INCORPORATING MT. OLIVER BOROUGH'S DATA IN THE PITTSBURGH NEIGHBORHOOD AND COMMUNITY INFORMATION SYSTEM:

PROJECT SUMMARY AND LESSONS LEARNED

July, 2011

Project in support of the Hilltop Alliance

Program in Urban and Regional Analysis

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Purpose

This project collected Mt. Oliver Borough's crime, tax delinquency, and property and inspection data for inclusion in the Pittsburgh Neighborhood and Community Information System to support the work of the Hilltop Alliance. This report describes the process involved in collecting data from Mt. Oliver Borough in winter 2010 and spring 2011, and describes the data that was collected so the process may be repeated in the future. Our experience also offers lessons for collecting data from other small municipalities in Allegheny County. Data collected in this project includes crime, property, code enforcement, and property tax delinquency records.

The Hilltop Alliance secured funding from the Birmingham Foundation and an anonymous donor to enter Mt. Oliver Borough's crime and property data into the Pittsburgh Neighborhood and Community Information System (PNCIS). The Hilltop Alliance was instrumental in assisting the project team in developing a trust-based working relationship with Borough staff and officials, whom were very cooperative. Tom Plietz, the (then) code enforcement officer at the Borough also served a key role as a liaison with others in the Borough. Any future projects will be well-served to have similar champions and liaison within local government.

About the University Center for Social and Urban Research

The University Center for Social and Urban Research (UCSUR) was established in 1972 to serve as a resource for researchers and educators interested in the basic and applied social and behavioral sciences. As a hub for interdisciplinary research and collaboration, UCSUR promotes a research agenda focused on the social, economic and health issues most relevant to our society. UCSUR maintains a permanent research infrastructure available to faculty and the community with the capacity to: (1) conduct all types of survey research, including complex web surveys; (2) carry out regional econometric modeling; (3) analyze qualitative data using state-of-the-art computer methods, including web-based studies; (4) obtain, format, and analyze spatial data; (5) acquire, manage, and analyze large secondary and administrative data sets including Census data; and (6) design and carry out descriptive, evaluation, and intervention studies. UCSUR plays a critical role in the development of new research projects through consultation with faculty investigators.

About the Pittsburgh and Neighborhood and Community Information System (PNCIS)

The Pittsburgh Neighborhood and Community Information System (PNCIS) is a property information system that collects integrated information on community conditions and provides it to local stakeholders. The PNCIS empowers community leaders through the regular, direct use of information on a wide array of topics and issues.

The Pittsburgh Neighborhood and Community Information System (PNCIS) is a partnership of the University Center for Social and Urban Research (UCSUR) at the University of Pittsburgh, the Pittsburgh Partnership for Neighborhood Development (PPND), the City of Pittsburgh, and other stakeholders. UCSUR operates PNCIS in agreement with the City of Pittsburgh and PPND, a leader in community development in Pittsburgh. PPND was instrumental in securing the financial support to build the PNCIS and expand and develop it over the years.

Data Collection Processes

Crime Data

Access to Mount Oliver Borough's crime data was obtained via Chief Frank Mosesso and Corporal Ed Besselman at the Police Department. Tom Plietz, Code Enforcement Officer at Mt. Oliver Borough was instrumental in our building trust and developing a positive working relationship with the Corporal, Chief, and other officers. This trust-building process with the Police Department took approximately two months preceding data collection, and was aided by several face-to-face meetings and the display of code enforcement, tax delinquency, and foreclosure posters put on display in the entrance to the Borough Building.

The computerized data system used by the Borough's police department dates to the mid-1990's, and relies on an MS_DOS operating system. The database was not searchable (only sortable by date, viewable one page at a time) and did not use a crime coding taxonomy similar to many other municipalities, such as the City of Pittsburgh, which incorporates both the Federal Bureau of Investigation's Uniform Crime Reporting classification and more-detailed definitions based on state crime codes. The typical crime record in Mt. Oliver was not composed of numerous fields (e.g. date, time, offense type, address, etc), but instead was composed largely of one block of unstandardized text, containing information about each crime.

The software also did not provide the capability of exporting data, and this data was not searchable. As a result, the student employee working on this project had to page through the department's crime data record-by-record while sitting at a computer terminal in the police department, parsing out each key piece of information about each crime into relevant fields, and entering it into a laptop computer. As not to tie-up a computer terminal and disrupt operation of the Police Department, close coordination of visits to the police department was necessary. Care was made to ensure that information about the type of crime was coded consistently from one record to the next. It took about two to three hours on average to transcribe the information for each month of crime data.

In addition to creating inefficiencies for the project, the lack of a modern police data system in Mt. Oliver Borough creates serious inefficiencies for the department. Records for each crime were entered three separate times. The first record was created on paper at the time of the report. This paper copy was then typed into the Borough's computer system, and then again hand-entered into a data system managed by Allegheny County. All data entry was performed by police officers, and required them to spend considerable time in the office performing data entry.

The data collected includes all crimes committed in Mt. Oliver Borough between January 1, 2010 and December 29, 2010. The precision of the crime data is somewhat limited based on incomplete information about the time and exact location of the offense in some cases. Some entries did not always provide an exact time or location of an offense, but instead refer to a general time of day or block where the crime occurred. In some crime offenses, reports were not made for days or weeks after the fact, making it difficult to provide full detail for all incidents.

Tax Delinquency Data

Tax delinquency data was obtained directly from the tax collector in paper format. The data system used to maintain tax delinquency records seemed to be based on a much older interface similar to the DOS-based program in use at the Borough's Police Department. The computer system did not allow for electronic export of the data. The data was collected for years 2004 through October, 2010. Data included outstanding delinquency as of October, 2010 for all years since 2004.

Converting the data from paper to electronic format required hand-entering much of the data into a spreadsheet after attempts to use optical recognition technology from digital scans of the data proved to be fraught with error. The parcel numbers were included on the paper report, but were in a "short" format that required additional cleanup in order to match the data to the 16-digit format included in the Allegheny County property assessment data. Records for each of the seven years were linked by parcel number to create a longitudinal table of tax delinquency for analysis of the duration of delinquency and cumulative amount in arrears.

The process of making the data request, entering the data, linking multiple years of data, and linking these records to the GIS layer of parcels and formatting the data for mapping took a student intern approximately 25 hours to complete.

Property and Property Inspection Data

Inspection records in Mt. Oliver Borough were obtained with assistance of the Borough's (then) Fire and Code Inspector Tom Plietz. Data was maintained on customized software developed by JRF Consulting of Pennsylvania. The software allowed for data entry at the borough office, and also allowed inspectors to quickly create letters to send notices of code violations to property owners. The software also allowed for records to be searched, but did not include an export function. To export data, we requested data through the building inspector, and compensated JRF several hundred dollars for time involved in exporting the data. The database does not include any mobile applications, and requires data to be entered in the office.

Inspection data is organized in a relational database, with four main tables providing information about properties, ownership, land use, and inspections, as described below:

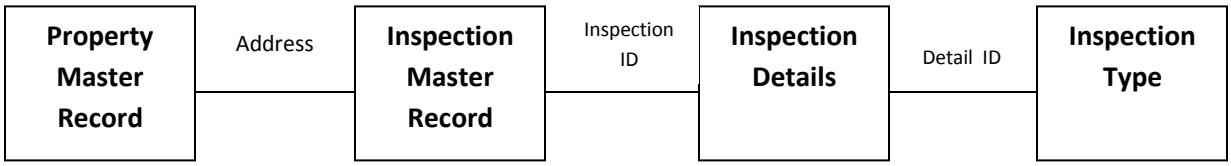
- **Property Master Record**: Contains information on the property, including address, location, owner's name, owners address, number of units, zoning classification, housing voucher status, occupancy permit dates, rental license dates, lien dates, and comments about the property. This data is not populated by external databases, such as assessment records, but is instead updated and maintained by Borough staff.

- **Inspection Master Record:** Contains basic information involving a property inspection including date of the inspection, status of the inspection, and whether or not follow-up actions are required. Information about the property and owner is also repeated here, including owner name, owner address, and property address. Additional data about the property is also included, such as the number of stories and presence of a garage.

- **Inspection Details:** This table links to the master inspection record, and contains details about the inspection, including the ordinance number, citation description, and findings.

- **Inspection Type:** The Inspection Details data table was linked to a table containing details about the ordinance.

The data tables were linked in the following fashion



A considerable amount of effort was devoted to requesting, preparing the inspection and property data, including identifying the common field between each of the tables obtained from the programmer, processing the "comments" fields (to remove all extra spaces and carriage returns), and linking the data to the parcel GIS file. The parcel ID used in the Borough's data was compatible with the 16-digit parcel ID format in the property assessment GIS data, but was not in the same format.

Recommended Information Systems Improvements

This project has demonstrated the need for systems and data organized in a way to improve operational efficiency and allow for analysis. Systems currently in use by the Borough were dated, inefficient, and hampered productivity of Borough staff. Any new systems developed or purchased for use in Mt. Oliver should have the capability to export data in commonly-used formats and allow staff such as code enforcement officers or police officers to enter data electronically in the field on mobile devices.

Systems should also allow data to be imported from existing state and county sources. For example, property ownership records, housing voucher data, sales, records, and other information should be obtained directly from the County. Borough staff should not need to enter data electronically available from other sources. Doing so is inefficient and introduces the possibility of error into the process.

Opportunities to jointly purchase or develop software with other municipalities should be pursued by the Borough to reduce software purchase and training costs. CONNECT, the Local Government Academy, or Councils of Government can serve as a vehicle for coordinating with other municipalities to reduce costs. Cooperation among municipalities is the only realistic way of replicating this project in additional communities .

Recommended Data Quality Improvements

Whether or not new systems are obtained, improved recordkeeping practices can improve data quality in the Borough. The following recommendations will improve data quality and allow for continued importing through the PNCIS.

- All data formats should remain consistent over time. Changing data formats make it difficult to update data in systems such as the PNCIS.

- Parcel data should use a consistent parcel numbering format based on the 16-digit format used by Allegheny County's GIS Office and the County Office of Property Assessment for all property records.

- Rather than hand-enter addresses or parcel numbers, systems should allow parcel numbers or addresses to be pulled from a database to eliminate the possibility of data entry error.

- All parcel data excluding incident reports should include only one unique record per property to reduce the possibility of duplicate records.

- Property-based data such as tax delinquency data and inspection records should use the parcel number as the common field to link records on the same property.

- Tax delinquency records should be archived at the end of each year in order to track change over time. Delinquency data was current on the date received, but for analysis purposes, would be good to analyze tax collections at the same point in time from year to year.

- Quality of the crime data can be improved by providing a specific address for all crimes where possible -many records in the existing data reference a block, not a specific address. Also information related to whether an incident occurred on a property, on a street, or in a public place, such as a park can be added to allow for crime information to be used to specifically identify nuisance properties.

- Crime data should use consistent coding classifications based on FBI or other commonly-used reporting schema, and should also record detailed information about the date and time of the incident.

Appendix: Field Definitions

Crime Data

INCIDENT NUMBER- eight digit filing number for crime given by the police department

OFFENSE CODE- alphabetical/numerical code assigned to particular crimes by the department

OFFENSE DESCRIPTION- corresponds with and defines offense codes

DATE- the date the crime occurred. In some cases it is the date the crime was reported if no date was provided for its occurrence

TIME- the time of day the crime occurred. In some cases, no specific time was given and 0:00 is used as a default

ADDRESS NUMBER- the street address at which the crime occurred

OTHER LOCATION- used to signify when a crime is not associated with a business or household. "S" for example is used to identify a crime that happened on the street. This is includes traffic violations.

SUBSTANCE- identifies what if any substances were involved in the crime or present at the scene

WEAPON- identifies what if any weapons were used in or present at the crime

UNIT- specifies the exact location within an apartment building where the crime occurred

Tax Delinquency Data

OWNER- name of property owner

PARCEL NUMBER- property number designated by Boro

HOUSE NUMBER- street address of propertyh

STREET- street name where property is located

VALUATION- assessed value of property

TAX AT FACE- amount of taxes owed without penalties

PAID- amount owner has paid

DUE- amount of taxes due based of valuation and __% of penalties

Property Inspection Data

Property Master Record
ID - ID

IDTen – 1st 10 Characters of address field serves as ID to join to inspection records

X - longitude

Y - latitude

PNCIS_Parcel_ID_Flag – Parcel number

HOUSE - House Number

HOUSE_ALPH - Unknown

STREET – Street name

Address – full address (number and name)

OWN_LNAME – Owner last name

OWN_FNAME – Owner first name

OWN_ADDR1 – Owner address 1

OWN_ADDR2 – Owner address 2

OWN_CITY – Owner address city

OWN_ST – Owner address state

OWN_ZIP – Owner address zip

OWN_PHONE1 – Owner phone 1

OWN_PHONE2 – Owner phone 2

OWN_PHONE3 – Owner phone 3

EMERG_CONTACT – emergency contact

UNITS – units at property

LOT_BLOCK – short format parcel number (i.e. 14-S-120)

ZONE - zoning

LIEN_LETTER_DATE – lien letter date

SEWER_DYE_TEST_DATE – dye test date

PURCH_DATE - purchase date

SECTION8 – section 8 date (NOTE – this data is confidential in nature and will not be released)

OCC_PERM – occupancy permit date

OCC_NAME – name of occupant

CREATED_ON – date record created

UPDATED_ON – date record updated

CREATED_BY – created by

UPDATED_BY – updated by (name)

COMMENTS - comments

Comments2 – additional comments

VIOLATIONS – list of violations, which seem to be prior to 2003

PREV_OWNER – previous property owner

RENTAL – rental property (yes/no)

LIC_ISSUED – rental license issued

LIC_EXPIRY – rental license expiration date

EMERG_PHONE emergency phone

LicenseNum – license number

Inspection Master Record
ID - ID

PropertyID – Property ID

IDten – 10 leftmost digits from address used to link record to property data

Location – property address

NumStories - stories

Date – inspection date

Name – Owner Name

Address – Owner Address

City – Owner City

State – Owner State

Zip – Owner Zipcode

Construction – Type of construction

GarageAttached – attached garage (y/N

PassFail – Pass or Fail (Yes/No)

Comments - Comments

Inspector – Inspector Name

InspectionDate – Date of Inspection ?

FollowUpRequired – Follow-Up Required

FollowUpDate – Follow-Up-Date

Zoned - Zoning

Phone – Phone number (owner?)

DocType document type code issued – citation, permit, etc

FileName - (citation, etc)

Prop4_ID - ?

Inspection Details
ID- ID

InspectionMasterDataID – inspection data id

ItemNum – unknown

Status – yes/no?

Citation – citation code

Description – citation description

Finding – inspection finding

YesNo - yes/no?

CategoryID – category ID

DetailID –inspection detail ID

ChkBoxIndex –check box index

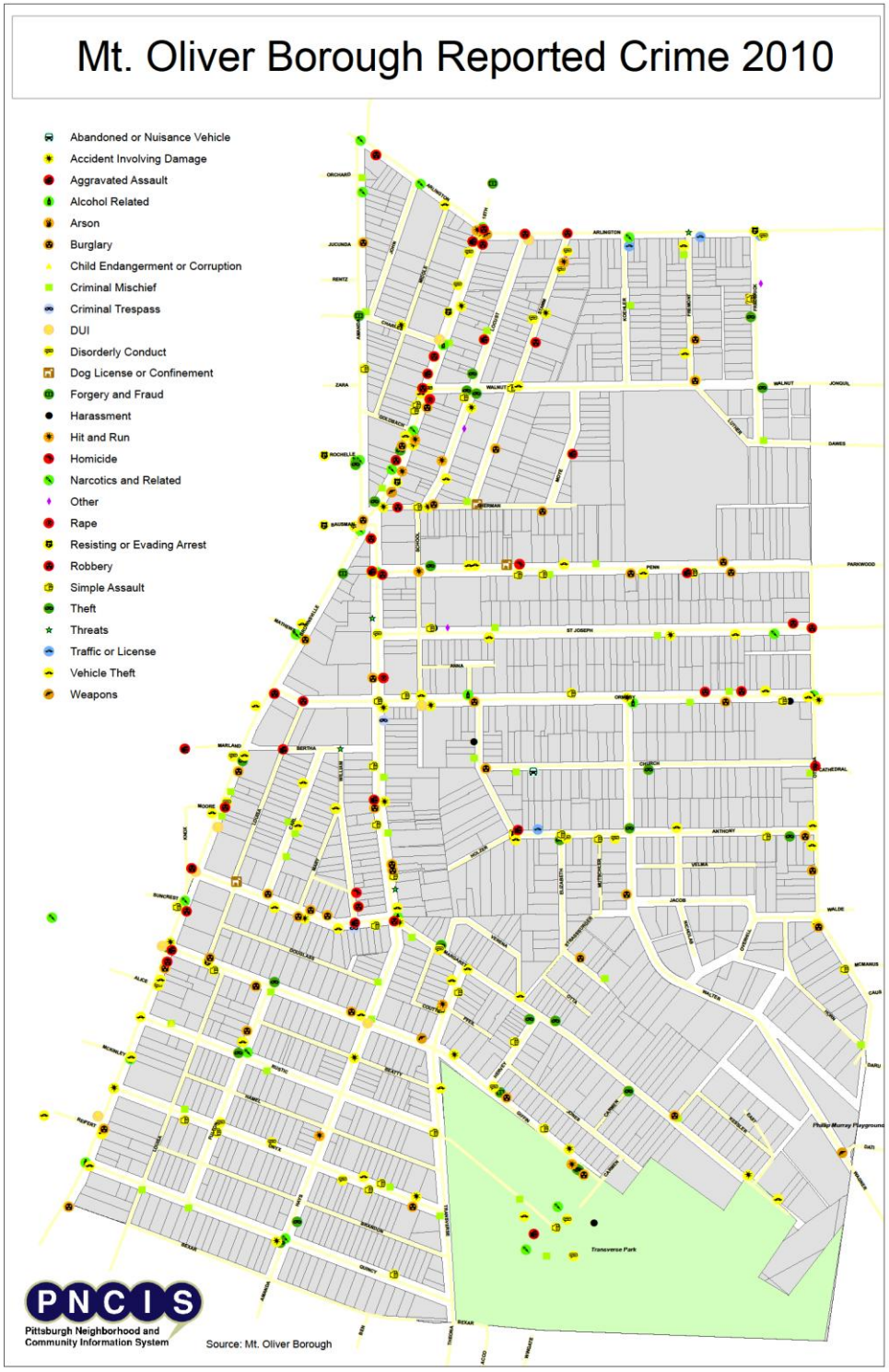
Inspection Type

ID

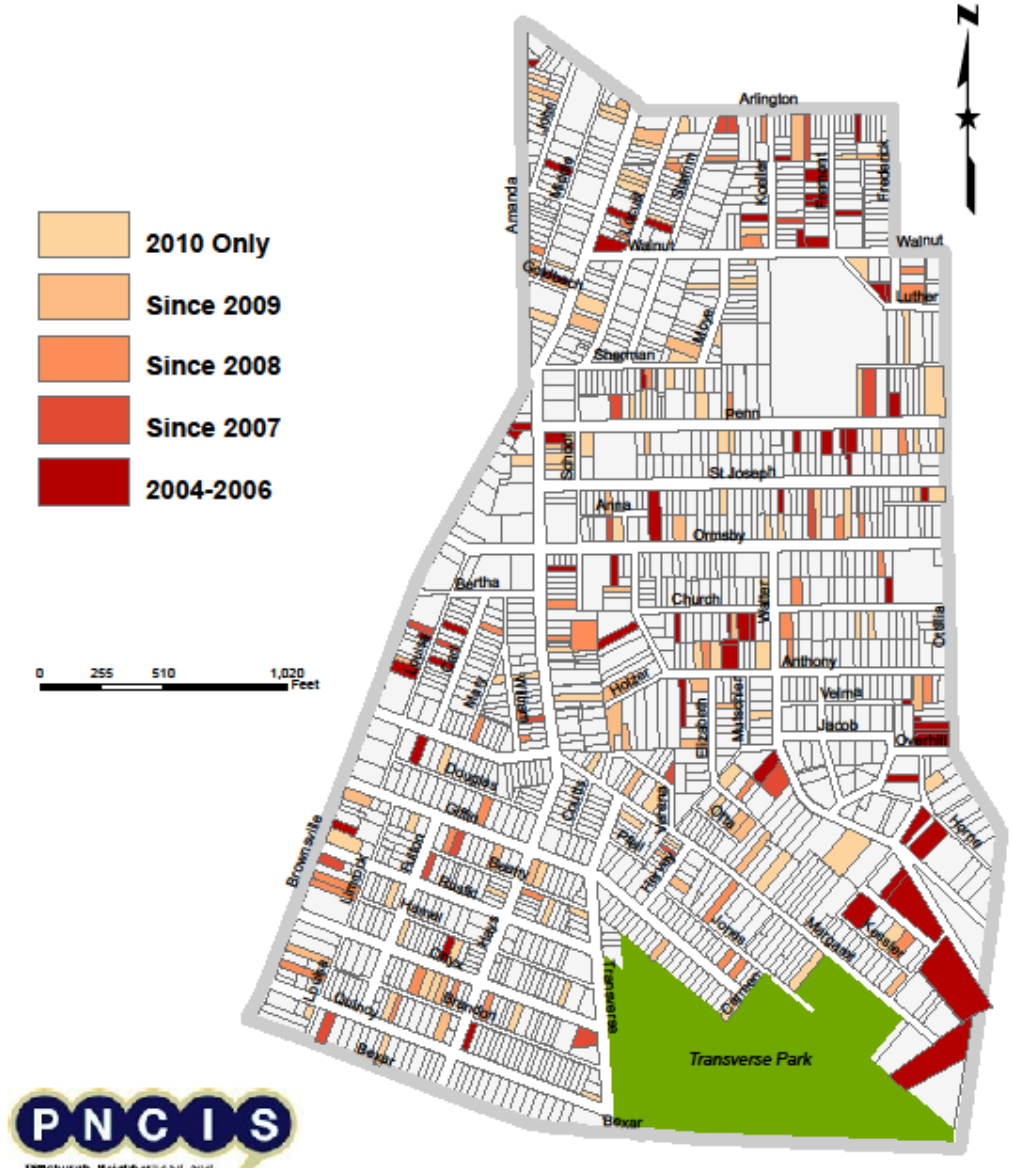
DocType

Appendix: Maps

The following maps provide an example of the Mt. Oliver data now available through the PNCIS.

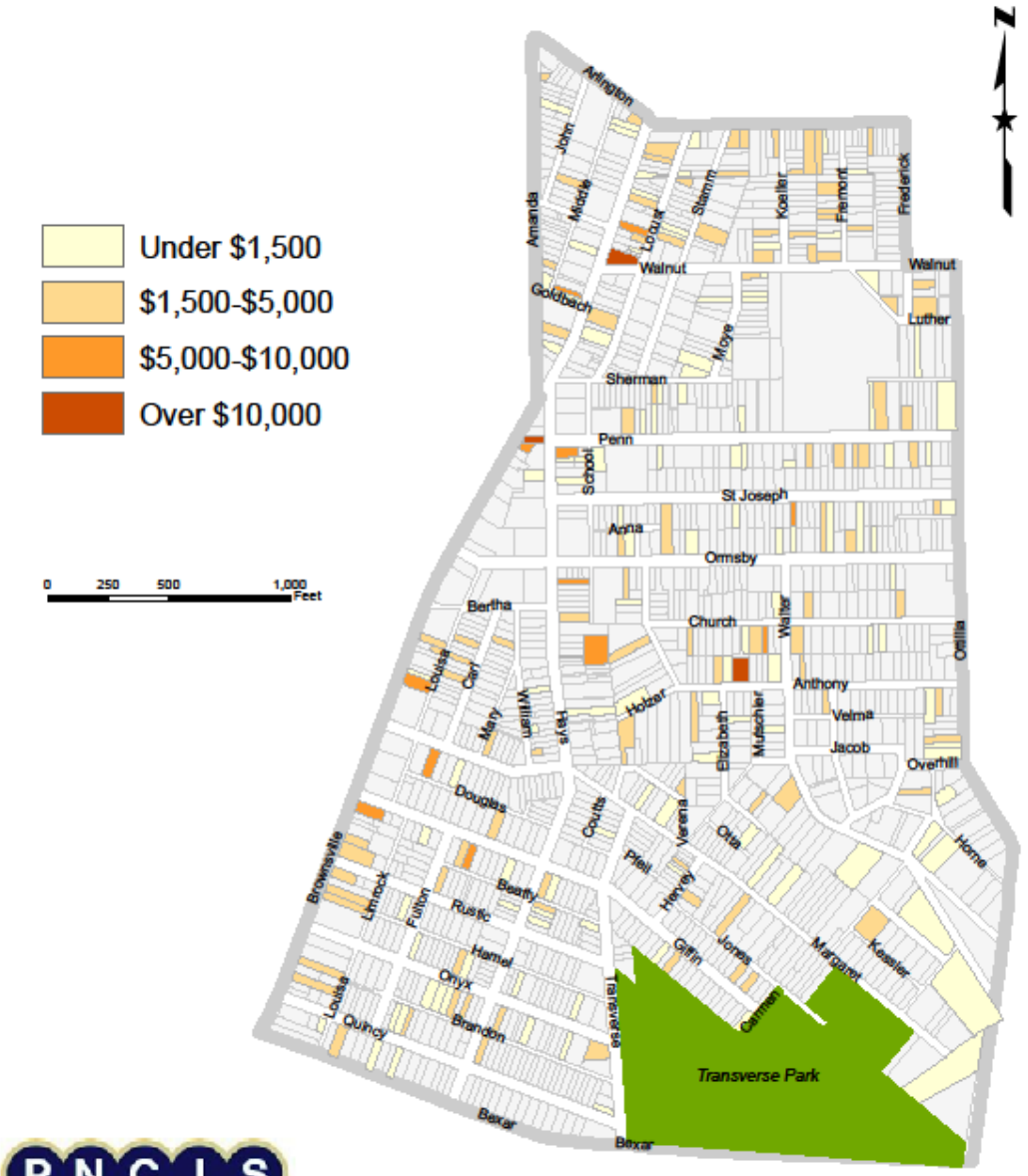


Tax Delinquency by Year in Mt. Oliver Borough
Municipal Property Tax 2004-2010

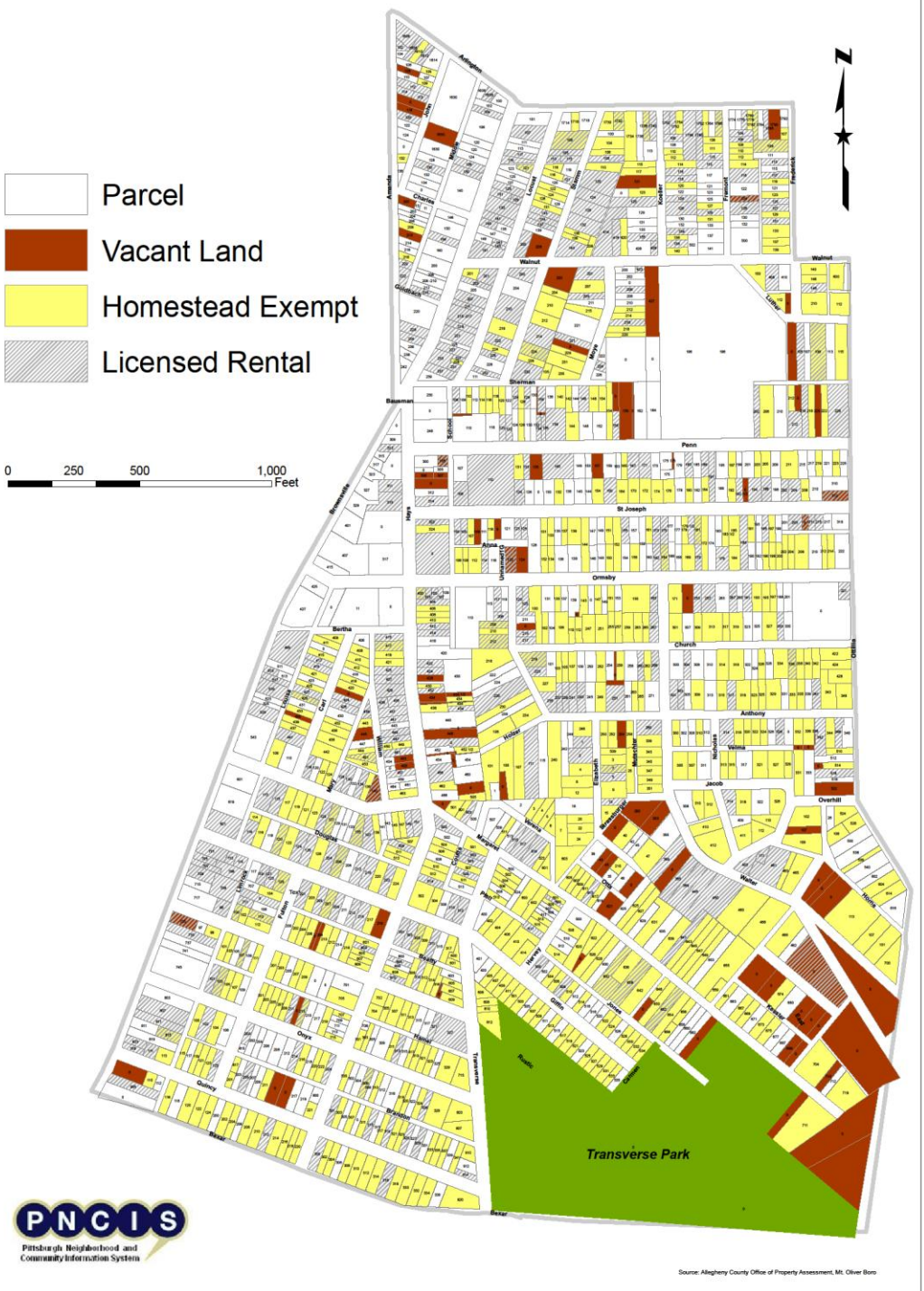


Source: Mt. Oliver Borough

Cumulative Tax Delinquency in Mt. Oliver Borough
Municipal Property Tax 2004-2010



Mt. Oliver Boro Homestead Exemptions, Rental Licenses, and Vacant Land, November 2010



Property Inspection Violations by Type, 2009