

# GIS Applications to Planning Health Care Safety Net Services

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# Abstract

In a collaboration between county government and academia, GIS was utilized and maps were created as strategic planning tools for a local Health Department serving a population of 452,869. Client eligibility data were extracted from the 2000 United States Census. A database was generated combining program data and U.S. census data. Analysis of data included demographics of clients served vs. clients eligible and market share calculations by program. Analysis identified target populations with greatest need of health care safety net services thus allowing strategic planning efforts to focus on the development and implementation of programs for these populations. This project served to emphasize the importance of academic and practice linkages within an ecological framework of healthcare.

# Sedgwick County Kansas

- Located in south-central Kansas
- Most populous of Kansas's 105 counties
- Population estimated at more than 460,000 persons
- Sixteenth largest in area with 1008 square miles
- Reportedly has the second highest per capita wealth among Kansas's counties.

# Sedgwick County Health Department (SCHD)

## Mission Statement:

“To promote and protect the health of Sedgwick County residents through education, prevention, surveillance and treatment using public health functions of assessment, assurance and policy development.”

# SCHD Programs

- Dental Program
- Child Primary Care
- Adolescent
- Adult PH Home Visit
- Healthy Babies Inc.
- Maternal & Infant
- Epidemiology
- Women, Infant and Children (WIC)
- Immunization
- Family Planning
- Sexually Transmitted Disease
- Migrant Health Program
- Tuberculosis
- Well Child
- Refugee Assessment

# Project Purpose

Through the analysis of populations that *utilized* SCHD services and those *eligible* for services, populations with greatest need of health care safety net services are identified. GIS software provides visual tools which will play an integral part in the development of a strategic plan to target clinical services for those individuals with the greatest need.

# Background:

- Graphical information is often more quickly and easily understood.
- Graphical information can impact decision-making.
- Collaboration between county government and academia can build capacity.

# Methods

- SGHD defined client eligibility by program, according to Federal Poverty Level.
- Eligibility data was extracted from the 2000 U. S. Census (zip code and census tract level data).
- Consulted Sedgwick County GIS Analyst to determine appropriate geographical area to utilize.
- Developed a mapping template with Sedgwick County GIS Analyst to be used for all maps created for the project.

# Methods Continued

- Obtained SCHED program data for 1999.
- Database created combining program and census data.
- Analysis of data completed including market share calculations.
- Results of analysis prepared in excel spreadsheets and delivered to Sedgwick County GIS Analyst.
- Maps and overlays were created by the Sedgwick County GIS Analyst.

# Results

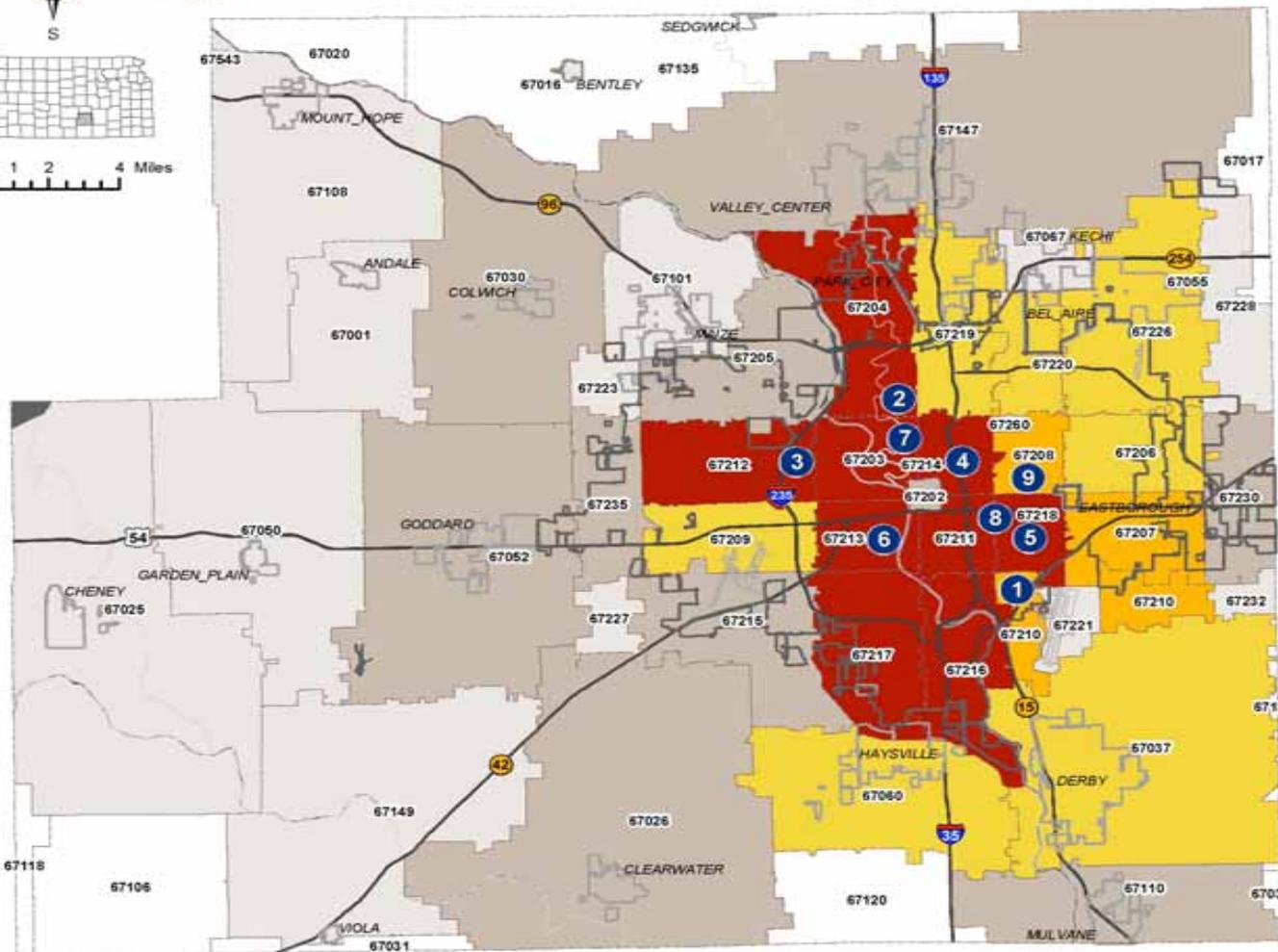
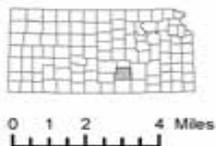
- GIS maps were created by SCHD program showing clients served in 1999 by Zip Code.
- GIS maps were created showing all clients served by the SCHD in 1999 by age group by Zip Code.
- GIS maps were created by Zip Code showing poverty prevalence rates.
- GIS overlay maps were created to display U. S. Census eligibility data and political boundary information.

# Program Maps



## Sedgwick County Health Department

All Sedgwick County Clients Served in 1999 by ZIP Code



### Clients Per ZIP Code



- Health Stations
- ZIP Codes
- City of Wichita
- Other Incorporated Areas

### Health Stations

Station ID	Station Name
1	Colvin/Planeview
2	Evergreen
3	Orchard Park
4	Main Health
5	Southeast
6	Stanley
7	Teen Health Center
8	Behavioral Health Center
9	Integrated Family Health

### Data Sources:

GIS Data  
Sedgwick County GIS  
Demographic Data  
Demographic data compiled by  
K.U. School of Medicine - Wichita  
using Sedgwick County (1999) Health  
Department Program Data and  
2000 Census American Factfinder  
<http://factfinder.census.gov>

DATE: 10/5/2004

It is understood that Sedgwick County GIS, the Division of Information and Operations, and data compilers, have no indication or reason to believe that there are inaccuracies in information incorporated in the map or in associated tables.

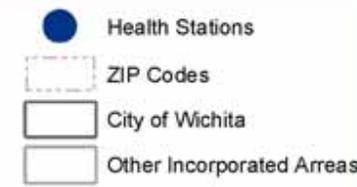
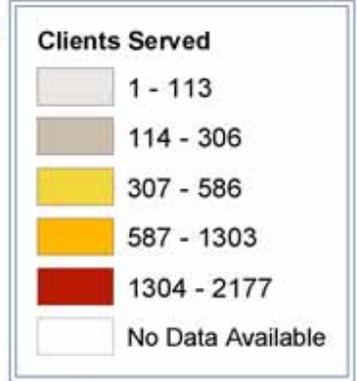
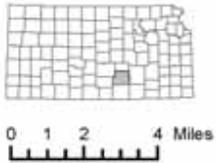
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# Sedgwick County Health Department - Immunizations Program

## Number of Sedgwick County Clients Served in 1999 by ZIP Code



**Health Stations**

Station ID	Station Name
1	Colvin/Planeview
2	Evergreen
3	Orchard Park
4	Main Health
5	Southeast
6	Stanley
7	Teen Health Center
8	Behavioral Health Center
9	Integrated Family Health

**Data Sources:**  
 GIS Data: Sedgwick County GIS  
 Demographic Data: Demographic data compiled by K.U. School of Medicine - Wichita using Sedgwick County (1999) Health Department Program Data and 2000 Census American Factfinder <http://factfinder.census.gov>

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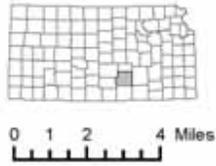


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# Sedgwick County Health Department - WIC Program

## Number of Sedgwick County Clients Served in 1999 by ZIP Code



Number of  
Individuals Under  
5 Years of Age in  
1999 Below 100%  
Poverty Level

**Clients Served**

- 0 - 49
- 50 - 167
- 168 - 514
- 515 - 1061
- 1062 - 1658
- No Data Available

● Health Stations

--- ZIP Codes

□ City of Wichita

□ Other Incorporated Areas

**Health Stations**

Station ID	Station Name
1	Colvin/Planeview
2	Evergreen
3	Orchard Park
4	Main Health
5	Southeast
6	Stanley
7	Teen Health Center
8	Behavioral Health Center
9	Integrated Family Health

**Data Sources:**

GIS Data:  
Sedgwick County GIS

Demographic Data:  
Demographic data compiled by  
K.U. School of Medicine - Wichita  
using Sedgwick County (1999) Health  
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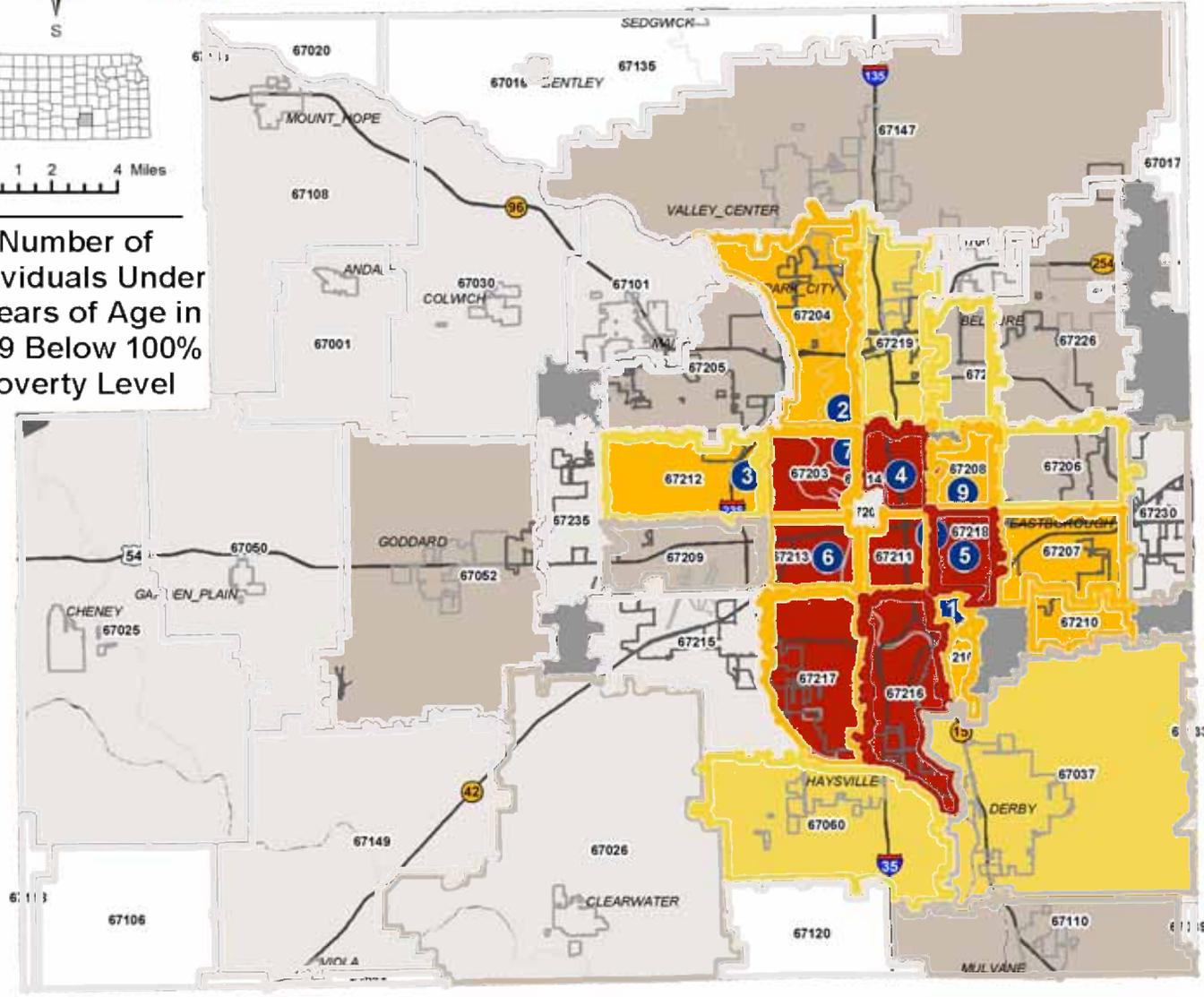
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**Number of Individuals**    0 - 21    22 - 67    68 - 179    180 - 411    412 - 656    No Census Data Available

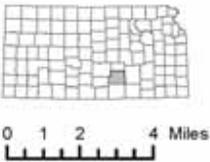


GIS Data: Sedgwick County GIS <http://www.sedgwickcounty.org/gis>  
 Overlay data compiled by K.U. School of Medicine - Wichita  
 using 2000 U.S. Census American Factfinder <http://factfinder.census.gov> © 2004 Sedgwick County Kansas Government. All rights reserved.



# Sedgwick County Health Department

## 1999 Prevalence of Children under 5 Years of Age Below 185% Federal Poverty Level



Sedgwick County  
Board of County  
Commission  
Districts

**Prevalence per ZIP Code**

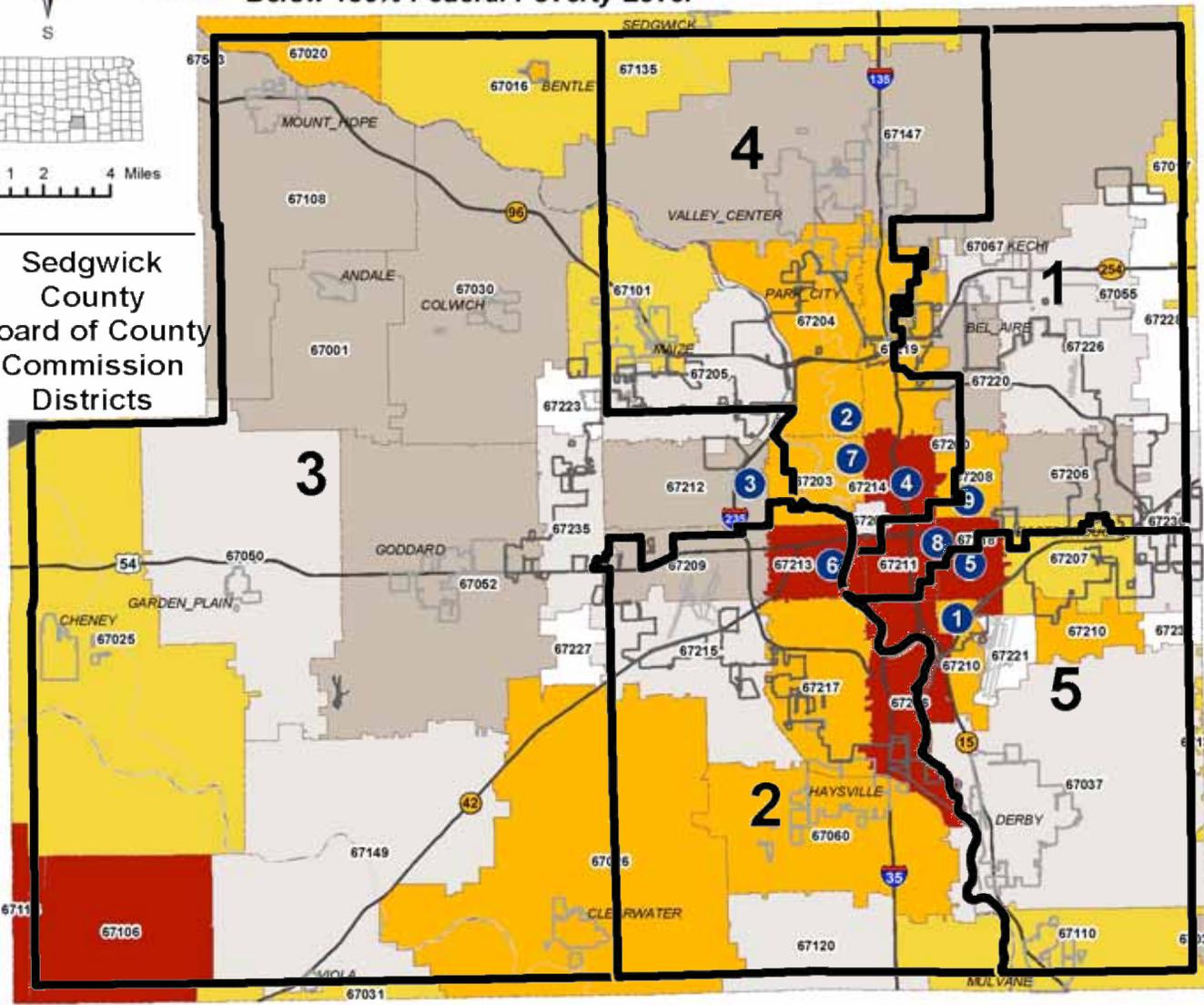
- 0 - 11.57%
- 11.58% - 20.61%
- 20.62% - 31.48%
- 31.49% - 45.49%
- 45.50% - 68.29%
- No Data Available

● Health Stations

--- ZIP Codes

□ City of Wichita

□ Other Incorporated Areas



**Health Stations**

Station ID	Station Name
1	Colvin/Planeview
2	Evergreen
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**Data Sources:**

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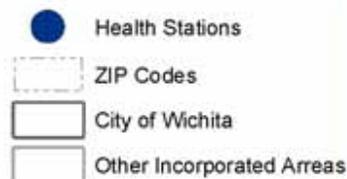
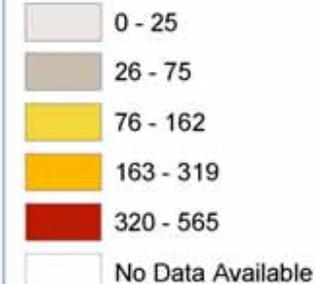




# Sedgwick County Health Department

## Number of Sedgwick County Clients Under Age 5 Served in 1999 by ZIP Code

### Clients Served



#### Health Stations

Station ID	Station Name
1	Colvin/Plaineview
2	Evergreen
3	Orchard Park
4	Main Health
5	Southeast
6	Stanley
7	Teen Health Center
8	Behavioral Health Center
9	Integrated Family Health

#### Data Sources:

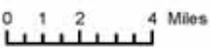
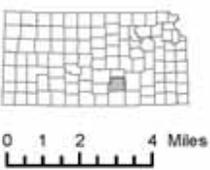
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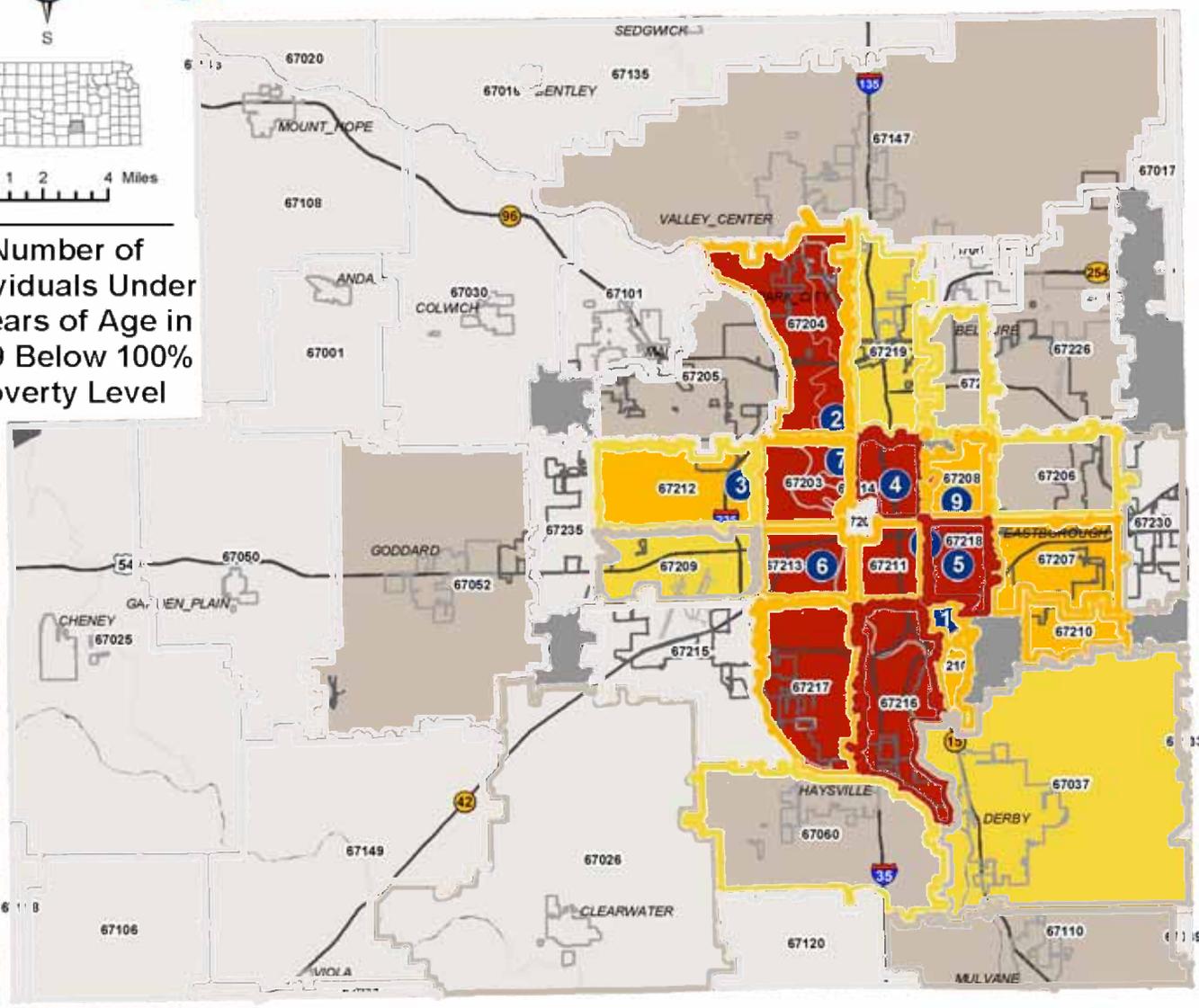
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Number of Individuals Under 5 Years of Age in 1999 Below 100% Poverty Level



# Conclusions

This GIS project:

- emphasized the importance of academic and public health practice linkages.
- demonstrated that partnerships accrue additional resources, techniques and personnel.
- produced visual tools necessary to strategically plan the development and implementation of SCHD programs for the populations with the greatest need.

# Acknowledgments

- Wichita –Sedgwick County Health Department Administration and Staff
- Sedgwick County Geographic Information Services Division of Information & Operations

# References

U. S. Census Bureau; American FactFinder  
<http://factfinder.census.gov>

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