

**Understanding the Activity and Travel Patterns of  
Teenagers Living in Providence, R.I.**

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## **Introduction**

This is the final report for the TATE (Teen Activities and Transportation Enterprise) project, which was conducted at Feinstein High School, a nontraditional high school in the inner city of Providence, RI. The project was funded by the University of Rhode Island Transportation Center. The TATE Team comprised four University of Rhode Island professors, two URI students, four Providence Plan employees, four nonviolence trainers, and two teams of Feinstein teachers (9 total). From September 2006 - May 2007, we researched the attitudes and educated one hundred and eighteen 9th – 12th graders at Feinstein HS, addressing their activity patterns and perceptions of riding public transit, car use, and safe/unsafe places in the City of Providence.

The goal of the study was to better understand the activity patterns of Providence, RI, teenagers and their personal and societal meanings of space and time. Much of the methodology used in the study was first developed and tested in previous studies to address the activity patterns of disadvantaged populations (McCray and Brais, 2007; McCray, Lee-Gosselin, and Kwan, 2005). The methodology used to analyze violent behavior was also developed and tested in earlier work (Collyer, Gallo, Corey, Waters, and Boney-McCoy, 2007). Contemporary society's youth share a set of unique cultural experiences, including rap or hip hop music, urban dress style, and use of explicit language. These generational differences often surface in public transportation settings. This study attempts to glean an understanding of the different perceptions of "personal space" as it pertains to socioeconomic status and public transportation. The researchers explored this view in relationship to issues of safety, violence, and technology.

The project's innovation is evident in its success in combining research and outreach. The team collaborated in designing a two semester-long, weekly, all-day learning environment for the purposes of engaging urban youth in exploring their perceptions of personal space, as it pertains to socioeconomic factors and transportation issues. The study incorporated training in GIS using ESRI's ArcGIS 9.1 software, and nonviolence training designed to address aggressive behavior while driving a car, riding public transit, and socializing in public spaces. In addition students were exposed to a series of transportation planning/engineering hands-on seminars led by transportation officials dealing with planning challenges and policy issues for the city of Providence, the public transportation system in Rhode Island, and the building of the new I-195 bridge in Providence. While engaging the students in exploring Providence's built environment, the researchers gathered data through observation, discussions, socio-economic surveys, activity records, safe/unsafe area mapping, and perceptions of violence surveys.

### ***Student population***

The majority of the students live in South Providence, primarily the Elmwood and West End Neighborhoods. Feinstein HS sits on the boarder of these two neighborhoods. So who are Feinstein students? The largest group of students is Hispanic (N=53, 57.6%), with the majority of them (53.3%) reporting Spanish as their primary language. African Americans (N=17, 18.5%) comprise the second largest group. RI is the birth place of the majority (N=52, 56.5%), and the second largest group (N=13, 14%) was born in the

Dominican Republic. Most of the students come from families with one or two children living in the household (67.8%). Forty three percent of the students (N=39) reported having two employed persons living in the household, and more than half of the students (68.4%) reported having one or two cars in the household. If one uses the lunch statistics from the school department as a proxy for economic status, this population would be considered low-income, where 71.2% of the students receive free lunch and 13.6% of the students receive a reduced lunch rate.

The student population at Feinstein HS mirrors that of many urban environments where a high percentage of the children live in poverty. According to Rhode Island Kids Count, “Providence is the third poorest city in America for children (for cities of 100,000 or more) with 41% of its children living in poverty.” (Facts about Rhode Island’s Children Kid’s Count)

### ***Layout and Focus of the Report***

This report is intended to give an overview of what was accomplished during the year-time frame of our study. In this report we do not provide an in-depth analysis of the data. A lot of data were collected, and we still are in the process of analyzing and studying the data. To date, we have produced one technical paper which was presented at the *Access to Destinations Conference* sponsored by the University of Minnesota in Minneapolis from August 23-24, 2007. An improved version of this paper was chosen to be presented at the *Frontiers in Transportation: Social Interactions Conference* sponsored by NSF in Amsterdam, Netherlands. This conference will take place October 14-16, 2007. The title of the paper is: *What do I consider safe?: analyzing the spatial perceptions and social activities of teenagers in Providence, RI*. Professor Talia McCray presented the paper for the team at both conferences.

The format of the report is as follows. We begin with the educational component of exploring the field of transportation. Next, the framework used in the focus groups and interviewing skills workshops is presented. Following the interviewing/focus group section, the nonviolence training and its relevance to transportation modes is presented. The final major section provides an overview of the activities and training linked to GIS (geographic information systems). We conclude with comments addressing our next steps and future work.

### **Exploring the Field of Transportation**

A major educational component of the project was to explain the field of transportation to students using presentations by URI faculty as well as professional transportation experts from outside the University. The presentations covered the different dimensions of the field of transportation, including planning, policy, engineering, management and finance. The presentations offered the students the opportunity to understand the purpose of the research project and the significance of their decisions regarding their daily travel and activity patterns. Moreover, the connection

between land use patterns and travel behavior and activity patterns was explained to the students using the State of Rhode Island and the City of Providence as case studies.

Professors Farhad Atash and Talia McCray as well as five outside guest speakers made presentations to students. The research team in cooperation with the teachers at the Feinstein High School and invited speakers developed a format for the class presentations in order to maximize their benefits to the students. The format included lectures, videos, class assignments and hands-on activities. The format was applied to the 11<sup>th</sup> and 12<sup>th</sup> grade high school students during Fall 2006. Lessons learned from this experience helped the research team to fine tune and streamline the format for presentations to the 9<sup>th</sup> and 10<sup>th</sup> grade students in Spring 2007.

### ***Speakers and Topics***

The speakers were divided into two groups. First, Professors Farhad Atash and Talia McCray from the University of Rhode Island offered introductory lectures on the field of transportation. Second, transportation professionals from public and private sectors in Rhode Island were invited to present lectures on different dimensions of the field of transportation ranging from planning, policy, finance and management at the state level to engineering of a specific project in the City of Providence. Two examples of these presentations are in Appendices A and B.

The speakers were:

1. Katherine Trapani, Supervising Planner, Statewide Planning Program
2. Michael Moan, Principal Planner, Statewide Planning Program
3. Tim McCormick, Rhode Island Public Transit Authority
4. Patty Steere, Engineer, Maguire Group Inc.
5. John Steere, Engineer, Edwards and Kelcey

### **Format for Class Presentations**

In cooperation with the teachers and speakers a format was developed for the presentations to students. In Fall 2006, the participating students were divided into four groups. In Spring 2007, the students were divided into groups to make it easier to fit the educational component with the rest of the activities of the project. The presentations were given to each group of students. Each speaker had approximately 80 minutes for his/her presentation. The presentation time was divided into two parts. First, each speaker presented a lecture for approximately 30 minutes discussing his or her individual topic and current transportation activities and projects. Second, each speaker conducted a class assignment that required the participation of students. Depending on the nature of the class assignment, the students in each session were divided into several small groups to work on the assignment.

## ***Summary of Class Presentations***

Professors Farhad Atash and Talia McCray presented an introduction to the field of transportation at the local and state levels, using the case studies of the State of Rhode Island and the City of Providence. They also discussed the job opportunities in the field of transportation.

Katherine Trapani and Michael Moan offered a summary of the functions and responsibilities of the Office of Rhode Island Statewide Planning Program. They covered topics related to transportation and land use planning in the State of Rhode Island. Their presentation included a discussion of various modes of transportation in Rhode Island, statewide transportation planning activities such as the Long Range Transportation Plan, Transportation Improvement Program (TIP), Air Quality Conformity, GIS Travel Demand Model for Rhode Island, and the financing of transportation projects in Rhode Island.



Figure 1

Figure 2

The class assignment for 11<sup>th</sup> and 12<sup>th</sup> graders focused on conducting a student transportation needs assessment based on the 14 topic areas of the Rhode Island Transportation Plan: Bicycle, Design, Economic Development, Emergency Response, Environment, Equity, Finance, Highway, Intermodal, Land Use and Corridors, Pedestrian, Planning, Safety and Transit. The students were asked to offer written comments and assessments under each topic area (see Figures 1 and 2).

The class assignment for 9<sup>th</sup> and 10<sup>th</sup> graders focused on the case study of Elmwood Avenue in Providence, where the Feinstein High School is located. The presenters with the participation of students discussed the following topics: history of the avenue and who uses it; land use patterns along the avenue; modes of transportation available along the avenue; types of street furniture, overhead and underground utilities and public spaces along the avenue; average daily traffic volume; and access to properties along Elmwood Avenue.

Tim McCormick summarized the history, functions and responsibilities of the Rhode Island Public Transit Authority (RIPTA). The presentation focused on planning and financing of public transit in Rhode Island. Also, the presentation included a discussion on the meaning and the purpose of “policy” to address public transportation issues and problems, including safety.

The class assignment focused on the case study of Kennedy Plaza in Downtown Providence. Kennedy Plaza functions as the main transit hub of RIPTA in Providence. The students were asked to discuss the potentials and problems of the plaza and then develop policy recommendations to make Kennedy Plaza more transit-friendly in the future.

Patty and John Steere discussed the transportation engineering. Specifically they focused on the design and construction of the new Providence River Bridge for the relocation of Interstate 195 in Providence. The objectives of the new bridge were to improve traffic flow and safety along I-195 corridor. Patty Steere is the designer of the new bridge. In her presentation, she discussed the design process for the new bridge, including preliminary design and research, final design and construction. Her presentation included images of the new bridge built in different phases.

Patty and John Steere's presentation included a hands-on class assignment to have the students experiment with the design and construction of a new bridge using alternative cable arrangements. The students were divided into small groups. Each group designed and built a bridge. John Steere coordinated the class assignment (see Figures 3 and 4).



Figure 3



Figure 4

## ***Major Outcomes***

The education component of the research project had several major outcomes for the students and their teachers at the Feinstein High School as well as the URI research team.

First, the students and teachers were exposed to the field of transportation and its potential job opportunities. This was particularly beneficial to the 11<sup>th</sup> and 12<sup>th</sup> grade students that were planning for their college education.

Second, the students learned an overview of the different dimensions of the field of transportation to help them understand the nature of the project and their participation in it. The presentations by URI faculty gave them an introduction to the field of transportation from an academic point of view. The presentations by professional transportation experts showed the students the variety of policies, programs, projects, and opportunities in the field of transportation.

Third, the students were exposed to the important connection between land use patterns in the State of Rhode Island and the City of Providence and their daily travel and activity patterns. Emphasis was given to the role of public transportation in their daily activity patterns. Safety issues and concerns were debated among the students, teachers and speakers.

Fourth, the presentations provided an excellent opportunity for the students to interact with the speakers and ask them questions about the field of transportation and its opportunities.

## ***Lessons Learned***

The research team learned immensely from this component of the project.

First, the education component of the research project played a major role in the research project. It is critical to plan this component very carefully so it is well integrated with other components of the research project as well as other daily activities of the students that participate in the project.

Second, it is important to have the class presentations short, focused, and lively so the students remain interested in them.

Third, the class assignments and hands-on projects were critical in keeping the students engaged in each class presentation. More importantly, the students learn more from each presentation when they were asked to participate in a class activity related to the topic of presentation. By forming small groups, the students were given the opportunity to interact with their friends and learn from each other.

It is hoped that lessons learned from this research project will help the students to better understand the impact of the local transportation system and land use patterns on their daily travel and activity patterns. Also, it is hoped that lessons learned from the educational component of this project will help other researchers in the future.

## **Conducting Focus Groups and Interviews**

The original research design was to utilize two approaches to obtain information from Providence's students regarding their understanding of public space as it pertains to transportation: 1) focus groups and 2) in-depth interviews. The focus groups were to consist of small groups of ten to twenty students from Feinstein, with an individual serving as a moderator. Students were to be queried about their use of public transportation. The questions were to be derived from information provided in an earlier GIS survey. The focus groups were to be videotaped. The videotapes would be transcribed and studied to acquire information regarding repeated themes in the focus groups' discussions.

One-on-one in-depth interviews were to be conducted by a small group of Feinstein students (N=20) with their fellow students under the supervision of a Principal Investigator. Students would be trained in interviewing techniques. During the training sessions, students would have an opportunity to participate in experimental interviews, discuss critical issues related to interviewing, and read current information on interviewing. The focus of the interviews was to obtain information regarding the connection between the students' views on contemporary popular culture and its impact on teenage behavior. Students would be encouraged to make connections between their daily behavior and the use of public transportation. Information obtained from the GIS survey data and focus groups would be used as a guide for constructing the interview schedule/protocol (questions).

### ***First Semester Preliminary Meetings***

Prior to conducting the field research, a series of meetings were held between Dr. Talia McCray and Dr. Donald Cunnigen regarding the methods to be employed in the field. McCray informed Cunnigen that the GIS data would not be available for the construction of interview or Focus Group questions. Due to the limited time available in the research schedule, the interviewing and Focus Group sessions had to occur before the data were analyzed by her team. Thus, the research design cited above had to be modified before the execution of the activity.

The preliminary meetings focused on the following: 1) construction of interview questions; 2) developing interview training material; and 3) construction of Focus Group questions.

### **Interview Questions**

Utilizing information obtained from students during the early stages of the research project, five social variables were identified as influencing their common travel

patterns. They were: 1) friendship; 2) eating; 3) work; 4) school; and 5) shopping. Twenty-four questions were developed around the five variables. In addition, thirteen background questions and three "general" questions regarding travel patterns were included as a part of the interview questions (40 total). The questions were designed to tap the students' knowledge and understanding of their daily travel patterns.

### ***Interview Training Sessions***

Cunnigen had prior experience training undergraduate students interviewing procedures. Using the information gained from that experience, a power-point presentation and brief lecture was presented to high school students about interviewing techniques. Students were given a printed handout that summarized the power-point presentation on interviewing techniques. The power-point presentation was designed by the members of the URI TATE Team to provide a visual interpretation of the key components of the interview process. Most importantly, it was designed to offer students an opportunity to discuss the interviewing activity prior to performing the interviews. Prior to the training sessions, Red and Blue team instructors received photocopies of selected chapters from scholarly works on research methodology that discussed interviewing techniques and methods to obtain valid results from interviewing subjects.

### ***Focus Group Questions***

A group of Focus Group questions were developed around the following themes: 1) degree of independence; 2) neighborhood safety issues; 3) behavior while riding the bus; 4) defining space on the bus; 5) RIPTA services; and 6) school rivalries. The Focus Group questions were created with the assistance of suggestions offered by Mr. Tim McCormick, Dr. Charles Collyer, and the graduate research assistants. Collyer was interested in the inclusion of questions that focused on violence. The graduate research assistants were concerned with the space issue of early morning bus crowding. McCormick suggested the inclusion of a question about RIPTA changes that would make them more comfortable and the bus ride easier.

### **First Semester Focus Groups and Interviewing Sessions**

On 17 October 2006, the team of Cunnigen and McCray conducted Focus Groups and interviewing sessions. The size and scope of the interviewing and Focus Groups were modified to accommodate the request of the Feinstein officials to incorporate the research activity into the students' daily class experiences (N=122; approximately 30 students per class: 60 Red team members; 62 Blue team members). This change had a significant impact on the research. Each researcher directed a separate group. The interviewing training lasted for approximately fifteen minutes; and the balance of the session consisted of the construction of personal interview question(s) by students and the student interviews.

During the training session, students were given information regarding the purpose of the research project and the interviewing activity as well as basic information regarding how to conduct an interview and types of interview questions. Students were provided instructions. In addition, they were provided with micro-cassette tape recorders, tapes, pens, and copies of the interview protocol.

Students interviewed each other regarding their travel patterns by using the interview protocol (interview questions), including an original question(s) created by each student. After the completion of the interviews, students reviewed the taped interviews. The review was used to acquire information that would be included in the brief written student summaries of the key points in their interviews.

The Focus Groups were videotaped by the Feinstein staff. During the Focus Groups, McCray and Cunnigen served as provocateurs. They attempted to engage students in an open and frank conversation regarding their travel patterns and public transportation. The Focus Groups lasted approximately 15-20 minutes in length.

### **Second Semester Preliminary Meeting**

Before conducting the second semester interviews, a meeting was held with the principal investigators about the modifications necessary to accommodate the subjects in upcoming interview sessions. After reviewing the videotaped Focus Groups, the PI's decided to eliminate the collection of Focus Group data because the previous semester's groups did not work effectively, i.e., students were not very responsive in some of the Focus Groups.

During the first semester, it was discovered that the increased size of the sample had an impact on substantive quality of the interview data, especially the construction of interview questions. Thus, the PI's decided to invest more time in the pre-interview training sessions.

As a means of encouraging students to develop interesting questions as well as understand clearly the different types of interview questions, the pre-interview training session incorporated a contest in which students were award prizes based on their construction of the most original questions in the categories of objective, subjective, and indeterminate questions. The prize winners were chosen by the PIs and course instructor.

### **Second Semester Interviewing Sessions**

The second semester interview sessions were conducted on 2 February 2007 and 13 February 2007. Unlike the previous semester's location in a large classroom that allowed students to move desks/chairs for privacy during interviewing, the second semester interviews were conducted in a science laboratory with huge fixed laboratory tables that prevented flexibility in terms of students creating private interview spaces. Consequently, the simultaneous interview sessions in a small and compact space resulted in a cacophony of noise that proved to be a distraction to interviewers and interviewees. Clearly, the location had an impact on the interviews. It prevented the PIs from circulation throughout the room to the same degree as the previous semester.

### **Lessons Learned**

The interviewing activity was well-received by the students. It was clear that the students enjoyed thoroughly the opportunity to interact with their classmates in the interviewing exercise. They were quite amused by the sounds of their voices on the

tapes. The responses were quite direct. Most important, they provided an interesting perspective on their daily lives and transportation patterns.

Although McCray had experience in conducting Focus Groups, Cunnigen conducted Focus Groups for the first time. Thus, the researchers had different reactions to the quality of their Focus Group experiences. McCray reported the successful execution of the Focus Group activity, i.e., she received in-depth responses that were illuminating. Cunnigen reported a less-successful execution of the Focus Group activity, i.e., limited responses from a select group of participants.

McCray and Cunnigen concluded the interviewing activity should be retained in the second semester data collection. The Focus Groups were eliminated from the second semester data collection due to the uneven quality of the data received in the first semester. Scholarly research indicates that Focus Groups are most effective with small groups of 8-10 participants. The large groups of 20 or more students at Feinstein worked against the most effective response rate. Most important, Focus Group data have been used by past researchers as a method of refining questions for interview protocols and large surveys. Since the interview protocol was constructed prior to the Focus Groups, it obviated the need to conduct the Focus Groups.

In the Cunnigen Focus Groups, several students were bored, distracted or simply failed to participate in the discussion. With a smaller group, there would have been less of an opportunity for students to be distracted by others. The original research design expected to use the Focus Group data as an aid for constructing the interview protocol. The fact that the interviewing session took place simultaneously made the Focus Groups less significant in the data collection process.

A preliminary review of the interviews has been completed by Cunnigen. In the construction of the individual interview questions, the students did not engage in higher order thinking. Most important, only a few questions fell in the sphere of transportation. Some of the questions had a tenuous relationship to transportation and immigration. In reviewing the students' summaries of their interview sessions (their paragraphs; in some instances, two sentences describing the experience, i.e., best and worst aspects), the level of descriptive detail varied among students based on their interest. However, their descriptions may have been limited by the time constraints, i.e., the class session was consumed by the training and interviewing exercise. More attention was devoted in the second semester to the construction of questions; and ample time was allotted for this activity.

## **Nonviolence Training**

Transportation has a behavioral component. Some of its central issues involve the decisions and actions people take as they confront the problems of daily living – getting to and from school, choosing routes and in the context of perceived threat, and using a repertoire of skills to meet one's own and others' needs. Transportation is therefore a

context within which it is reasonable to discuss problem-solving in the individual's life space, both as it applies to transportation, and more generally.

As part of this project, students received a series of lessons on the Kingian approach to nonviolent problem solving. This approach draws on the American tradition of nonviolent social change, especially as represented by Martin Luther King Jr.'s leadership of the Civil Rights Movement. The main message of this approach is that nonviolence is a means to effective, peaceful and cooperative problem solving.

These lessons followed a curriculum based on King's principles of nonviolence (LaFayette & Jehnsen, 1995; Collyer & Zepp, 2007). They included modules on:

- how human beings are alike, providing a foundation for mutual respect;
- the nature of conflict, and how the type and level of conflict can be usefully analyzed to provide clues for solution;
- historical examples of nonviolent resolution of difficult human conflicts;
- King's philosophy and methods, emphasizing six principles of nonviolence;
- a sequence of steps for solving problems nonviolently;
- discussion of traps and pitfalls, such as the tendency to personalize conflicts; and
- application of the nonviolence approach to community and transportation problems suggested by the students themselves; these included the need for additional bus routes in Providence, and the disruption to neighborhoods caused by highway construction.

A training team led by Richard Tarlaian and including Victoria Christgau, Laura Clarke and April Wilson delivered the training to three or four groups of students in each semester. All of the trainers were certified to deliver the Kingian curriculum through the Center for Nonviolence and Peace Studies at the University of Rhode Island.

A brief questionnaire was administered before and after the training in order to assess changes in knowledge and attitudes. The pretest – training – posttest sequence was carried out in both the Fall 2006 and Spring 2007 semesters.

The questionnaire included a demographic page and six short content sections, which are described below. A sample questionnaire is appended to this report, Appendix C.

- How Violent Are These? – Students were asked to rate the severity of violence of 16 behaviors on a 5 point scale. The behaviors were chosen to be good psychometric markers of four types of violence, based on the typology of Collyer, Gallo, Corey, Waters, and Boney-McCoy (2007).
- How Do You Feel? – Students were asked to rate the extent to which 15 statements applied or did not apply to them. The statements were mostly derived from the Aggression Questionnaire of Buss and Perry (1992).
- What Do You Think? – Students were asked nine questions about their degree of agreement or disagreement with statements about violence and nonviolence. These questions were exploratory and not based on earlier studies.

- How Good Is That? - Students were asked to rate several positive behaviors, as a preliminary step toward a perceived "goodness" scale. Four additional questions in this section about good driving practices were to be answered only by students who were drivers.
- How Bad Is That? - Students were asked to rate 12 behaviors that might occur on a public bus. The methodology here was analogous to Collyer et al.'s (2007) approach to scaling severity of violence as a way of measuring sensitivity to violence. From the student ratings we hoped to get a picture of how students perceived their own and others' behavior in this transportation context.
- About Driving – Students who were drivers filled out this section of the questionnaire. For each of 15 statements about driving, they indicated the extent to which the statement applied to them on a 5 point scale.

The questionnaire data have been partially analyzed. We focused first on the results from a new measure of sensitivity to violence (the How Violent Are These? section of the questionnaire). Sensitivity to violence is thought to be reflected by relatively high ratings of a violent behavior's (e.g. bullying) severity. In contrast, tolerance of violence is reflected by relatively low ratings of severity.

Some main results are the following:

- The sensitivity profiles across four types of violence are similar in shape to profiles seen in other studies, such as Collyer et al. (2007). In order of decreasing perceived severity, the types of violence are: V1, more severe physical violence (e.g. stabbing); V2, less severe physical (e.g. fighting); V3, more severe nonphysical (e.g. vandalism); and V4, less severe nonphysical (e.g. insults).
- High school students show lower sensitivity to violence than previously studied groups such as student teachers and traffic offenders. (A report on these groups by Collyer, Johnson, deMesquita, Palazzo & Jordan is in preparation.) More must be learned about whether this lower sensitivity is a cause for concern.
- Girls are more sensitive to violence than boys, across all four types of violence.
- Boys show increasing sensitivity to violence with age, between 14 and 16, for all four types of violence, with the greatest change for V2.
- Girls show a temporary increase in sensitivity to nonphysical types of violence (V3 and V4) at age 15.

Some analyses of student perceptions of behavior on public buses (the How Bad Is That? section of the questionnaire) have been completed. Main findings include the following:

- A newly constructed scale (range 1 to 5) for the "badness" of behavior on buses, based on averaged ratings:
  - Starting a fight (4.24)
  - Driver yells at passenger (4.12)
  - Tripping a person (4.04)

Passengers cursing in front of young children (3.99)  
Pushing a person (3.94)  
Passenger yells at driver (3.73)  
Blocking the aisle (3.73)  
Making fun of a person (3.68)  
Person grabs a seat (3.18)  
Playing music loudly (2.80)  
Telling a person not to talk loudly (2.79)  
Passengers offer up their seats (1.85)

The scale resembles a severity of violence scale, with physical acts rated higher.

- It was found that the perceived "badness" of a behavior depends on who is doing it, and to whom. This finding is reflected in the data in two ways. First, on the "badness" scale, note that "driver yells at passenger" is considered worse behavior than "passenger yells at driver." Second, questions in this section were asked in three different wordings on alternate forms of the questionnaire: Agent (e.g. "You start a fight with another passenger"), Recipient (e.g. "Another passenger starts a fight with you"), and Bystander (e.g. "Two passengers start fighting with each other"). The data show that bad behaviors on the bus are rated worse if the rater is involved as the agent or the recipient of the action than if the rater's role is that of a bystander.
- The distinctly lower rating for the one prosocial behavior on the list, "Passengers offer up their seats," which was included as a check, confirms that students meaningfully discriminated between the behaviors in making their ratings.

### ***Lessons Learned***

These findings give insight into how high school students perceive behavior that is potentially or actually violent. They show that nonviolence training can affect student attitudes toward such behavior to some extent, specifically the construct termed sensitivity to violence.

The nonviolence training used here was based on a widely-used curriculum that is not specifically designed to produce changes in sensitivity to violence. Training might be revised in the future in order to focus specifically on raising sensitivity if it can also be shown that this is a desirable result contributing to more constructive behavior. This study is a step forward; these results contribute to a larger body of research aimed at this kind of improvement in nonviolence education.

In addition to outcomes measured by the questionnaire, ideas and knowledge from the nonviolence training were applied to student projects on community problems in such areas as transportation, crime and public safety. Not all students fully grasped the view of nonviolence as effective problem-solving; some retained a stereotypical and rather passive view of nonviolence as simply refraining from violence. However, we observed many students attempting to apply specific Kingian principles, exercising control of their anger, emphasizing talk and negotiation, looking ahead to a desired future goal, and

making constructive suggestions for change in Providence. One important suggestion that came from students in the Fall 2006 semester was for a new bus route in the city. This proposal is being discussed by staff at RIPTA.

Overall, the inclusion of nonviolence training, and the empirical results associated with it, in this project, has been informative and suggestive. It has provided a test of new cognitive measures which, while easy to use, show promise as a way of tracking the effects of educational intervention. This type of training can be integrated with transportation issues in a way that engages students and gives them practice at constructive problem solving.

Nonviolence training curricula are works in progress. The curriculum used in this project produced only small increases in our measure of sensitivity to violence. However, the curriculum can be revised and focused on that type of change as one specific strategy for increasing the effectiveness of nonviolence education for young people. This study has helped to define that task for us.

## **GIS Training**

### ***Fall Semester***

Activities began with preliminary meetings with Feinstein staff to determine expectations and set schedule.

As an introductory exercise for both students and teachers, ProvPlan staff developed introductory GIS lecture and PowerPoint presentations for kickoff session and class sessions using relevant local and national examples. Topics included basic GIS theory, examples of different mapping types (address, parcel, census and neighborhood thematic), and various mapping technologies making the distinction between desktop (ArcMap, etc.) and web-based (ProvPlan Mapper, Google Maps, Google Earth). Presentations included live demonstrations of the ProvPlan Neighborhood Mapper (zooming in to students' houses, showing neighborhood context), and Google Earth (using local ProvPlan-produced KML layers of neighborhoods and buildings as well as flying around the world to where students families are from).

The primary goal of the GIS component was to collect spatial data on students' activities, travel patterns, transportation modes, and perceptions of safety & comfort. To that end ProvPlan staff worked with the TATE team to translate paper-based data collection forms to MS Excel with drop-down menus to ensure standardized data.

### **GIS Curriculum**

Based on Feinstein staff needs and expectations, what was initially slated as a series of lectures grew into a semester-long GIS curriculum with a lecture/lab combination format. Approximately eighty students attended 17 sessions over the course of the semester, culminating in a policy forum where they discussed what they learned and presented their mapping projects.

The GIS curriculum consisted of six topic areas:

Highway: “Our way or the highway”

Exploring the effect of Construction of Interstates 95 & 195 on Providence Neighborhoods

Land Use: Cause and Effect in Providence

Exploring Providence’s Terrain and Natural Resources

Immigration: The freedom of relocation?

Looking at Immigrants in Providence and their settlement patterns

Transportation: An examination of how Providence's transportation system affects neighborhoods and vice-versa

Crime: Do you think you're safe?

Patterns and perceptions of crime, its root causes, and how crime affects the community

Housing and Demographics

Creating less conflicts in affordable areas in Providence

For more detail on the curriculum and to see students’ work, visit the extensive website ProvPlan developed as a resource for the project:

<http://local.provplan.org/feinstein/>

ProvPlan staff provided all of the datasets for the students to use, a list of which can be found here:

<http://local.provplan.org/feinstein/data.htm>

Staff also created special data that didn’t exist before, such as georeferenced 1951-52 Aerial photos (pre I-95) and Dunkin Donuts locations (a popular landmark and destination).

### ***Safety Mapping Exercise***

In addition to the individual data collection of students’ activities (which were mostly in Providence but some outside), ProvPlan staff supported collection of student perception of safety within the City.

Staff produced large-format city maps with streets and landmarks overlaid with 1/8-mile grid cells. Students were divided into small groups, male and female. The students

were then asked to mark areas of the city where they felt safe and unsafe in the daytime and nighttime and to note reasons why.

Each group's data were entered into tables square by square, categorized into themes, and summarized into separate grid map layers for male and female. Examples of themes include: Police/Authority/Security, Drugs, Fights, Etc. See a complete list in Appendix D. All of the individual safety scores were summed to provide an overall rating for day and night.

Preliminary safety maps, with graduated colors of blue for safe and red for unsafe were produced and shown to students and teachers.

### ***Spring Semester***

This semester brought a second group of approximately eighty students in to the project. Because of quality problems with Fall semester student activity data, the curriculum focus shifted away from topic areas towards having the students be responsible to collect and geocode their own data. This approach enforced valid addresses- students quickly learned what type of locations are able to be mapped. Because the project started later in the semester and the focus was shifted from project themes to data collection/geocoding skill development, the number of lab sessions was reduced to eleven.

### **Data**

Data collected for this project fall into three areas:

Student Home Locations- Two point-level address layers enhanced with Providence Public Schools data, joined to block-level 2000 Census Characteristics and student survey data.

Activity Data- A single point-level address layer containing all student activity data including data on transportation mode, distance from home, activity type, day of week, duration, proximity to bus route, and traveling companion(s) if any. In cases where points overlapped on a single address (such as the Providence Place Mall) individual points were separated to more accurately represent the location.

Safety Grid- Two 1/8 mile grid map layers (male and female) containing summarized perception data by category.

Crime Data Grid- A single 1/8-mile grid layer coded with one year (10/2005-10/2006) of crime data extracted from the Providence Police Department's Records Management System (RMS). Crime types are summarized by FBI UCR Part I and Part II categories and well as by Violent/Property categories.

### **Mapping**

All data sets were mapped in various combinations in order to explore spatial patterns and relationships. Map types and descriptions are as follows:

Base Map (Student Home Location Map)- A simple letter-size map showing student home locations (mostly located on the south side of the City), Feinstein High School, Providence Place Mall, Kennedy Plaza Bus Terminal, and Roger Williams Park, along with a thematic backdrop of neighborhoods themed by the number of students in each neighborhood.

Bus Routes Map- A letter-size map of student home locations with major bus routes. The bus routes have varying thickness bases on how many student activities are in close proximity. The overwhelming amount of activities Take place either along the two main bus routes (#11 Broad Street and #20 Elmwood Ave) or Downtown/Providence Place Mall where all bus lines lead.

Safety Grid Quartet- Large-format combination of four maps: Male Night, Male Day, Female Night, and Female Day. This provides an “at a glance” analysis of the most aggregated level of safety perception data.

Crime Mapping- Preliminary maps were produced of Violent Crime, Property Crime, and Simple Assault., based on crime grid data and visually compared to the safety grid. It will be necessary to take this analysis to the next level and isolate high-crime cells and overlay them on the safety grid.

## **Conclusion**

The results, on the benefits of conducting projects like that of the TATE project, are rarely attempted, innovative, valuable, and beneficial to both researchers and practitioners. As researchers and practitioners, we rarely have access to data that provide information beyond the obvious (i.e. trips made, mode used, and trip length). Data collected here provide an extra dimension addressing socio-economic factors of low-income teenagers, their activity patterns, their perceptions towards the communities in which they live, and their perceptions of acceptable and unacceptable behavior while riding a bus and driving a car. We are interested in the “*why*” underlining the activity behavior. In addition, our study takes a bold step in exploring the degree to which perceptions can be altered through nonviolence training, to eventually change transportation behavior (i.e. etiquette while riding the bus and driving a car). Further work needs to be done in this area.

The educational portion of this project was very challenging, but rewarding. A project of this size requires a sincere commitment on the part of the principal, and more importantly the teachers. The success of our project was highly dependent upon the degree of involvement of the teachers. Teachers are very much needed to be the bridge between outside researchers and the students. We were fortunate that the Feinstein teachers incorporated our project into their weekly lessons. Transportation became the semester theme for the red and blue team.

Since the end of our project in late May, we have had the opportunity to do some analysis of the data. Listed below are some immediate plans:

1. The most common destination in our study is Burger King. A research question that arises is, do students have access in their communities to healthy eating places?
2. Students were asked to map their perceptions of safe/unsafe areas in Providence, RI. How do their perceptions of safety compare to crime data in the City of Providence?
3. The qualitative data resulting from the professional seminars conducted by Statewide Planning, two Civil Engineering firms, and RIPTA provides a valuable input to how students use the City, their views of public transportation and the road system. With this information, we collected quantitative data on bus usage, number of vehicles in the household, and other socio-economic factors. One question worth exploring is: To what degree does this population venture out from their communities, what types of modes are used, and to what degree could more students be encouraged to use public transportation?
4. Initial results of the nonviolence training reveal that the training had more of an effect on females than males? Why, and what are some of the other cultural factors that are influencing the results?

Since completing this study, two other cities have shown an interest in conducting similar studies, also Feinstein HS would like the team to lead another study. Our hope is to do this study in several cities in high schools where the majority of the students are low-income and/or immigrants. Expanding our data base would be invaluable to the understanding of spaces where students interact.

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## ***Appendix A: Bridge Engineering Presentation to Feinstein High School Students***

Presenters – Patricia Steere, P.E., Bridge Department Manager, Maguire Group Inc.  
John Steere, P.E., Structural Engineer

### **Purpose**

The purpose of our presentation was to familiarize the students with the bridge engineering design process and to show how modification to one aspect of the design can change the load carrying characteristics of a bridge.

### **Method**

#### **Part 1:**

A Powerpoint presentation describing the design of the new Providence River Bridge, part of the Iway project was shown to the students. This 20 minute presentation showed the steps that the engineers at Maguire Group and RIDOT went through to design the bridge. It described the following steps:

Type Study

Preliminary Design and Research

Final Design and Detailing

Construction

The Type Study for most bridges uses preliminary estimates, constructability, maintenance, and site constraints to decide the type of bridge to use at a particular site. For this bridge, aesthetics also played a major role in deciding the bridge type.

A lot of research into ‘network arch’ bridges was done during the preliminary engineering phase to learn how to save money in the amount of steel required for this bridge.

Students learned that the final design and detailing was the most time consuming part of the bridge design and that the designer has to give instructions for every detail and every nut and bolt that goes into the structure.

Finally, they learned that the design is not over until the construction is done. Many times problems come up during construction for which the design engineer needs to provide input.

#### **Part 2:**

For the second part of the presentation, we developed a hands on activity to demonstrate how a change to on part of the structure could dramatically change the load carrying

capacity of the structure. We used steel sheet metal strips bolted together to form an arch and tie and the students, working in groups of four, were asked to use thin electrical wire to simulate the cables connecting the arch and tie. They could use vertical cables, diagonal cables, or any design they chose to join the arch and tie. The arches were then loaded with bricks until they failed.

**Outcome:**

The students had some good questions after the powerpoint presentation and really seemed to enjoy the hands on activity. For some groups it was quite competitive to see whose bridge would win the load test.

**Recommendations:**

Our materials got a little beat up by the end of the last session due to having them re-used by each group. This resulted in the bridges buckling at bends before they would have if the metal pieces were new. We would recommend providing new materials for each group.

Another possibility is to provide computers for the students to run West Point Bridge. This is a free student level structural engineering program that demonstrates many of the ideas that we would like to teach them. This would require a computer for each child or for groups of no more than two students.

## ***Appendix B: Transportation Planning Concepts in RI***

Katherine R. Trapani, Supervising Planner

Michael C. Moan, Principal Planner

### **Purpose.**

To introduce the federal and state transportation planning concepts used in Rhode Island to high school age students within the inner-city environment by using the Metropolitan Planning Organization (MPO) staff office as an example. The MPO staff also used this opportunity to expand the state's environmental justice and transportation equity outreach and obtain minority student input into the update of Rhode Island's Long Range Transportation Plan.

### **Method/Structure.**

The MPO staff engaged the students in a three part presentation/exercise.

Part 1. Material was presented through lectures using a Power Point slide show. Slides highlighted the Long Range Plan and Transportation Improvement Program (supplemented by urban artwork found in Providence). This was followed by question and answer sessions.

Part 2. An interactive element called the Elmwood Avenue Exercise was conducted eliciting student feedback on all the activities that occur in the street right-of-way, including above and below ground utilities, abutting land uses, street furniture, traffic volumes, modes, etc. This was intended to encourage the students to think about the street in a different way. MPO staff drew a cross section of the street during the discussion.

Part III. The end of the class consisted of an additional planning exercise where the students were asked to provide written input on the fourteen (14) emphasis areas of the Plan update, including items such as bicycle, pedestrian, transit, and safety. Students were encouraged to walk around the room and post to the wall blogs addressing their ideas for improving the elements described to them in a prior lecture. The students voiced strong opinions on many topics.

### **Outcome and Participation.**

The outcome was a successful educational encounter for the staff of Statewide Planning and we believe for the Feinstein students as well. Minority and student participation in the update of the Plan was accomplished. Environmental Justice and equity outreach goals were obtained. Statewide Planning staff provided this lecture series on three (3) different occasions over the winter of 2006 –2007, reaching freshman, sophomores, juniors, and seniors.

***Appendix C: Sample Pretest/Post-test Questionnaire (Agent version)***

FEINSTEIN STUDENT SURVEY

Do not put your name on this form.

Please provide the following information:

Age \_\_\_\_\_

Male \_\_\_\_\_ Female \_\_\_\_\_

High School Year    1st    2nd    3rd    4th

Favorite School Subject \_\_\_\_\_

Interests Outside School \_\_\_\_\_

Career Plans \_\_\_\_\_

Have you participated in a Nonviolence or related program? Yes \_\_\_ No \_\_\_ Not  
Sure \_\_\_

If Yes or Not Sure, describe \_\_\_\_\_

Please write down your password (not your name or other official ID).

Your Password: \_\_\_\_\_

-----  
Write your password again for yourself, so that you will remember it.  
Tear off this portion of the form for this purpose if you wish.

Your Password: \_\_\_\_\_

Part 1 – How Violent Are These?

- Instructions: Please rate each behavior from 1 to 5 on how violent you think it is:

Not Violent At All = 1 2 3 4 5 = Very Violent.

stabbing \_\_\_\_\_  
screaming \_\_\_\_\_  
hitting \_\_\_\_\_  
robbery \_\_\_\_\_  
shooting \_\_\_\_\_  
gossip \_\_\_\_\_  
pushing \_\_\_\_\_  
stealing \_\_\_\_\_

vandalism \_\_\_\_\_  
fighting \_\_\_\_\_  
cursing \_\_\_\_\_  
kidnapping \_\_\_\_\_  
competition \_\_\_\_\_  
slapping \_\_\_\_\_  
insults \_\_\_\_\_  
murder \_\_\_\_\_

How Do You Feel?

- Instructions: Please think about whether each statement applies to you. Rate each statement from 1 to 5:

Does not describe me at all = 1 2 3 4 5 = Describes me very well

1. I get mad quickly but get over it quickly too. \_\_\_\_\_
2. Sometimes I talk about my friends behind their backs. \_\_\_\_\_
3. I feel good most of the time. \_\_\_\_\_
4. I sometimes get really jealous. \_\_\_\_\_
5. Sometimes I don't trust my friends. \_\_\_\_\_
6. I am an easy-going person. \_\_\_\_\_
7. I often disagree with people. \_\_\_\_\_
8. When people annoy me, I may tell them what I think of them. \_\_\_\_\_
9. People I meet usually like me right away. \_\_\_\_\_
10. When people are especially nice, I wonder what they want. \_\_\_\_\_
11. When I am frustrated, I let it show. \_\_\_\_\_
12. I get into fights a little more than the average person. \_\_\_\_\_
13. I can't help arguing with people when they disagree with me. \_\_\_\_\_
14. I have trouble controlling my temper. \_\_\_\_\_
15. I don't get angry very often. \_\_\_\_\_

### What Do You Think?

- Instructions: Read each of the following statements, and rate how much you agree (higher numbers) or disagree (lower numbers).

I do not agree = 1 2 3 4 5 = I agree strongly.

1. The way to get along in life is to go along with your friends. \_\_\_\_\_
2. Courage means a willingness to get physical. \_\_\_\_\_
3. Violence is more predictable than the nonviolence approach. \_\_\_\_\_
4. Many times violence is the only way to solve a problem. \_\_\_\_\_
5. Adopting nonviolence will reduce your options when trouble comes. \_\_\_\_\_
6. Most people cannot learn how to be nonviolent \_\_\_\_\_
7. Nonviolence is only possible if you have a great leader like Martin Luther King \_\_\_\_\_
8. Nonviolent people are more vulnerable to getting hurt. \_\_\_\_\_
9. Most people know what nonviolence is all about. \_\_\_\_\_

### How Good Is That?

- Instructions: Please rate each behavior from 1 to 5 on how good you think it is. Not Good At All = 1 2 3 4 5 = Very Good.

- Helping your brother or sister with homework. \_\_\_\_\_
- Giving up your seat on the bus to an elderly person. \_\_\_\_\_
- Doing the daily chores at home. \_\_\_\_\_
- Giving a dollar to a friend. \_\_\_\_\_
- Giving a dollar to a homeless person. \_\_\_\_\_
- Not getting rowdy with your friends on the way home from school. \_\_\_\_\_
- Breaking up a fight between two younger kids. \_\_\_\_\_
- Cleaning the snow off a neighbor's car. \_\_\_\_\_
- Taking an injured cat to the vet. \_\_\_\_\_

And if you drive:

- Offering the right of way to other vehicles. \_\_\_\_\_
- Offering rides to your friends. \_\_\_\_\_
- Using the car to entertain your friends. \_\_\_\_\_
- Using the car to impress your friends. \_\_\_\_\_

## How Bad Is That?

- Instructions: Here are several things that could happen on a public bus. Please rate each behavior from 1 to 5 on how socially bad you think it is.

Not Bad At All = 1 2 3 4 5 = Very Bad Behavior.

1. You trip another passenger, who falls down. \_\_\_\_
2. You yell at the bus driver when he will not make change. \_\_\_\_
3. The bus driver yells at you when you ask for change. \_\_\_\_
4. You start a fight with another passenger on the bus. \_\_\_\_
5. You tell another passenger on the bus not to talk so loud. \_\_\_\_
6. You push another passenger as you both move to get off the bus. \_\_\_\_
7. You take the seat that another passenger wanted to sit in. \_\_\_\_
8. You and your friends block the aisle on the bus so other people can't get by. \_\_\_\_
9. You and a friend give up your seats so that other people can sit down. \_\_\_\_
10. You play music very loud right beside a stranger. \_\_\_\_
11. You make fun of another passenger on the bus. \_\_\_\_
12. You and a friend are cursing right beside a mother and her young children. \_\_\_\_

About Driving – Please answer these questions if you drive a car or truck.

- Instructions: For each statement, indicate how well it applies to you.

This does not describe me at all = 1 2 3 4 5 = This describes me very well

- 1 When I am driving, I get angry at other drivers. \_\_\_\_\_
- 2 I get angry at slow drivers. \_\_\_\_\_
- 3 I get angry when another driver cuts me off. \_\_\_\_\_
- 4 My friends in the car tell me to calm down. \_\_\_\_\_
- 5 I get angry at drivers who tailgate me. \_\_\_\_\_
- 6 I get impatient at stoplights. \_\_\_\_\_
- 7 I get impatient with pedestrians crossing the street. \_\_\_\_\_
- 8 I am alert and have a quick reaction time. \_\_\_\_\_
- 9 I compete with other drivers on the road. \_\_\_\_\_
- 10 I respond competitively when drivers challenge me. \_\_\_\_\_
- 11 When I am bored, I drive fast for excitement. \_\_\_\_\_
- 12 I "punish" bad drivers. \_\_\_\_\_
- 13 I complain to my passengers about other drivers. \_\_\_\_\_
- 14 I curse at other drivers. \_\_\_\_\_
- 15 I would seek to confront a bad driver face to face. \_\_\_\_\_

### *Appendix D: Categories of Students' Safety Perceptions*

Students' open-ended comments on why a place was safe or unsafe were interpreted and summarized into the categories below:

<b>Data Field</b>	<b>Description</b>
SUM_HOME	Home Location or Neighborhood
SUM_POLICE	Police/Authority/Security
SUM_QUIET	Quiet
SUM_FAMILI	Familiar Place/People
SUM_HOMICI	Homicide
SUM_FIGHTS	Fights 89
SUM_DRUGS	Drugs
SUM_SHOTS	Shots
SUM_BAD_PP	Bad People/Crackheads
SUM_ACTIVI	People or activities going on
SUM_NO_PPL	No People or activity
SUM_RACE	Racial Conflict
SUM_NO_POL	No Police/Security
SUM_DARK	Dark/Isolated
SUM_MV_REL	Motor Vehicle Related- Drag racing, accidents
SUM_MISC_V	Misc Violence
SUM_GANGS	Gangs
SUM_EXPLOD	Explosions
SUM_LIGHTS	Well-lit area
SUM_SUPERN	Supernatural Occurrences
SUM_SEX_WO	Sex Workers
SUM_SEX_PR	Sexual Predators 33
SUM_CARJAC	Carjackings
SUM_INSTIT	Institutions (School, Church, Workplace)
SUM_CHILDR	Children Playing
SUM_ABAND	Abandoned/Run-Down
SUM_THEFT	Theft/Robbery
SUM_LIQUOR	Liquor
SUM_CLOSET	Close Proximity
SUM_WHT_SAFE	Safe because white/rich people are there