

The Causes and Consequences of Urban Expansion The Urban Growth Management Initiative

Field Research Instructions for the City Survey Protocol

I Overview

The field research you are about to undertake is an essential step towards completing the analysis of the causes and consequences of urban expansion in a global sample of cities. During the past year, the research team has acquired and analyzed satellite images of each of the 120 cities in the sample for two time periods, approximately a decade apart. The preliminary analysis of these images has provided a measure of the amount of change in urban land use in each city. The next step in the research is to investigate the variety of the possible causes of variations in urban expansion rates, and to explore some of the consequences of varying rates of urban expansion in terms of housing affordability, housing conditions, transport congestion, etc.

To proceed with this next step, we are collecting two types of data: (a) data which is available from global resources, such as, for example, climate data or data on the annual rate of inflation; and (b) data that can only be collected on the ground in each city by engaging local consultants such as yourself. The type of data that needs to be collected on the ground includes data on the number, type and condition of housing in the city, on urban planning norms and procedures, on planning policy, on the price of housing, on conditions in informal settlements, on the availability of housing finance, and on the accuracy of the measured changes in urban land use derived from the satellite data. Collecting these data clearly requires a researcher in the field. Your role is to obtain this essential information for your city.

Collecting the information need not be difficult, and it should be possible for you to collect the required information in 6 or 7 working days. The field research has been structured as a series of six “visits” with questions to be answered during each visit. All questions in the survey are given in English, and we are relying on you to translate to the appropriate local language during your visit. This translation will require you to look at the questions carefully to make sure you understand what is being requested. If there is any uncertainty – please send us an e-mail. We will respond as quickly as possible. With some preparation and planning, you might be able to complete two of the visits in one day. In general, we expect each visit to correspond to a full day of work.

There may be some questions in the questionnaire that do not apply to your city, or data that cannot be obtained. In these circumstances, you should make some notes about why the questions do not apply or what was done in an attempt to get the data, and submit this information to us. Please note, however, the importance of being persistent in your research efforts. Our experience has shown that many times initial requests for information were refused or we were told the data do not exist. Repeated questioning and persistence very frequently resulted in obtaining all the data required – and more!

You may complete the “visits” in any order. Section IX below contains instructions for submitting your results. Once you have completed a visit, you should sit down and type up any notes or observations from your visit and submit the results to us. We welcome partial results and this will provide a measure of safety for your valuable results – storing them on our remote server so that they do not get lost.

Finally, please be alert for the opportunity to obtain data that, in your judgment, might be useful in the research even if it is not explicitly requested in the survey form. As a field researcher for the project, you are in a position to note details on the social and economic structure of the city, to identify important features or phenomena that are not covered in the questions, and to obtain information on the local

economy and its structure that you were not specifically asked to obtain. The same applies to obtaining an extra map or a statistical reference book for the city. As you can imagine, it is difficult for us to know in advance what information may be available in your city that has a bearing on the questions we are asking; what special conditions exist in your city that require us to interpret the information you provide in a special way; or whether any special studies were already undertaken there that are particularly relevant to our present research. In identifying and getting this information, we rely on you and on your judgment. Please note, however, that the most important priority is to obtain all the data that is specifically requested in the survey questionnaire. Please do not pursue additional data at the expense of getting all the information requested, because the survey information is critical for a thorough comparative analysis of the global sample of cities.

II Preparation

a. Appointments and contacts

The key to quickly completing each visit and collecting the required data is to prepare for each visit by making an appointment. If you have a friend, an acquaintance, or any other contact in a particular office, ask them to help you find the data you need. Please keep notes on the people you contact, along with phone or fax numbers and e-mail addresses if available. These will provide you with important documentation about the data collected, and will permit checking back if important questions arise about the information provided.

b. Letter of introduction

You will be provided with a letter of introduction, containing a brief explanation of the project, its sponsors, and the importance of the data being collected. The letter will be provided to you in English. Please feel free to translate it into the appropriate language. If you can supply us with a translated text we can produce a translated version on letterhead to accompany the English text. These letters are sometimes helpful in gaining cooperation with field research efforts.

c. Equipment and materials

For most of your "visits" the essential equipment consists of a copy of the survey form and a pen or pencil to record the information. For Visit No. 5 (discussed below) you will need:

A digital camera for taking photographs in every direction at designated points; and

A handheld GPS (Geographic Positioning System) device for recording the exact location where your photographs are taken.

The camera can be very helpful for other visits as well. For example, land use maps are often produced and available in the planning office, but sometimes not available for distribution in paper form. In such cases laying the map flat on a table and taking a series of photographs may be a substitute for obtaining a copy of the map.

d. Computer and internet access

It is essential that you have access to a computer and e-mail to facilitate interaction with the research team, both to answer questions that come up during your research and to submit the results of your data collection. A web site has been set up that provides access to copies of the survey as well as a series of forms for submitting the data that you collect:

<http://www.williams.edu/Economics/UrbanGrowth/HomePage.htm>.

III Visit One: Census Data

a. Questions

The first group of questions relate to the population and total number of dwellings in the urban area. Please make an effort to obtain this information separately for the districts or sub-areas in your city. The list of districts and an accompanying map will be provided to you with the survey form. The second set of questions relate to the price of motor fuel and to the weekly earnings (in local currency) of various occupations. For fuel prices you can simply choose three local sources and average the price of the standard grade fuel. For earnings you may need to be more resourceful. If these data are not available in official sources, please inquire of your contacts in the city or ask the relevant people directly to obtain the necessary information. Remember: An approximation is better than no information at all.

b. Opportunities

Be alert for an opportunity to obtain recent documentation on household incomes, salaries and wages, employment by industry, and unemployment (in the city rather than in the country as a whole). Also, if there is a statistical yearbook or a similar document for the urban area please make every effort to obtain it.

c. Definitions

The information for table I.A must be obtained from the latest census, either by district (when this information is available) or for the metropolitan area as a whole. If data are only available for the metropolitan area as a whole, it is important to obtain information on the administrative boundaries of the metropolitan area, or on the names of the districts that comprise the metropolitan area.

The data for table I.A is typically available in separate tables in the census. There may be many more categories in the census tables than those requested in table A (e.g. different types of roof materials, or different types of residential tenure). Please obtain copies of the relevant tables.

Re "Multi-Unit" and "Single-Family Unit": Please omit dormitories, cooperative living arrangements, and military dwellings from your calculations.

Re "Owner-Occupied" and "Rented": Please omit "rent free" from your calculations; "Own the house, but not the land" should be listed as a separate category, if such a category exists.

Re: "With more than 2 (or 3) persons per room": This can be calculated from the table listing number of rooms on one axis and number of persons per household in the other axis.

Re: "With non-permanent roof materials": Thatch, straw, cardboard, plastic sheets are considered non-permanent; corrugated iron sheets are considered permanent.

Re: "With non-permanent wall materials: Cardboard, plastic sheets, and scrap materials are considered non-permanent; concrete, brick, wood, and corrugated iron sheets are considered permanent.

Re: "With non-permanent floor materials": Mud floors or earthen floors are considered non-permanent; tile, wood, concrete floors are considered permanent.

Re: "With improved water supply": Water taps outside the house plot are considered non-improved; water taps inside plot or house are considered improved.

Re: "With improved sanitation": Pit latrines outside dwelling unit are considered unimproved; toilets with septic tank or connected to water-borne sewerage pipes are considered improved.

Re: "With electricity": Includes both legal and illegal connections, with or without proper metering.

The data for table I.B needs to be obtained in the field, as it is not typically available in published documents. Price and income information should be provided in local currency. For income information, please use more than one reliable source to get the information and then use your judgment to estimate typical weekly earnings.

Re: “Standard grade gasoline”: Refers to the least-expensive regular gasoline sold in gas stations, whether leaded or unleaded as the case may be.

IV Visit Two: Municipal Planning Office

a. Questions

Experience suggests that this can be a difficult visit. While the questions are straightforward, the nature of the local bureaucracy may pose a variety of challenges. If there is a area-wide planning office that deals with policies covering the entire metropolitan area, then collect your data from that office.

Please note: If there is more than one municipal planning office in the metropolitan area and there is no area-wide metropolitan planning agency, then we would like you to collect data from two municipal planning offices—the municipal planning office covering the central city in the metropolitan area and a municipal planning office in a municipality on the urban periphery. This extra effort may be required to obtain information on the urban growth boundary and greenbelt (if any) in the metro area, as well as other planning policies relevant for containing urban expansion. If this is the case in your metropolitan area, please notify the research team as soon as possible.

In requesting information from local officials, you may find it helpful to stress the fact that inclusion in the study will bring their city to the attention of a diverse international audience, and that this will be helpful in attracting investors and potential employers to the city.

Re: “Land area covered by current plan”: If you are able to obtain a paper (or even better a digital) map of the urban area showing the area subject to planning regulations and areas where different types of building is allowed, you may skip questions 2A(18) through 2A(21).

b. Opportunities and other considerations

Be alert for information on differences between planning policies and the actual enforcement of these policies on the ground. Also, if you encounter anecdotal information concerning conflicts in policy-making, how these conflicts relate to local political considerations, or how these conflicts result in difficulties in enforcement, please make note of these and submit them as supplemental notes to us. Such information can be very useful in interpreting the true nature of regulatory constraints.

c. Definitions

For terms used in table 2A:

Re: “Elected/Appointed”: If some municipal governments are elected and some are appointed, please make a special note of how many are elected and how many appointed.

Re: “Municipalities”: Refers to jurisdictions (e.g. towns, cities, etc.) within the metropolitan area with their own governing bodies.

Re: “Formal and binding legal status”: Refers to the status of the plan and its statutes as a law or laws subject to enforcement by local, state, or federal law enforcement agencies.

Re: “Obliged to follow the plan”: Means that there are no formal or legal exceptions given from the statutes of the plan.

Re: “Permissible land use for each land parcel”: Means land use is specified directly or can be inferred indirectly from the text and maps accompanying the plan.

For terms used in table 2B:

Re: “Typical time it takes”: From first application for a permit until official permission is received and all relevant documentation is approved.

Re: “The tax rate as percent”: Refers to annual property taxes and related levies on land parcels. These two questions seek to explore whether the tax regime for non-urban and urban parcels are different or identical.

Re: “Estimated percentage of new land development where water is obtained from drilled wells”: This question seeks to explore whether new land developments are dependent on the extension or piped water supply or not.

Re: “Floor Area Ratio (FAR)”: The ratio between the total surface area to be constructed to the total land area of the plot.

Re: “Proper land registration”: This data may need to be obtained from then land registration office. It refers to land parcels with all the necessary documentation, where ownership is clear and not in dispute,

For table 2C:

Re: “Stop order: An official order to stop construction of buildings or infrastructure (e.g. roads, pipes, etc.).

Re: “Without formal land subdivision and/or building permits”: This estimate refers to the total housing stock, not only to recently-built housing. The estimate should include all dwelling units that were built without proper permits. It may be available in academic studies or reports, or from knowledgeable experts.

Re: “Squatter housing”: This percentage should be smaller than the percentage of dwelling units without proper permits. It refers only to housing built on invaded land or land occupied against the wishes of the landowner, whether public or private.

Re: “Full-time persons engaged in enforcement”: All employees or contracted personnel working in the agency/office/department in charge of enforcement, if such an office exists.

V Visit Three: Real Estate Agency

a. Questions

While there are potentially a very large number of separate pieces of information to be collected during this visit, professional estate agents (or real estate agents) with experience in the urban area are generally very well informed about house values and the factors that influence house values. If you make an appointment and review the questions in advance completing this visit should not be difficult.

Some of the questions relate to activities not sanctioned by law, such as suburban development without permits. Some of these questions have been included in this visit (rather than the visit to the planning office) because the individual is likely to have some knowledge of these things, and a direct answer to the question does not reflect on his own job performance. Nevertheless, you may need to assure the person that the answers given will be treated confidentially and entered into the database but not associated with them individually.

The three columns in table 3.B might cause some confusion. The idea is that the first column should relate to all houses, both old and newly constructed, and the answers should reflect what is true for a house with a median price (where half of all houses are more expensive, and half are less expensive). The second and third columns relate to only to newly constructed houses. The answers in the second column should pertain to a median-priced new house (thus for a “typical” newly constructed dwelling). The third column should relate to the lowest price newly constructed house. This provides information on the most affordable new construction now available on the market.

b. Opportunities and considerations

The real estate agent you will interview earns income from selling houses, and therefore has a great incentive to master details of the local market. This provides you with an excellent opportunity to gather information about the nature of the market beyond the items covered in the questions. Are there particular environmental conditions that affect the market? Are there particular problems with crime or social strife that affect the market value of dwellings? Are better-off families fleeing the city center? Use your own knowledge of the city to explore these and other relevant issues with the agent. Make notes of these other considerations and submit them to us.

c. Definitions

For table 3A:

Re: “Middle range”: This range refers only to houses available in the formal housing market and does not include illegally-built ones. If, for example, the market were to be divided into three equal-size house price categories, “middle-range” will refer to the middle price category. If better data exist, it may be possible to divide the housing market into more categories and to narrow down the middle-range, but a three-category division may be considered adequate.

Re: “Corrupt practices”: “High” refers to high levels of corruption and “Low” to low levels of corruption.

For table 3.B:

Re: “Median-priced”: This calculation needs to be done carefully during your discussion. Most people are not familiar with the concept of the “Median”. The “median” is a property of the entire stock of dwelling units. If, for example, there are 100,000 legally-built dwelling units in the city, arranged according to their prices – from the lowest to the highest – then the median-priced unit will be the unit that has 50,000 units cheaper in price and 50,000 with a higher price. Finding the median therefore requires not only knowledge of the range of prices, but also knowledge of the quantity of houses in each price category. Real estate agents may have this knowledge in their minds and, together with you, can estimate the median even if it is not a number they typically use or calculate for themselves.

Re: “Floor area of unit”: Typically calculated as gross floor area, including interior walls, but (in case of apartments) excluding stairwells and corridors outside apartment.

Re: “Materials”: If more than one material, please specify the major material.

VI Visit Four: Informal Settlement

a. Questions

Informal settlements are typically of two major kinds: (a) informal land subdivisions that are constructed on lands that are legally-owned by the sellers or their partners, but do not conform to zoning and land subdivisions regulations or to building codes; and (b) squatter settlements that are constructed on lands that are occupied illegally, without permission from the legal (public or private) land owner. Squatter

settlements typically do not conform to regulations as well and should therefore be included as a sub-category of informal settlements.

If there are no informal settlements in your city, please write a zero (0) for questions 4A(1) and 4A(2) and leave the rest of this section blank.

Before you decide which settlement to visit, you should obtain some knowledge about which type of settlement – informal settlements on legally-owned land or a squatter settlement – is presently more prevalent. You should then visit a recently-settled settlement of the more prevalent kind.

To ensure your safety and to be welcome there, please make sure that you visit the settlement accompanied by a person familiar with the people there, either a public official or a member of a non-government organization working in the area. When you get to the settlement, try to interview one or more of the community leaders or people that were among the original settlers to get information for table 4B. Then visit three more houses to get information for table 4C, as well as to check the answers you got in table 4B.

b. Opportunities and considerations

There may be published documents or studies done on informal settlements or on squatter settlements. Please try to obtain these studies, if possible. Also, to get an overview on the prevalence of such settlements, you may wish to meet an academic, an official, or a member of a non-government organization that work with these issues. If you have a camera, you may also wish to take a photo of the settlement as a whole as well as photos of the dwelling units where you collected data.

c. Definitions

For table 4A:

Re: “Recently-occupied”: During the last one-to-three years. If there are only older settlements, please select one of the most-recently settled ones.

Re: “Price for a typical plot”: Refers to the price that plots are being sold for at the time of your visit. The price for the original settlers may have been zero, if they were invaders. Also, prices may have been originally lower than they are today.

Re: “How is water provided?”: Bought from water trucks, rubber pipes, common taps, water pipe to house.

Re: “How is sanitation handled?”: Community latrines, on-site pit latrine, on-site septic tank, indoor water closet with septic tank, or indoor water-closet with piped sewerage.

Re: “Is there electricity?”: Either legal or illegal supply should be considered a positive reply.

VII Visit Five: Ground Truth Data

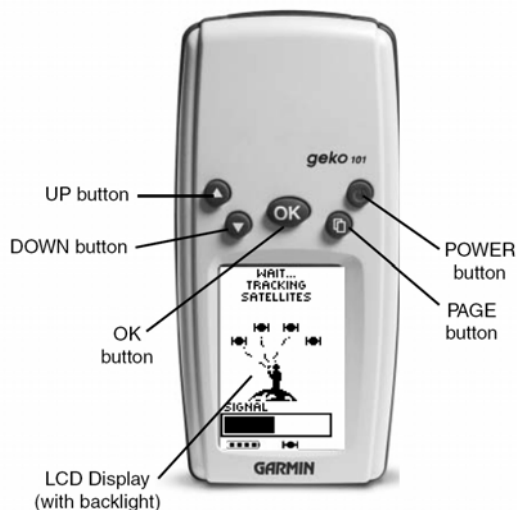
a. Procedures

This visit is designed to serve three main purposes. The first is to take a series of photographs at four designated locations (indicated on a map or satellite photograph provided to you) that will record present land use for comparison with our computer-derived estimate of land use based on the satellite data. This provides an important test of the accuracy of our remote-sensing methods. The second purpose is to obtain some sense of the congestion involved in traveling through the city. This is done by recording the time and distance traveled from the city center to the first point you choose to visit, and subsequently to each point. Finally, the visit requests that you record the average building height (number of floors) along

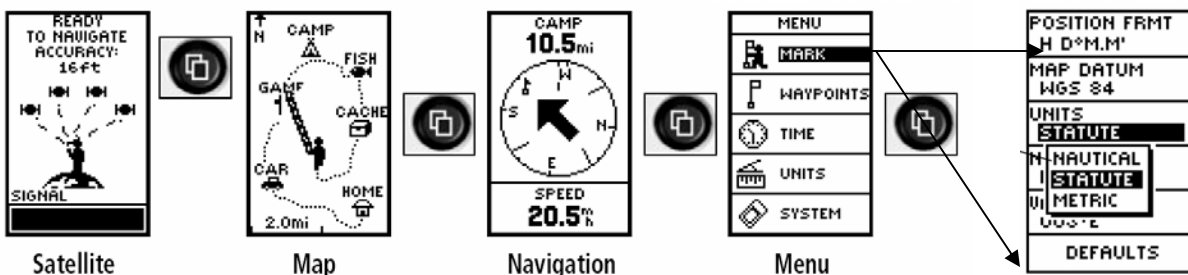
each segment so that we can have a sense of the level of capital investment in structures at various points in the urban area.

You have been supplied with a map or a satellite image identifying our initial estimate of the city center along with four dispersed points in the urban area identified by numbered dots on the image, and a list of their coordinates in both latitude-longitude format and in an alternative UTM format. You have also been supplied with a Garmin Geko GPS receiver for recording your location and distance traveled. While you can report locations in either latitude-longitude format or UTM format, we would prefer to receive them in UTM format. Here are the steps to start the GPS and change its recording mode to UTM:

1. Use the power button to try turning the GPS on. If the screen display starts, your GPS already has batteries in it. If it doesn't, obtain two AAA alkaline batteries and install them in the battery compartment as shown.

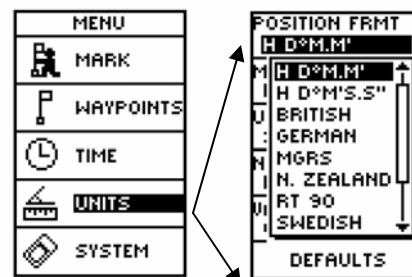


2. Turn the unit on. By pressing the PAGE button you will cycle through four screens as indicated in the figure below. Press the PAGE button until the MENU screen is showing. Use the UP and DOWN buttons to select UNITS and press OK.



3. Select METRIC within the UNITS menu and press OK.

4. Then press the UP or DOWN button to highlight POSITION FRMT. Press OK to select this menu area. There are several choices for which reference system to use to display your location. Press the UP or DOWN buttons to select the choice UTM/UPS. Press OK and then use the PAGE key to display the navigation window.



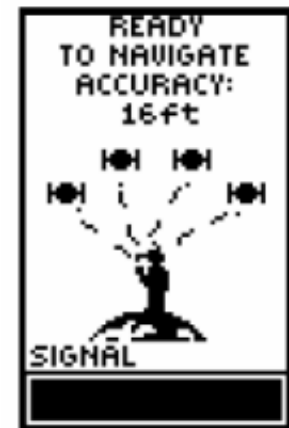
5. Use the UP or DOWN arrow to switch the lower display area (below the compass) until it displays the CURRENT LOCATION. The GPS is now configured to display your location in UTM coordinates. The use of metric measures and UTM as the coordinate system will remain set.

You will need to secure a car and driver, or to have access to a car in order to travel through the city to each of the numbered locations identified in the map or satellite image. For this visit you should have with you the following items:

- The GPS receiver
- 4 extra batteries in the event the batteries fail
- 2 copies of the survey form page for Visit 5
- Pen or pencil for recording data
- Map or satellite image identifying numbered ground truth locations
- Paper for taking additional notes
- Digital camera capable of recording 32 images

You should begin your data collection at the city center – whatever seems in your judgment to be the generally accepted “center” of the urban area. This may be a major crossroads, a plaza or park, or significant building. You will be using the GPS to record your location so you must first turn on the receiver and allow it time to locate signals from at least 4 satellites. Note that the receiver will not work indoors and generally will not work well inside of an automobile. To use the receiver inside a car it must have good visibility to the sky – on the dash under the windshield/windshield will generally work once it has identified its location. Even outdoors, the receiver will have difficulty if much of the sky is obscured by tall buildings or other physical barriers. Starting in the city center, undertake to complete the following steps:

1. Stand outside in an area with a good view of the sky and turn on the GPS.
2. Allow several minutes for the receiver to identify and process the signal from satellites. You will know this process is complete when the Satellite screen says “READY TO NAVIGATE”.
3. Press the PAGE button until the NAVIGATION screen is showing. Press the UP/DOWN buttons until your CURRENT LOCATION is displayed below the compass.
4. Record your current location (this will be the location of the urban center) on the Visit 5 survey page.
5. You may want to record the location as a WAYPOINT in the GPS receiver. This is done by pressing the PAGE key to display the MENU screen, highlighting the MARK option and pressing OK. This will display a human figure holding a flag that gives the WAYPOINT NUMBER. Make note of this number and a descriptive phrase (like “Center – Waypoint 1”) and press OK. You can then return at the end of the day to review the exact coordinates of each location.
6. Note the current time, the average number of stories of buildings in the area, and the odometer reading (you may use either the odometer in your car or the odometer that is built into the GPS, which you can view from the NAVIGATION screen by pressing the UP/DOWN buttons until it is displayed below the compass). Record these values on your survey form.
7. Proceed to the first “ground truth” point identified on your map. Please note that these have been chosen without knowing about

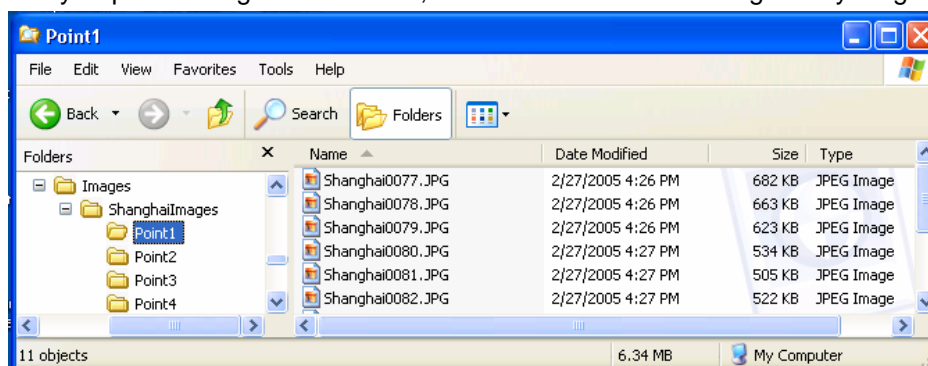


Satellite



constraints that may limit your access to the point. Please do not go anywhere that is illegal for you or would put you in any peril. Just get as close as you can to the designated location.

8. Along the route to the location, please make note of the range of building heights you pass. Enter your estimate of the average height of buildings along the route in the appropriate place on your survey form.
9. Once at the location, make note of the odometer reading (if you are using the GPS odometer you will have to leave the GPS turned on during the trip, which may use up the batteries more rapidly). Make note of the time and the average building height (possibly zero) in the area around the ground truth point.
10. Use the GPS to determine the direction that is North (you need to walk a few feet for the GPS to accurately reflect direction). Leave the GPS turned on so it can get an accurate reading of location.
11. If possible find a slightly elevated location (standing on a bench or on some part of the car for example) from which to take the photographs. Start with the image centered towards the north, and proceed to your right through East, South, West and back to North to take a panoramic image showing current land use in the area. Depending on your camera, this will take 4 to 8 images.
12. Record the current location from the GPS on your survey form, and if you wish record the location as a WAYPOINT and make note of the waypoint number for future reference.
13. When you are ready to depart, note the current time and odometer reading and record them on your survey form. Depart for the next ground truth location.
14. Repeat steps (8) through (13) until you have visited and recorded data from all 4 ground truth points identified for your city.
15. Once you have completed your visit, transfer the photographs to your computer. Images should be stored in a separate folder with a name such as "CityNameImages" where CityName is replaced by the actual name of your city. For example if your city is Shanghai, create a folder called "ShanghaiImages". Within that folder copy images taken at the first location into a subfolder "Point_N" where N is replaced by the number of the ground truth point where the images were taken. If you put all images into folders, and their folders into a single "CityImages" folder it will be easier to transfer the images to our server electronically. The figure illustrates how your files should be organized.



b. Opportunities and considerations

When you are traveling through the city, you may pass unusual or interesting features relevant to the research, especially new features. For example new large illegal settlements, significant new developments or changes in land use, or new transportation infrastructure such as roadways and bridges. It would be helpful if you jot down the coordinates (or mark a waypoint for later reference) along with a brief description of these and pass the information along to us. This will help us to understand recent changes and developments going on in your urban area.

VIII Visit Six: Sources of Housing Finance

a. Questions

This visit will provide us with important information on the availability and nature of housing finance in the city. This is essential if we are to accurately represent the true cost of housing. Most countries have more than one type of institution that makes loans for housing (for example government housing banks, private commercial banks, savings and loan associations, finance companies, *credit fonciers*, postal banks, or credit unions). Please identify the two types of institutions that have the largest shares of the mortgage finance market (to determine this you might consult official statistics or, if these are unavailable, ask the real estate agent you meet with in visit three). Choose two institutions, preferably the largest one of each type, to represent these two groups of mortgage lenders. Please arrange for an interview with a mortgage credit manager and/or a loan officer in each of the two financial institutions to obtain data on the terms and conditions under which mortgage finance is given.

The data you collect should pertain to individual clients or households (not for organizations or firms) and should be representative of a “typical” private mortgage for purchase of a dwelling. The survey should be conducted based on the following criteria:

1. All questions should address bank regulations and procedures for individual house loans with respect to the most common type of dwelling unit in the market (either a house, apartment, condominium, etc).
2. Refer only to those dwelling units that are planned to be occupied by the individual loan applicants (i.e., those units that will be lived in by the applicant and his family and not those dwellings rented to a third party, a resident or a business).
3. All data recorded should refer to loans that do not include optional insurance. To the extent possible the questions should refer to loans in which all risks of default are being borne by the bank. If there are some types of insurance that are mandatory for all loans, please record this fact and submit this information along with your notes.

If possible, please obtain a mortgage application form from the bank and return it with the completed questionnaire.

Please also provide the date when the survey was conducted; the full name of the bank; bank mailing address; the full name and title of the person you have interviewed together with that person’s contact information (work address, phone, fax, email).

b. Definitions

For table 6A:

Re: “Self employed persons”: Can persons who are not employees of public or private organizations but who work independently (e.g. manage and operate their own business) obtain a mortgage loan?

For table 6B:

Re: “Interest rates”: Interest rates on other loans are requested for comparison to the interest rate on mortgage loans.

IX Submitting your results

Once you have collected this valuable information, you must transfer it to us for inclusion in the global dataset. Two important principles should be applied to this process:

Submit the data as soon as possible after it is collected – there is no need to wait until all visits are completed.

Submit the data to us using at least TWO different mechanisms – assuming you have internet access submitting the data via our web survey site is ideal, plus another backup method such as fax or e-mail.

a. Web site

We have designed a special web site set up for submitting results of each visit, for transferring the digital images taken at the ground truth locations, and for transferring your notes and scans of other documents. You should endeavor to submit your results via this web site, although for most successful use this will require a broadband internet connection (not dialup).

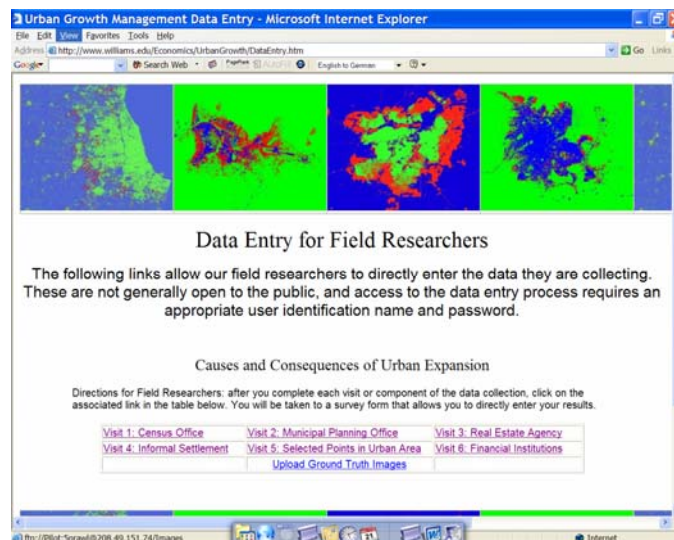
The website can be accessed at:

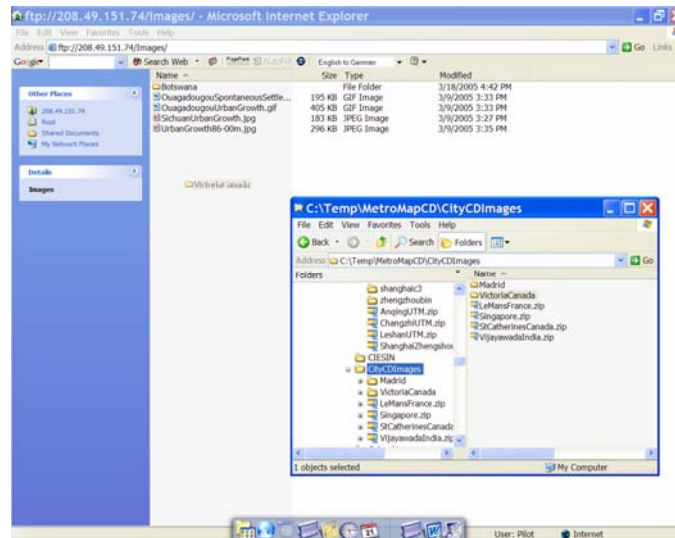
<http://www.williams.edu/Economics/UrbanGrowth/HomePage.htm>

Once at this page choose the link labeled Data Entry. This will take you to a page where there are links for each of the six Visits. Clicking on any of these links will take you to a series of survey forms where you can enter each of the answers you have recorded during your visit.

There are also links that will allow you to transfer (via FTP) your ground truth images, selected notes that you have typed up on your research, and any scans of other documents (such as maps, statistical reports, etc.).

For transfer of images, scans, and documents you are likely to have better success if you are using Internet Explorer 6 or later as a web browser. The Data Entry page is shown below on the left. Clicking on the “Download Ground Truth Images” link will lead to an FTP directory. This is shown below on the right behind an open Windows Explorer window. (If the FTP window initially fails to display, press the “refresh” button or Ctrl-R a few times until it displays).





Once you have the FTP window open, you can drag the folder containing your city ground truth images “CityNameImages” and drop the folder into the white area of the FTP directory window to start the file transfer. Note that it can take a long time for all images to transfer. If you have 32 images you can generally expect a minimum of 30 minutes for the transfer, and often as much as 1 hour.

b. Fax

You can fax your completed survey pages directly to us.

The fax number is (+1) 413-884-0098 if you are working with Professor Sheppard, and the fax number is (+1) (212) 337-1808 if you are working with Professor Angel.

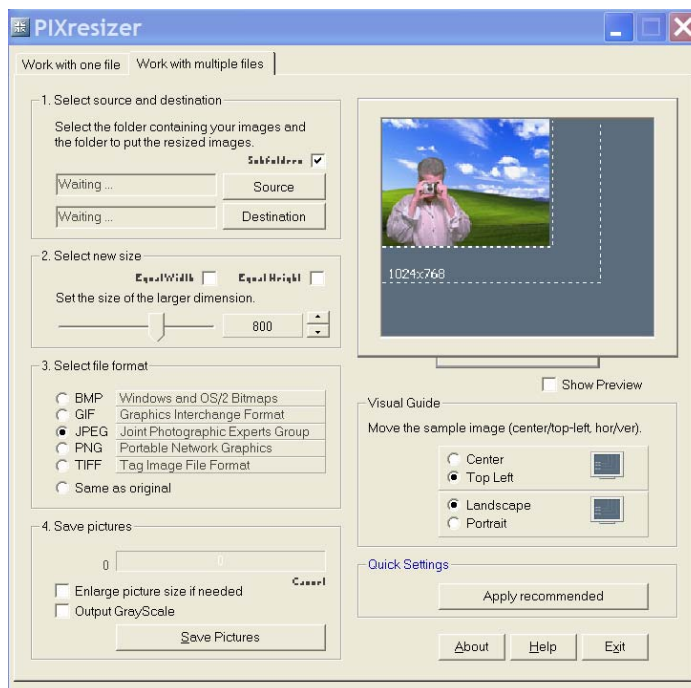
c. E-mail

All of you have e-mail access, and submitting your data as attachments to e-mail is a good way to deliver the data at low cost. You may use the following e-mail addresses:

Professor Sheppard	Professor Angel
stephen.c.sheppard@williams.edu with copy to	Solly.angel@verizon.net with copy to
akraley@williams.edu	Lucila5@aol.com

You can submit your images via e-mail, although most e-mail services will not accept attachments of more than 1 or 2 full resolution photographs. For the ground truth photographs collected in Visit 5 you may prepare reduced resolution images using the free PIXResizer program that can be downloaded either from the project web site Data Entry for Field Researcher page¹. Once you have installed the software, start the program. Choose the tab to work with multiple files. Check the subfolders box to convert all images in the folder and subfolders. Then click the Source button and select the CityNameImages folder you have created to store your photographs. Click the Destination button and specify an output folder name such as "CityNameImagesSmall" to store the smaller images. Select a resolution of 800x600, and choose JPEG format. Finally, click the Save Pictures button. This will result in images that are much smaller and you should be able to attach 10 to 15 of them to an e-mail message.

This method will not work well for photograph copies of maps and other documents. The reduced resolution images will generally not be sufficiently clear to be useful for our analysis. If you want to submit these images to us via e-mail, attach each full resolution image to a separate e-mail message.



d. Postal

Finally, there may be some documents and books that you obtain that can be sent in no other way except by post. If your internet connection is not fast, transferring the ground truth images might require copying them to a CD or disk and sending the disk by post. You can also submit completed survey forms by post. Material should be sent to:

If you are working with Professor Sheppard:	If you are working with Professor Angel:
Stephen Sheppard Department of Economics Williams College Williamstown, MA 01267 USA	Solly Angel/Lucy Gitlin 280 Lafayette Street, Apt. 3B New York NY 10012 USA

An important rule for any research results sent by Post: NEVER SEND YOUR ONLY COPY OF IMAGES OR SURVEY FORMS! There may be some documents (such as statistical abstracts for your city) that are impractical to copy before sending. Send us an e-mail for instructions concerning these items.

THANK YOU!

¹ Or alternatively from <http://bluefive.pair.com/PIXresizer.zip>