary criteria for selection for adults were that they had at least one child between the ages of 8 to 15 years old and were Latino. Age was the primary criterion for youth and participants included those in seventh through twelfth grade. We also strived to get as equal a mix as possible of females and males in the youth sample.

Of adult participants, 87% were female. Almost all participants were immigrants and Spanish was their first language. All focus groups with parents were conducted in Spanish and each lasted two hours. Among youth participants, most respondents were second generation (i.e., born in the U.S.). Focus groups with youth were all conducted in English (with a sprinkling of Spanish as appropriate) and each lasted one hour.

Each adult participant received $50 cash and a small gift (sound CD) from the Lab of Ornithology. Youth received $20 and a small gift (sound recording CD). Participants were
recruited by the city partner organizations with guidance from Garibay Group and Karen Purcell.

Focus groups with families and youth in target communities drew upon respondents’ personal experiences in order to understand participants’ perspectives, attitudes, and ideas and develop an understanding of community contexts, particularly community needs and assets. The following topics/issues were explored:

- Identify pertinent cultural values and perspectives regarding leisure time activities
- Determine levels of interest in technology, and motivations and potential barriers to technology use.
- Understand target community members’ conceptions or perceptions of science/environmental science and scientists.
- Understand target community members’ conceptions or perceptions of the environment.
- Determine levels of interest in citizen science projects, and motivations and potential barriers to participation.

**Selected Focus Group Findings**

**Leisure:**
Since engaging in informal learning activities is part of a larger decision a person or group makes about how to spend leisure time we focused on identifying cultural values, norms, and perspectives that play a role in leisure choices.

**Leisure Choices: Implications (from Garibay Group report)**

- While parents in this study were working class and had relatively low levels of education, they all still highly valued education for their children. This permeated all of their decisions, including choices about leisure activities and out-of-school activities for their children. The value placed on education presents an important opportunity that can be capitalized on in developing an informal science education project such as UBG. It is clear from findings that those activities that are seen as educational often rise to the top of families’ list of viable activities they will choose.

- Another important finding is around the importance of engaging in leisure activities as a group. While previous studies have certainly identified the importance of socializing as part of leisure, for Latino families in this study, group engagement went beyond socializing. For participants in this study, it provided a vehicle by which to foster family bonds. The implication is that whatever model is developed for UBG, it needs to include both youth and adults in the process. Moreover, the program will be much stronger if parents are not simply providing a supporting role, but are also
engaged in their own learning. In other words, the project should consider the family unit as the target audience rather than simply youth.

- Community involvement also emerged as an important value in selecting leisure activities for youth. It may be that this finding is unique to those youth in our study as they were heavily involved with partner community organizations where community is a core value of what they do. Nonetheless, for this particular audience, developing a project that has obvious links to and direct benefits for the community can be critically important.

**Technology:**

When we first began the Urban Bird Gardens Planning Grant we planned to test educational tools and materials previously developed to support citizen science for their utility and relevance in target community settings at focus groups. As relationships with partners and communities developed, we realized that it was premature to do this at this point. We decided, instead that we needed to look at a larger picture and assess interest from the community without presenting ‘pre-made’ tools. It was important assess degrees of comfort and interest in different technologies. Exploring fears also became critical. Testing usability of tools without first exploring technology with the community did not seem feasible. Testing of tools, then, took the form of exploration of the capacity and motivation of communities to engage with technologies ranging from using cell phones, video, social networking tools, internet, and gaming.

**Technology: Implications (from Garibay Group report)**

- If a program targets Latino families similar to those in this study, there may be a technology “gap” between parents and children. Clearly youth were very adept at using technology and saw it as an important aspect of their lives, including as part of leisure activities. Technology use by parents, on the other hand, was much more of a mix. If a program will include a significant technology component, it will be important to address differences in familiarity and comfort with technology.

- There may be opportunities to leverage the social networking so important to youth. For example, a project that links youth from different parts of U.S. or even different countries as part of a broad informal science initiative may have high appeal and could present interesting opportunities to share data and experiences around science.

**Perceptions of Science/Environmental Science/ Scientists:**

We explored perceptions of science and scientists. We also explored the value of study in
scientific fields and careers in science. Parents were asked about the importance of science for their children.

**Perceptions of Science: Implications (from Garibay Group report)**

➢ The generally positive perceptions of science, particularly for adults, suggest that there are opportunities to engage this audience in citizen science projects. Adult participants and youth (to a lesser extent) saw science as a valuable field that made significant contributions to society. They thought of sciences as a somewhat dynamic discipline that centered on experimentation, discovery, and invention. These aspects often seemed to be the most exciting aspects of science. Yet participants also had limited conceptions of what science was and did not necessarily associate science with doing field work and research outside a laboratory. Programs like UBG can clearly help expand both adults and youth’s understandings of science and scientific research.

➢ It is also possible that engaging these youth in informal science activities that provide them with a different way of “doing” science than what they currently experience in school may be useful in expanding their notions of what science is and potentially seeing themselves as scientists.

**Environment:**
We explored the environment, environmental issues, perceptions of nature, green, and birds.

**Environment: Implications (from Garibay Group report)**

➢ Participants’ concern for the environment can clearly serve as an entry-point in engaging Latino communities with citizen science, particularly if the connection between the activities in which they are engaged and the potential contributions of such activities to scientific learning about environmental issues is clearly communicated.

➢ The extent to which participants (both adults and youth) were focused on community issues even extended to some of their views of environmental problems. They saw a relationship between the two and were very motivated to engage in activities they saw as directly benefiting their local community. We see this as another important entry-point and opportunity that can be leveraged by UBG. Projects that include some community focus can be especially effective in engaging these Latino communities.

**Citizen Science:**
The concept of citizen science was introduced and several examples of national projects (astronomy, horticulture, and birds) were presented. Perceptions and attitudes were explored.
Citizen Science: Implications (from Garibay Group report)

- Adult participants did, in fact, see themselves as potential participants in citizen science projects. They not only saw the value of citizen science to society, but also easily identified potential benefits for them personally. There is clearly an opportunity to engage this audience in projects that focus on public participation in research. It is important to note, however, that respondents also expressed reluctance about their ability to participate, particularly because of their education levels. Any project developed to serve this audience, therefore, will need to: a) take into consideration literacy and other education issues; b) help participants become comfortable with their role and data collection; c) potentially provide participants with more “basics” about how citizen science works than that provided to more “mainstream” audiences already participating in citizen science; and d) likely provide more support early in the process than other citizen science projects.

- Projects developed for Latino families similar to participants in this study will be more compelling if they are integrated into community issues and that relationship between project activities and the benefit to the community is clear.

- The importance of community also clearly emerged in participants’ emphasis on opportunities to participate in groups—be that a family group or as part of a larger community network that includes peers, neighbors, and friends. Any program developed will need to consider ways to incorporate group participation into its design.

- While engaging youth may be more challenging, opportunities to participate as part of a social group as well as a community focus can help. Additionally, programs that include youth in their development and that use technology and even social networking components may prove more successful.

Focus Group Timeline:

July 30-31 2008 Focus groups were conducted at Carl Hayden Community Center in Phoenix, Arizona.

August 12-13 2008 Focus Groups were conducted at Corazón Community Services in Cicero, Chicago, Illinois.

October 29-30 Focus Groups were conducted at ASPIRA Eugenio Maria de Hostos Youth Leadership Charter School in Miami, Florida.

December 10-11 Focus Groups were conducted at Bert Corona Charter Middle School and Monseñor Oscar Romero Charter Middle School in Los Angeles, California.
Analysis of Project Research (from Garibay Group Report)

Focus groups were recorded and transcribed for analysis. Transcript data was coded using inductive constant comparison techniques (Patton, 1990, Denzin and Lincoln, 1998) whereby content is examined and salient categories or themes are identified as they emerge from the data. In this iterative process each unit of data is systematically compared with each previous data unit, which allows the researcher to continually identify, develop, and refine categories of data and patterns as they emerge.

For analysis of interviews with partner organizations, a written summary of each interview was carefully prepared by the CLO staff member. Garibay Group staff then used the summaries as they basis of analysis, examining them for salient patterns or categories. Additionally, CLO and Garibay Group staff debriefed by phone periodically over the course of interviews as well as after all interviews were completed to discuss findings and key themes emerging from interview data.

Partner, Advisor, and Collaborator Synergies

The UBG Planning Grant research strategy also included fostering communication among partners, advisors, and collaborators through creation of Urban Bird Gardens Website and a partner, collaborator, and advisory board meeting.

1) Urban Bird Gardens Website:
The website includes a partner highlight, summary and update of project activities, news, results, photos, and relevant literature. Website: http://www.birds.cornell.edu/urbanbirdgardens

The website was created to keep partners connected, create a sense of community, and keep all partners, advisors, and collaborators informed.

2) Partner, collaborator, and advisory board meeting.

The UBG Partner/Collaborator/Advisory Board meeting was held on January 29 – January 30, 2009 in Ithaca NY. The meeting brought all stakeholders together and was used to evaluate and interpret the focus group data and community profiles.

After community profile report and focus group data were analyzed, partners, collaborators, and advisors received a written report containing detailed findings. These results were presented by Garibay in a PowerPoint presentation at the advisory board
meeting. Discussions centered on the best practices and characteristics of a leadership model for bringing informal science education into Latino communities. All community partners actively provided their opinions and insights into the meaning of results. With Garibay’s and Purcell’s leadership, partners and advisory board members reviewed findings and engaged in a participatory process using a range of techniques (e.g., affinity diagramming, SWOT analysis, critical success factor identification) to develop the community model. After the meeting, CLO staff developed a revised model for distribution to community partners for final review. This model will serve as the basis for a full proposal to the ISE program in 2009.
Urban Bird Gardens
Front-end Research
Cornell Lab of Ornithology
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Overview

The Cornell Lab of Ornithology embarked on Urban Bird Gardens, a planning grant funded by NSF to inform citizen science efforts targeting Latino families in six major U.S. cities. Garibay Group worked with CLO staff to conduct front-end research with targeted Latino communities. The goal of this research was to gain in-depth understanding of Latino families living in these communities and their perspectives on citizen science.

Research focused specifically on understanding Latino families’ cultural values and norms regarding leisure choices, attitudes toward science, use of technology, and responses to (and interest in) citizen science.

Methods

Methods for this study included the development of community profiles, focus groups with parents and youth, and community partner interviews. This research was grounded in culturally responsive approaches (Frierson, Hood, and Hughes, 2002).

In culturally responsive research and evaluation, the researcher considers the culture and context of participants and of the program to be critical dimensions that inform every aspect of the research project.

An important aspect of this approach is the inclusion of stakeholder groups, in as authentic a way as possible, throughout the project—in this case families from the six communities and community partners.

Community Profiles

As a first step in the research, Garibay Group staff developed “community profiles” from census data as well as other published research on Latino communities in the six target communities. While much of this research was demographic in nature, the process was important in teasing out the nuances among the significantly diverse Latino communities in the U.S. and ensuring a general understanding of community contexts, including similarities and differences. This component of the research, for example, provided data on the percentages of Latino sub-groups in the area by nationality, education levels, and other socio-economic factors. (Community profiles are part of a separate report generated for the project and are not included here.)

Focus Groups

Focus groups are a type of social research that rely and draw on respondents’ personal experiences in order to understand participants’ perspectives, attitudes, and ideas about a topic or issue (Krueger, 1998; Powell

Project partners included six community organizations:

- Aspira of Florida, Inc. (Miami)
- Chicanos por la Causa, Inc. (Phoenix)
- Children's Museum of Houston (Houston)
- Corazón Community Center (Chicago)
- New York Restoration Project (New York)
- Youth Policy Institute (Los Angeles)
Overview, cont’d.

and Single, 1996). This approach provides community members with opportunities to share their lived experiences and viewpoints, helping researchers understand salient issues that community members, as a whole, may feel to be important. Focus groups, therefore, allowed us to speak with respondents from a variety of communities in depth and gain an understanding of their perspectives, both from an individual level and as part of members of their particular communities.

Garibay Group staff led the focus group research with Latino families. A CLO team member was also involved in order to hear from participants firsthand, develop initial relationships with partner organizations, and to help facilitate focus groups discussions when appropriate. The Garibay Group/CLO team conducted eight focus groups with adults in four cities (two per city in Chicago, Los Angeles, Miami, and Phoenix), involving a total of 72 participants, and four focus groups with youth, one each in the same cities (37 participants total).

Focus group participants were purposively selected. A purposive sample is a type of non-random sample in which specific types of respondents are sought out (Totosy de Zepetnek, 2000). In addition to drawing on families who were already involved in some activity at the community partner organization, the primary criteria for selection for adults were that they had at least one child between ages 8 and 15 years old and were Latino. Age was the primary criterion for youth; participants ranged from seventh through twelfth grade. We also strived to get as equal a mix as possible of females and males in the youth sample.

87% of adult participants were female. Almost all participants were immigrants and Spanish was their first language. The length of time participants had resided in the U.S. ranged from six months to more than 30 years. Respondents were all working class and most had low education levels. All focus groups with parents were conducted in Spanish and each lasted two hours.

Among youth participants, most respondents were second-generation (i.e., born in the U.S.). Focus groups with youth were all conducted in English (with a sprinkling of Spanish as appropriate) and each lasted one hour. (See Appendix A for tables on participants.)

Partner Interviews
This study also involved in-depth interviews with staff from each community partner organization. Interviews focused on learning partners’ perspectives about their communities.
Overview, cont’d.

and drew on their experience in understanding the lived experience and context of Latino families in the six communities.

Interviews, also meant to develop relationships between CLO and community organizations, included in-depth discussions about what it meant to both engage in authentic collaboration and exchange ideas about partners’ expectations and expertise. For this reason, a CLO staff member led these interviews with Garibay Group staff providing guidance (including developing interview protocols) and co-facilitating some interviews as appropriate. The number of staff interviewed varied, but generally ranged between one to three staff members with significant experience working directly with the local Latino community.

A CLO staff member carefully prepared a written summary of each interview. Garibay Group staff then used the summaries to further inform the interpretation of focus group results. This report focuses on adult and family respondents as they are the target audience. Where appropriate, CBO perspectives are included.

Analysis

Focus groups were recorded and transcribed for analysis. Transcript data was coded using inductive constant comparison techniques (Miles and Huberman, 1994, Patton, 1990), whereby content is examined and salient categories or themes are identified as they emerge from the data. In this iterative process, each unit of data is systematically compared with each previous data unit. This technique allows the researcher to continually identify, develop, and refine categories of data and patterns as they emerge.
Results
The Community Context

Latinos in the U.S. comprise approximately 15% of the total population (U.S. Census, 2002). The Latino population in the United States is, of course, quite diverse. U.S. Latinos, for example, represent more than 20 different countries, include both U.S.-born and immigrant residents, and include communities with varied levels of acculturation, socio-economic status, and education. Furthermore, culture and cultural identity are not static, but rather dynamic, context-driven processes (Chuang, 1994; Gutierrez and Rogoff, 2003); they are mutually shaped by an individual’s perspectives and values and their environment (Hirschfeld, 2002).

Thus, when interpreting research results and determining the implications of study findings, it is critical to have a clear understanding of the specific segment of the Latino population who participated in a study and of the contextual issues at play within those communities. Results from this study, therefore, should not be generalized to Latinos as a whole. Study findings, however, are relevant for Latino communities with similar demographics and community contexts as those who participated in this study.

Participating Communities

- Primarily two-parent households.
- Spanish-dominant.
- Immigration status varies.
- Working class and low income. (CBO partners reported that average household income less than $20,000 per family.)
- Low education levels, including varied literacy skills.
Leisure Decisions

While adult participants saw relaxation as an important function of leisure, they also saw a broader purpose to leisure and often selected activities based on their perceived benefit. Analysis revealed three key aspects to the leisure choices these participants made: leisure as a group activity, family unity, and education.

Because engaging in informal learning activities is part of a larger decision that a person (or group) makes about how to spend leisure time, one line of inquiry in this study focused on identifying cultural values, norms, and perspectives that play a role in leisure choices. We specifically wanted to learn from parents how they made decisions about leisure activities, what factors entered into these decisions, and how parents considered their leisure time in general.

Leisure is a Group Activity

This study confirmed earlier research (Garibay, 2007, 2006, 2006b) identifying spending time with family and friends as a critical factor in leisure choices made by Latino families. For this audience segment, spending leisure time together is about being "attentive" to the needs of the family. An important consideration in selecting leisure activities, therefore, was the degree to which they allow the entire family to participate. Therefore, leisure activities must be accessible to the entire family group and, in general, should engage and accommodate all family members regardless of age.

Additionally, "family" for this specific audience also included extended family members (e.g., grandparents, cousins, aunts and uncles) and sometimes even friends. In fact, getting together with extended family was often mentioned as a primary weekend activity.

Promotes and maintains family unity

This study confirmed previous research about the leisure choices of Latino families from similar socio-economic backgrounds to those participating in the UBG research. A major function of leisure activities was to build and maintain family cohesion (Garibay, 2007, 2006, 2006b). Despite their long work hours, participating adults placed great importance on making sure to carve out time for family activities.

Garibay (2006b) has previously suggested that fostering family unity seems especially important to Latino families in lower socio-economic situations. Given some parents' heavy work schedules (e.g., having two jobs or working six days a week), these families have limited time together and therefore view their leisure time as precious.

It’s important to have everyone together. We enjoy ourselves. We have fun and we bond. It feels great to share time as a group. It’s about the family.

It’s about being with the kids. Dedicating time to them.

Those things you do together...they unite the family more.

I try to give them special experiences like camping or going peach picking—just different things we do together that give them special memories. We build memories together.

[We choose] activities that expose kids to new things that opens up their world.

I try to expose them to a bit of everything. So they can start seeing what’s out there. Things that can expand their mind beyond just the neighborhood or negative things. I want them to learn.
Leisure Decisions, cont’d.

While findings in the adult focus groups concerning "family time" were similar to previous research, this study found that Latino youth in participating communities also felt that spending time with family was an important dimension of their leisure. Like adults in our sample, they valued family connections and actively maintained these networks through spending leisure time together. Additionally, they also used technology as a way of keeping connected not only to friends, but also to "peer" family members such as cousins.

Of course, participating youth also saw spending time with friends as an important and critical aspect of leisure time. Their "off time" networks typically included friends from school and friends or peers at the CBO. We did note that access to technology meant that some participating youth tended to have broader and sometimes more geographically dispersed social networks.

The cultural construct of educación is also apparent when viewing the leisure activities participants categorized as "educational," which could include various activities providing their children with new experiences or ideas that developed a range of skills or fostered moral and social values.

Parents valued activities that:
- Provide mental or physical stimulation for children.
- Expose children to something they might not have seen or known about before.
- Stimulate children’s interest, potentially inciting them to seek additional information later.
- Foster a range of developmental skills, including social skills.
- Strengthen family bonds.

Has some educational merit, especially for children

The educational dimension of leisure time activities also emerged as an important factor in the research. Parents highly valued their children's education; leisure activities considered educational were highly regarded, directly influencing their leisure choices. Adult participants often discussed the importance of providing educational experiences that broadened their children’s perspectives and supported their learning.

It is important to recognize, however, that adult respondents felt that education included much more than formal schooling or the mere acquisition of facts. Education, from their perspective, was more about their children's whole development: physical, social, moral, and even spiritual. Reese et al., (1995) in fact, discuss the concept of educación in more traditional Latino families, in which education encompasses not only formal schooling but also social and ethical education. This construct may be akin to the “mainstream” concept of youth development.

This is not to say that parents did not also choose activities that were solely entertaining, such visiting a water park. But they did consider those activities with both entertainment and educational value to be more worthwhile. Of course, even a visit to a water park was considered beneficial because it got youth outdoors and physically active.

The educational dimension of leisure time activities also emerged as an important factor in the research. Parents highly valued their children’s education; leisure activities considered educational were highly regarded, directly influencing their leisure choices. Adult participants often discussed the importance of providing educational experiences that broadened their children’s perspectives and supported their learning.
Leisure Decisions, cont’d.

Safety emerged as a major consideration for parents. This was true not only regarding leisure activities, but also in deciding where youth would spend time after school. Places perceived as safe environments for youth included those seen as “youth-focused,” free of gang activity (an unfortunate reality in some of the neighborhoods in which these respondents live), and which offer educational or appropriate activities for their children.

In fact, parents often commented that they were involved with a particular partner CBO because they trusted places that met that criteria. On participant, put it this way, “I also know this [the CBO] is a safe place and he is with other kids who I know or who I know are part of a program like the one you find here.”

Youth also noted that safety was a consideration in leisure choices, stating that they felt that activities at partner community organizations should provide appropriate and safe ways to spend time when not in school or at home.
Leisure: Youth

Three factors emerged as critical aspects of youth’s leisure time: spending time with friends, spending time with family, and engaging in community-focused activities.

Youth saw leisure mostly as a time to socialize, relax, and spend time on activities they enjoyed such as playing sports, spending time on the Internet, and listening to music.

**Friends**

Friends, not surprisingly, were an integral part of youth’s leisure time. Respondents often talked about spending time playing sports, games, and “just hanging out” with their friends. Peer interactions through after-school activities, particularly at the partnering CBO were also important.

**Family**

Family also emerged as a considerable part of youth’s leisure time. Youth talked about the importance of spending time with family, including not only their parents and siblings, but also extended family such as aunts, uncles, and cousins. They not only talked about enjoying this family time, but some also commented that even their friends sometimes took part in family leisure activities. For example, several mentioned that friends regularly came over during family cook outs or gatherings.

**Community Involvement**

Youth also placed high value on activities in which they could do something positive for their community. Youth mentioned being involved in a range of activities...
Leisure: Youth, cont’d.

including neighborhood clean-ups and beautification projects (e.g., planting gardens), community rallies against gangs and violence, and other activities that they saw benefiting their neighborhood in general. While these might not be considered “leisure” pursuits in a traditional sense, youth certainly saw them as important activities in which to use their free time.

Of course, these particular respondents were involved with programs at community organizations, and as a whole were likely more “into” such activities than peers who did not participate in CBO programs. What was striking, however, was the extent to which this value emerged across all youth groups in the four cities in which we collected data. Community involvement and actively participating in group projects which focused on improving or positively affecting their neighborhoods and community were important to youth.

You get to hang out with your friends. That’s what’s fun about free time.

I like to do activities where you can express yourself.

We do cookouts with my family. Sometimes my friends come hang out with us.

Usually on weekends we do stuff together as a family. It’s good to do stuff together.

I like to get involved in community activities.

The community marches are cool. Like, Peace march and cease fire [against gang violence]. It feels good to get out there and help the community.

If we can do something for the community, I think, “Let’s go ahead and do it.”
Technology Use

Technology use varied significantly between youth and adult participants. While technology was prevalent among youth, its use varied more widely among adult respondents. Adults, nonetheless, recognized the importance of technology.

In the grant proposal, the CLO team expected to test a range of existing educational tools and materials to support citizen science with Latino communities to assess their potential relevance and usefulness. However, as the project progressed and conversations with partner community organizations ensued, the CLO team felt they first needed to determine communities’ access to and comfort with various technologies. This way the team could gauge the degree to which citizen science initiatives could realistically incorporate technology as data collection or communication tools. Perhaps not surprisingly, youth were heavy users of technology, including the internet, cell phones (especially for texting friends), computers, mp3 players, and video games. Technology was found to be a key social networking tool for youth to connect with friends both local and far away. Youth used text features on phones, MySpace, and IM to stay connected with friends and peer family members like cousins.

We found that beyond its obvious communication and social networking aspects, technology helped youth express themselves and explore building their identities. Youth were particularly interested in and used technology that allowed them self-expression and assisted them in exploring their interests. YouTube, for example, was quite popular for listening to and sharing music videos. MySpace was, in large part, a favorite because it allowed students to create their own online page, decorate it as they liked, and include information that helped them express their personality.

Technology use was less consistent among adult respondents than with youth. Some adult participants used newer technology regularly while others used it rarely or not at all. Most adults used cell phones on a regular basis for general communication; it was seen as a convenient way to stay in touch with family. Digital cameras were also popular with most families.

Computer use varied widely, however. Some adults reported regularly using computers and the Internet for work and/or leisure, while others did not use them at all. Adult respondents were far less likely to use technology for social networking than youth. Nonetheless, some reported using email and YouTube to remain in touch with family and to share music and videos.

Totally social! I use technology to keep up with my friends.

You can express yourself, like sending videos from YouTube.

My friends and I made a video and we put it up on YouTube. It’s funny.

I put up pictures on MySpace.

I take pictures with my cell when I want to remember something.

MySpace is fun. You get to fix up your page and make it all about you. That’s why it’s called MySpace.

[With chats] you get to talk to friends. Like if they moved or I get to talk to my cousins who live in a different city.

Instant Message—I IM with friends or it can be friends of friends.

We webcam a lot with family like in Mexico or California.
Technology, cont’d.

Adult respondents recognized the importance and value of technology and saw these modern tools as fairly prevalent in daily life. Adults, however, were far less versed in technology than youth. While some respondents were quite comfortable with computers, being online, or using text functions on cell phones, others were much less familiar with such technologies.

Parents also expressed concern regarding their children’s use of technology, in particular the time they spent in on-line chat rooms and sites such as MySpace. They worried that their children would stumble onto inappropriate sites or fall prey to the motives of strangers. Some parents noted purposely locating the home computer in the living room or other highly trafficked space in order to closely monitor their children’s computer activity. Most said they also tried to limit the amount of time their children spent on-line.

Texting is a convenient way to keep in touch with my husband or the kids. I can ask them where they are. Or tell my husband when I’m on my way.

My kids help me upload the photos and we send them to my sisters and family back home. It’s fast.

Oh for YouTube, we all use it. The adults and kids at home. We’re all in line taking our turn on the computer at home to use YouTube.

I’ve heard about [YouTube] it, but I don’t use it.

I really don’t use computers. I know maybe I should—my kids do plenty of that.

I worry a lot about them getting into chats with bad people. You hear so many things—I’m careful about the time they spend there.

We do check up on kids’ cell phone use and their text messaging. Who they are communicating with.

I do worry about [their use of places like MySpace]. I want them to try to think about the consequences.
Technology Use, cont’d.

The graphic below illustrates the range of technologies named in all focus groups and those which adults said they used. However, the actual degree of use varied widely among respondents with some using some of these technologies quite regularly and others not using them at all.
Technology Use, cont’d.

As heavy users of technology, youth used a broad range of technologies. Those that allowed for social networking, self-expression and identity-building were especially popular. The graphic below illustrates the range of technologies named in all focus groups and those which youth specifically used.

*Youth did not use Facebook, stating that is was for older people.
**Technology Use, cont’d.**

Not only were youth heavy users of technology, but also used it as part of their own individual exploration and with others (e.g., gaming, IM, social networking). Adults used technology less often than youth, but as the graphic illustrates the actual degree of use still varied widely among respondents. Adults, were also less likely to use technology for social networking.
Perceptions of Science and Scientists: Adults

Overall, adult participants had positive perceptions of science, believing that it contributed significantly to society.

Adult participants in this study had positive overall perceptions of science. They saw science as involving elements of research, discovery, and invention. They often talked about science as advancing knowledge, particularly in the area of medical research. In fact, medical research emerged as a primary association with science across all focus groups with adult respondents. These adults viewed scientific research as critical in finding cures for diseases.

Participants, however, did associate science more broadly with a range of scientific disciplines; respondents named a wide range of fields including archaeology, oceanography, and geology. Their understanding of the specifics of scientific research in these fields, however, was understandably less concrete. Technological advances and inventions in the fields of medical research and consumer products were also strongly associated with science; respondents often discussed innovation and invention as parts of this process.

Few respondents had negative associations with science, although a few commented that they worried about science pushing boundaries too far and, potentially, scientists not making ethical considerations when conducting experiments on humans or in dealing with harmful viruses.

Adult participants’ perceptions of scientists were generally positive, if somewhat mixed. Typically, respondents saw a scientist as highly educated and devoting most of his/her life to schooling and research. They saw scientists as focused, intelligent individuals who care deeply about the subject of their research and are dedicated to their work.

These very qualities, however, were sometimes a potential drawback to respondents. Because adult participants saw scientists as highly devoted to their work, they also thought of them as “geeky,” isolated from friends and family by their work and also removed from the real world.

The stereotypical image of a person in a white lab coat working alone in a laboratory was a common mental image of a scientist. As one respondent put it, “They are a bit unkempt—if they are doing their research they probably spend a lot of time just doing that maybe locked up in their office or lab. Kind of like a hermit.”

Despite these associations, however, adult participants felt that scientists advanced our knowledge. Overall, participants clearly valued the contributions of science to society.
Perceptions of Science and Scientists: Adults, cont’d.

The tag cloud graphic below provides a snapshot of the range of associations adults made with science and scientists. Health (e.g., medical research and cures), invention, and discovery, were strongly associated with science. Education was also strongly associated with scientists.
Perceptions of Science and Scientists: Youth

Youth participants’ perceptions of science were somewhat more limited than adults’ views and were primarily colored by their school learning.

Youth’s top-of-mind associations with science mostly focused on scientific vocabulary or phenomena they had learned (e.g., gravitational pull), naming various science disciplines (e.g., chemistry), and naming famous scientists. Because of their education, youth had, in some ways, more exposure to science and to scientific concepts and ideas than their parents. But their associations and conceptions of science were more superficial than those of adults.

Younger respondents, however, did see elements of experimentation, discovery, and invention in science and generally noted that science made positive contributions to the world, including in making our lives easier through technology.

Attitudes toward science were also more mixed—i.e. more negative—than those of adults. While some young respondents stated they enjoyed science, many noted that their science classes were boring and did not see themselves as interested in studying or “doing” science. We found that youth perspectives were colored by science class experiences at school. Those with positive school experiences tended to have more favorable attitudes toward science than those with negative experiences. We noted that youth also often did not realize that some of their career aspirations involved science. For example, one teen discussed her desire to become a veterinarian, but did not realize the preparation in the sciences such a career involved. This disconnect held true across all focus groups including youth.

Youth participants’ conceptions of scientists were also generally more negative than those of adults, typically focusing on stereotypes of scientists as “nerds” spending most of their time in white lab coats conducting experiments. Despite these images, youth did recognize the contributions of science to society, but most respondents simply did not see themselves engaging in science beyond their required school classes.

Science is about learning new things.

Science helps discover new cures and probably invents a lot of new technology.

Scientists are smart people—how, like to do experiments.

Scientists inform us about how stuff is and how stuff works.

Scientists make new medicines and find cures like for cancer.

I think of nerd. A nerdy guy with glasses and a white robe.

Science is okay, but we’re just not that into it. Like I really want to be a veterinarian.

I think of microscope, the scientific method.

Scientists are good observers and they are willing to discover and be creative.

They’re a little boring, they are just focused on their experiments.
Perceptions of Science and Scientists: Youth, cont’d.

The tag cloud graphic below provides a snapshot of the range of associations youth made with science and scientists.
Careers in Science

While parents saw science as a fine career for their children, they were most concerned with their children’s economic future and supporting them in whatever career their children selected.

Parents generally saw science education as important for their children when asked about it specifically. They reacted positively to the idea that their children might choose science careers, because they saw science as worthwhile. Participants, however, did not see a career in science being any more or less valuable than a career in another field.

What was of primary importance to them was ensuring that their children received a good education so they could choose a career that would in turn provide their children with a better standard of living than they themselves had. In other words, parents saw formal education as a way to advance one’s learning and potential job skills and to become “prepared” for the workforce.

One parent, for example, talked about taking his son to work with him so that he could see what physical labor entailed, hoping that the experience would motivate his son to stay in school and get an education that would lead to a good, middle-class job.

While wanting to see their children succeed economically, parents also expressed a strong desire to support their children’s career choices rather than steer them in a particular direction. When probed about the prospect of their children selecting a science-related career, for example, many participants qualified their comments by first stating that if their children elected such a career, they would be supportive. But if they opted for a career in law or teaching, or some other field, they would support that as well. In other words, participating parents saw their role as being about making education a primary objective for their children and actively support their children’s career choices.

Despite the fact that participating parents valued education highly, and worked toward advancing their children’s education and future prospects, our discussions with them and with community partners indicated that barriers to education still exist for these families.

Discussions revealed that because of poor socio-economic status and relatively low levels of education, parents often lacked the tools to assist their children in planning and preparing for the elementary, secondary, and college courses needed to pursue higher education (including science careers). Additionally, parents participating in
focus groups were often unfamiliar with this country's school structure and, as a result, were sometimes uncomfortable negotiating the education system. Economic realities and immigration status played roles in deciding whether their children could actually attend college.

Nonetheless, results clearly indicated that participating parents valued science as a potential career and wanted their children to achieve as high a level of education as possible. Additionally, data suggest that parents saw leisure as a way to augment their children's education and, as a result, actively sought opportunities to broaden their children's experiences and perspectives. The family infrastructure, coupled with parents' interest in education, suggest that significant opportunities exist to engage participating families in these communities in informal science learning activities.
Environment

Both adults and youth expressed a high degree of concern for the environment. Additionally, local community efforts, such as developing green spaces were seen as important aspects of solutions to environmental concerns.

Both youth and adults reported high awareness of environmental problems. The environmental issues they named most commonly included global warming, air and water pollution, and extinction of animals and plants due to human activity. Respondents also expressed significant concern for the environment and felt the issue deserves attention. Adults, in particular, saw environmental science (a topic introduced by the moderators) as important in finding solutions to environmental problems.

Although both youth and adults expressed significant concern about environmental issues, we noted that respondents had a relatively low understanding of actual environmental problems. This is not an uncommon finding among the general public; some studies have noted that most people lack an accurate understanding of global warming. While we did not specifically ask about participants’ green practices, most named recycling and conserving water as the main activities they do to “save” the environment.

Conversations about environmental problems also indicated that their local communities were a primary focus for participants. They often raised, for example, the importance of creating clean and safe neighborhoods which included natural spaces such as parks, gardens, and numerous trees. This finding was particularly revealing because it emerged spontaneously.

Both adults and youth raised this issue in the context of environmental discussions, and shared a sense that addressing local neighborhood issues would not only contribute to the well-being of the community, but would also positively impact the environment.

We also noted that adults, in general, expressed a higher degree of appreciation than youth for nature. Many mentioned their own gardens or putting out seeds for birds, and even shared memories of the local flora and fauna from the country in which they were raised. Respondents who hailed from more rural areas had more recollections of birds or plants.

Adults also tended to focus more on the need for local green spaces than younger respondents. A recurring theme throughout adult focus groups was the importance of green spaces not only for the environment but for a human’s own well-being. Some, for example, discussed parks and gardens as restorative spaces where one could relax, enjoy the fresh air and sun, exercise, and be surrounded by nature.

I remember seeing a TV show that talked about the fact that in the future there may be water shortages. That’s a problem. We need to do something.

We need to take care of the environment. We’re destroying it and we need to think about our kids. What kind of world are we leaving?

There should be more parks near us. You should be able to walk to a park or even a garden. You shouldn’t have to drive 15 minutes to even get one. Parks and gardens would be good for the environment and they are good for people, for this community.

If we don’t take care of the world, we’re all going to die. (Youth)

We can go clean our block to do our part for the environment. (Youth)

Maybe we should do an environmental march. (Youth)

I’m really concerned about it [the environment] because we could end up without water. (Youth)
Environment, cont’d.

Adult respondents also saw green spaces—particularly parks—as important because they afforded children the opportunity to be outdoors and physically active. Additionally, some also felt green spaces could help youth connect to and develop a respect for nature.

Adults

They sing, they bring joy. You can look at birds, watch them fly. They’re beautiful.

My mom has two birds at home and she loves them. They keep her company.

In the summer you notice the birds. You hear them a lot. There’s a red bird that sings and sings. Oh, gosh--it’s beautiful. Then in the winter we’re all inside and you don’t see them as much.

Youth

Like, what I think of birds? It’s kind of—it sort of seems like a random question.

Birds are just…there. It’s not like I really pay that much attention to them.

Birds are nice, they fly, they sing. It’s cool, but I don’t really think about them.

Birds

CLO staff members were also interested in learning participants’ perceptions of birds. Overall, adults reported that they did pay attention to birds. Their primary associations with birds were aesthetic, admiring them for their beauty and song; many viewed birds as symbols of freedom. Some, particularly those who kept gardens or worked outdoors, seemed more aware of birds in their local environments and noted, for example, seeing different birds during different seasons of the year. While no participants were bird watchers, and most did not know the names of local common birds, respondents did express a general interest in them. We also found that quite a few respondents also reported keeping birds—mostly parakeets and finches—as pets.

While younger participants also expressed concern for the environment, they tended to be less aware of nature around them than were adults. Although they noted the importance of trees and other plants, and expressed a desire to address environmental problems, they tended to see plants and animals as part of the landscape; an important part, but one with which they had little interaction except as background. For example, when moderators asked if they noticed birds, or what they thought of them, most youth looked puzzled by our questions, as if incredulous that this could be a topic worthy of conversation. Most commented that they did not think about or take an interest in birds, although they recognized they were an important part of nature.

While youth’s connections to nature were generally weaker than those of adults, some did report engaging in outdoor activities such as hiking, camping, or visiting local parks. The actual level of contact with nature varied greatly among youth participants, The fact that youth respondents had all grown up in urban areas, unlike some adult participants, may account for some differences in their respective levels of connection to the outdoors.

Youth did see green spaces as important aspects of their communities, and did recognize the importance of nature, especially as it related to environmental issues, but simply had fewer personal connections to it.
Citizen Science

Citizen science was a completely new concept for both adult and youth participants. Adults were enthusiastic about the idea of public participation in research, while youth were less interested.

In focus groups, CLO staff members provided a (scripted) description of various citizen science projects to introduce the topic. Citizen science was a new idea for both adult and youth participants in all the communities in which we conducted focus groups. Since the idea was quite foreign to participants, we found that explanation was needed to help respondents fully understand the concept of public participation in research.

Adults

Respondents were very surprised that scientific research could involve the general public; many of their initial questions revolved around how the process worked. (In fact, the time available for our discussions proved too short to adequately communicate many nuances of the various citizen science initiatives.) Nonetheless, after answering some initial questions, participants readily identified a range of benefits they could see from participating in such projects, including:

- The opportunity to contribute to science and society.
- The possibility of expanding their own learning about a topic or area.
- The numerous opportunities for family bonding and community-building.

**Contributing to society:** Respondents were enthusiastic about the idea of personally contributing—even in a small way—to scientific research and, by extension, to society. Respondents were especially interested in projects that held a clear environmental benefit (e.g., understanding global warming patterns). Participants considered such projects ways for them to actively help address environmental issues and leave their children, and future generations, a better world.

**Learning:** Respondents also identified learning, in some depth, about a specific topic as another positive aspect of participating in citizen science. They speculated that through their involvement, they would expand their own understanding about animals, plants, and even about specific environmental issues.

They also discussed the potential educational value of citizen science for their children and often commented that such programs would help their children learn more about the environment and science. Adults, however, were as enthusiastic here about their own learning as about their own children’s learning.

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It’s for something that’s really big—it’s about a large benefit. Why wouldn’t you want to do that?

[It’s also] for the future. To help take care of the environment and leave it as a better place for our children.

It’s important. The word citizen suggests that each person is going to add a little bit. It’s an important idea.

It’s like everyone can participate. And in doing so you learn along the way.

You’re learning along the way. You can even share it with your children.

It would be a way for us to learn and get more educated about the environment. It would be something I would want to do with my children. It’s a way to do something together to better the environment. It may help them care more about the environment.

I think citizen science would help our children learn about the importance of whatever the project is about. The importance of birds or planets or whatever it is.
Citizen Science, cont’d.

While not as prevalent a theme, some respondents also noted that engaging in data collection and being part of a research project might also expose them to science in more direct ways and make them feel “a little bit” like a scientist. While not exactly certain about the specific skills they might acquire through the process, respondents felt that the mere notion of being part of a research team suggested that they might get a better sense for what it is like to be a scientist.

We also found that respondents had expectations about citizen science projects that perhaps are not “the norm” in most projects involving public participation in research. They assumed that as part of their participation they would receive ongoing communications with a project team and scientists to help them learn more about the topic under investigation. Thus, part of the reason they expected to learn as part of their involvement was because they expected some level of interaction with project members—even if most communications were via electronic or paper updates.

Additionally, they expected that the scientific research team would also keep them abreast of what they were learning from what they and others were contributing. Even when a CLO staff member clarified that sometimes it might take scientists many years to reach conclusions, respondents still wanted regular communication that kept them in the loop about how the project was doing and what was going on. As one respondent put it, “It’s important to know you didn’t forget about us!” In a sense, respondents who signed on to participate in a project expected a reciprocal relationship between the researchers and citizens involved.

**Family Bonding and Community-building:** For most parents with whom we spoke, involvement as a family was a must in any potential projects. Respondents’ reasons closely mirrored many of those identified in discussions about leisure choices, including the importance of spending free time together, sharing a common experience that can serve to strengthen family bonds, and participating in leisure activities which are also educational. Parents, in fact, commented on the potential for the whole family—not just children—to learn. They welcomed the prospect of mutual learning, noting that it would help them better support their own children’s education.

Participating in citizen science projects as part of a larger social group was also important to many adult respondents, who saw collective participation as a way to build and strengthen their community. Respondents felt sharing...
Citizen Science, cont’d.

the experience with others and integrating a social component would not only make participation more enjoyable, but would also create stronger bonds with neighbors and community members.

In fact, many respondents expressed interest in projects that included some focus on the local community. They saw such projects as an opportunity to contribute to general scientific research as well as concretely bettering their own communities. It is not that “non-local” projects weren’t of interest, but those that had a clear connection to the community had somewhat greater appeal than projects where the specific relevance to a local area or region was not as obvious.

From a respondents’ perspective, such projects served the dual purpose of bettering their communities while also contributing to larger scientific research. One respondent, in fact, pointed out the power dynamics involved in the inequitable distribution of resources to those in low economic neighborhoods, stating that:

“We don’t live in a powerful part of town. There are [other] areas in the city where you find a lot more programs, more resources. But we don’t live in powerful areas. So we need to do something that is about local concerns.”

Perceived Barriers to Participation

We also asked respondents about possible barriers to participation in citizen science.

Education

By far the most significant concern for respondents was whether they had the appropriate level of education and skills necessary to participate in citizen science. Some respondents, having noted earlier in the discussions that scientists are highly educated, seemed keenly aware of their own lack of education and questioned their own abilities.

Those with limited literacy skills were especially reluctant. Some discussed the importance of projects involving scientific research and felt that these projects might be better suited for those with higher levels of schooling. While respondents were excited by the idea of contributing to scientific research, they were not entirely confident in their own skills; some seemed intimidated. In several focus groups, the importance of training as a component of participation was discussed.

Respondents seemed less intimidated, however, by the idea of participating as part of a group. Several respondents

Something that’s centered in the community also allows you to meet and get to know your neighbors. You are working together toward something. You want to involve the whole community.

I could see a program that is in the neighborhood because it serves the purpose of doing something for the environment, but also that brings the community together and strengthens it.

This is serious [stuff. Citizen Science]. It’s a lot of responsibility. It seems you’d need more education.

There’s a big gap between what one as an ordinary person can do and what a scientist does. How will we really be able to help?

I don’t know how to read and write very well. So I don’t think I would participate. This [citizen science] is a big thing and you’d have to be really educated and really practice.
conducting data collection with others would build their confidence. They also saw a benefit to the relationships they might build with other participants, commenting that a collective effort would result in better data collection. Participating as a group would mean, for example, that respondents could serve as resources for each other, perhaps answering questions, coming up with solutions to problems, and perhaps even splitting tasks based on strengths and skill sets.

**Time**

Citing their long hours working and running their households, respondents saw time as a potential barrier to participation. They hoped that a project would have some flexibility to afford them more opportunities to participate as a family.

**Distance**

Mobility was also a potential barrier for some families. If a project were site-specific, they hoped for a central location (e.g., the CBO) or that arrangements could be made to facilitate transportation (e.g., shuttles or car pooling).

**Cost**

Respondents hoped that participation would be free and that they would not have to incur costs for any major supplies that a project might involve.

**Youth**

While adults were very enthusiastic about participating in citizen science projects, youth were less excited. A few young respondents were doubtful that non-scientists could accurately collect data, feeling that these tasks were best left to professionals.

In general, however, youth characterized citizen science projects as helpful to scientists; some liked the idea of being able to contribute to science research. They also anticipated that the potential of learning along the way might even give them insight into what scientists do or what it “feels like” to be a scientist.

Despite seeing positives in the citizen science initiative, youth were not especially interested in participating. They did not find any of the broad range of citizen science projects to be particularly appealing. The concept of researching bird behavior, bee counts, plants, or light pollution just did not seem exciting on face value. Some actually expressed surprise at the idea that “regular citizens,” or even scientists, would spend time studying these issues.

**Being in a group, you start feeling less intimidated about doing this. You start to gain confidence.**

**As a group, it might be less intimidating. If I didn’t have to be the one recording data, but I could help observe and see things as part of a group, I could do that.**

**Once you participate in a group, it would seem easier to then do on your own, too. Because you’ve learned together. You get experience. You’d be more confident about what you’re doing.**

**It would be like helping scientists find out something. You could contribute to that. (Youth)**

**You would see what it is like to be a scientist. (Youth)**

**It sounds like a good thing to do, but not something you necessarily want to do. It’s like cleaning your room. You know you should, but it doesn’t necessarily mean you want to do it or that you like it. (Youth)**

**It’s like of weird. People just getting together and counting bees…I find nothing interesting in bees. (Youth)**
Citizen Science, cont’d.

Our analysis suggests, however, that the citizen science was so foreign to youth that they were not able to fully grasp the concept. In sessions where moderators could more fully “unpack” a particular project and help young respondents understand the benefit to the environment from the specific focus of that project, youth became much more interested and, indeed, excited about citizen science.

Additionally, due to resource limitations, CLO staff gave a primarily verbal description of citizen science. Had presentations of projects been more dynamic (e.g., video, on-line modules), with a more concrete sense of what data collection looked like and examples of youth involved in similar projects, participants may have responded more positively. We suggest that the next stage of research look more closely at presentation issues.

To move beyond there initial reactions, we asked youth to imagine developing a program especially for them. The specific qualities identified in a citizen science “type” of project included:

**Environmental Connections:** Youth expressed interest in projects addressing an environmental issue (e.g., global warming). They saw these projects as worthwhile and were interested in contributing to a solution. The environmental connect needed to be very explicit and clear to youth.

**Community Focus:** Projects with a community focus were very important to these respondents; youth felt such projects would provide tangible, easy-to-see results. They also liked the idea of helping better their communities.

**Group Participation:** Participating as part of a group, with family as well as friends, was also very important to youth. Youth saw family participation as a way to share experiences, create family bonds, and have fun. Sharing experiences with friends, of course, was also very important to youth, who noted that at their age, it’s “all about your friends” and that participating with friends would be much more fun than participating alone.

**Youth Interests:** Tapping into youth’s interests also emerged as an important factor. Youth identified various areas to consider when developing a project. These included:

- Integrating technology into the design, potentially as a way of collecting data or sharing information.
- Incorporating social networking into the process, potentially paving the way for participating youth from different communities to participate.
- Allowing youth to drive the design, or at least including them in the development process.
- Tapping into teens’ interest in music.
- Ensuring the presence of many hands-on components to a project.

- We could go around planting seeds, fixing up parking lots and turning them into gardens.
- It’s our community. We’re the only ones who are going to change it.
- I would like to start out locally. It’s closer to you.
- I’d want something that would benefit your community. Like improving the water quality.
- It would be good to have your family doing one thing together. It keeps you together and we’d have time and discover things together.

**Family and friends. Like, [the CBO] could take youth and members of their families to work together. That would be fun.**

Friends and family definitely.
Conclusions and Implications
CONCLUSIONS AND IMPLICATIONS

Overall, results suggest that significant opportunities exist to tap into the values and assets shared by the communities of Latino families who participated in this study. The strong family ties, high value placed on education, and strong desire and drive of parents to give their children a better future are major strengths. Families already involved with partner CBOs are, in particular, also strongly committed to their community.

Findings suggest that projects involving public participation in research can, in fact, play a significant role in meeting Latino families’ values and goals, particularly those related to education, the family’s social needs, and the desire for community involvement.

Any informal science project developed will, however, need to consider and directly address the very real challenges families in these communities face, including parents’ long work hours and limited free time, parents’ low education and literacy levels, and lack of financial resources. Additionally, a project involving public participation in research must be responsive to families’ expectations that citizen participation means entering a reciprocal relationship with the research team. Projects will clearly need to be developed in close collaboration with partner CBOs as well as with families.

Leisure Choices

- While parents in this study were working-class and had relatively low levels of education, they still valued education for their children highly. This philosophy permeated their decisions, including those concerning leisure activities and out-of-school activities for their children. It is clear from our findings that activities seen as educational often rise to the top of families’ lists of viable leisure activities. The value placed on education presents an important opportunity which can be capitalized on in developing informal science education projects such as UBG.

- Another significant finding was how important families felt it was to engage in leisure activities together. While previous studies identified the importance of socializing as part of leisure, Latino families in this study felt that group engagement goes beyond socializing. For participants in this study, leisure activities provided a vehicle by which to strengthen family bonds. The implication for UBG is that whatever model is developed, must include youth and adults in the process. Moreover, the program will be much stronger if parents do not simply provide supporting roles but rather engage in their own learning. In other words, the project should consider the family unit, rather than just youth, as the target audience.

- Community involvement also emerged as an important value in selecting leisure activities for youth. This finding may be unique to those youth in our study, who were heavily involved with partner organizations who view fostering community as a core goal of what they do. Nonetheless, for this particular audience, developing a project with obvious links to (and direct benefits for) the community can be critically important.

Technology

- If a program targets Latino families similar to those in this study, there may be a technology “gap” between parents and children. Clearly, youth were very adept at using technology and saw it as an important aspect of
Conclusions and Implications

their lives, and certainly a big part of their leisure. Technology use by parents, on the other hand, was much more mixed. If a program includes a significant technology component, it will be important to address age-related differences in familiarity and comfort with technology. Adults, however, did recognize the value of technology. It may be that the right type of project may actually encourage adults to use technology. Cell phones and digital cameras are readily accessible technology to members of the Latino communities in this study.

➢ There may be opportunities to leverage the social networking that youth find so important. For example, a project linking youth from different parts of the U.S., or even different countries, as part of a broad informal science initiative may have high appeal and could present interesting opportunities to share data and experiences around science.

Science

➢ The generally positive perceptions of science, particularly among adults, suggest there are opportunities to engage this audience in citizen science projects. Adult participants, especially, saw science as a valuable field that makes significant contributions to society. Both adults and youth viewed science as a somewhat dynamic discipline centering on experimentation, discovery, and invention.

These aspects seemed to many respondents to be the most exciting aspects of science. Yet participants did not necessarily associate science with field work or research outside a laboratory. Programs like UBG can clearly help expand both adult’s and youth’s understandings of science and scientific research.

➢ It is also possible that engaging these youth in informal science activities, and providing them with a different way of “doing” science than what they currently experience in school, may expand their notions of science and, potentially, in identity-building endeavors where they see themselves as engaging in scientific inquiry.

The Environment and Citizen Science

➢ Adult participants did, in fact, see themselves as potential participants in citizen science projects. They not only saw the value of citizen science to society, but also easily identified potential personal benefits. An opportunity clearly exists to engage this audience in projects focusing on public participation in research. It is important to note, however, that respondents also expressed a reluctance to participate, particularly because of their education levels. Any project developed to serve this audience, therefore, will need to:

a) take into consideration literacy and other issues related to educational levels;

b) help participants become comfortable with their roles and with data collection;

c) potentially provide participants with more “basics” about how citizen science works than what is provided to more “mainstream” audiences already participating in citizen science; and

d) Provide more support early in the process than for other citizen science projects.

➢ Participants’ concern for the environment can clearly serve as an entry-point in engaging Latino communities with citizen science, particularly if a connection is clearly communicated between the activities in which they are engaged and the potential contributions of such activities to scientific learning and environmental issues.

Garibay Group  Urban Bird Gardens Front-end Evaluation  Summer 2009
Conclusions and Implications, cont’d.

- Adult and young participants were focused on community issues and saw relationships between their neighborhoods and larger environmental issues. They were very motivated to engage with activities they saw as directly benefiting their communities. We see this as another important entry-point and opportunity for UBG to leverage. Projects including at least some community focus can be especially effective in engaging these Latino communities. Programs will be more compelling if integrated into community issues, and if the relationship between project activities and benefit to the community is made clear.

- While engaging youth in citizen science projects may be more challenging than engaging adults, giving young respondents opportunities to participate as part of social groups, and stressing the community focus of such projects, can help. Additionally, including youth in program development and including technology and even social networking components in programs may prove successful.

- This study also revealed that participants had some expectations that may not be standard practice in citizen science projects, but which are nonetheless, important to address. These included the desire for program components that stretched their own learning about the topic at hand and some level of on-going communication with scientists.

- Participants felt that family participation was of major importance. A need for community also clearly emerged in participants’ emphasis on opportunities to participate in groups, whether that group includes family, peers, neighbors, and/or friends. Any program will need to effectively incorporate group participation.
Appendices
## Appendix A: Focus Group Participants: Adults

### Phoenix: Carl Hayden Community Center, July 30-31, 2008

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<th>Gender</th>
<th>Total number of children in family by target age</th>
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<th>Country of Origin</th>
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### Miami: ASPIRA Eugenio Maria de Hostos Youth Leadership Charter School, October 29-30, 2008

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### Los Angeles: Bert Corona Charter Middle School & Oscar Romero Charter Middle School, December 10-11, 2008

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## Appendix B: Youth Respondents by City

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