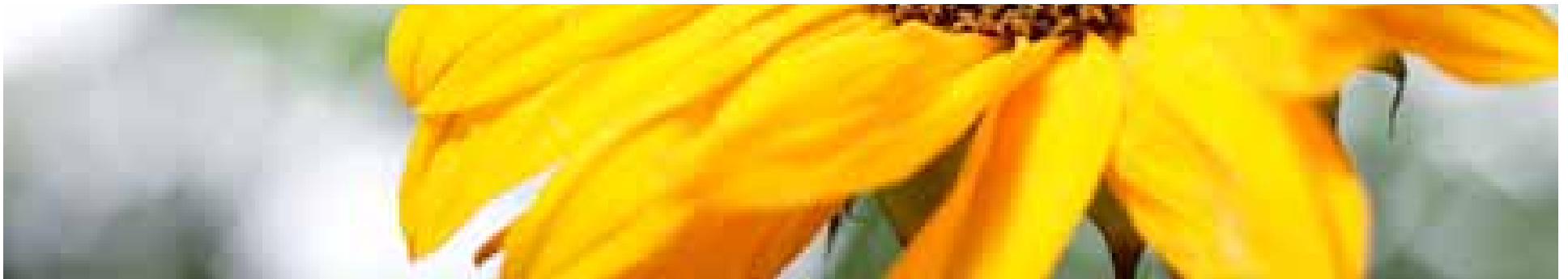




Disease Prevalence among Kaiser Permanente Members in Prince George's County: A GIS Approach

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Health disparities major cause of concern

- Healthy People 2010
 - Two goals:
 - Increase quality of life
 - Eliminate health disparities

Six areas of focus:

- Infant mortality
- Cancer screening/management
- Cardiovascular disease
- Diabetes
- HIV/AIDS
- Immunizations





"The future health of the nation will be determined to a large extent by how effectively we work with communities to reduce and eliminate health disparities between non-minority and minority populations experiencing disproportionate burdens of disease, disability, and premature death."

~ Guiding Principle for Improving Minority Health



Leading Health Indicators:

- Physical Activity
- Overweight and Obesity
- Tobacco Use
- Substance Abuse
- Responsible Sexual Behavior
- Mental Health
- Injury and Violence
- Environmental Quality
- Immunization
- Access to Health Care



- Increase Healthy Eating, Active Living (HEAL)
- Region-wide
- Pilot – Colorado
- Evaluation tools
 - IVR
 - GIS
 - School surveys



What we've done in Colorado

- KP member data
 - BMI, age, gender, point data
 - Census tract into neighborhoods
 - Average BMI
 - Compared to BRFSS and IVR

Nationally

- KP member data for Mid-Atlantic states
 - Washington D.C., Maryland, Virginia



MAS starting CHI HEAL initiatives

- Need to involve communities
- How they can use GIS to tell a story
- Prince George's county in Maryland focus for initiatives.



What could it mean?

HSCRC Analysis of Medicaid Payer Mix Dimensions Health System - December 2004

% of Inpatient Cases by Payer - FYs 2003 and 2004

Payer	FY 2003			FY 2004		
	PGHC	Laurel	Statewide	PGHC	Laurel	Statewide
Commercial	30.21%	37.87%	40.28%	29.46%	38.78%	39.60%
Medicaid	43.17%	19.59%	17.43%	41.17%	17.58%	17.97%
Medicare	17.72%	34.05%	35.98%	18.73%	34.39%	35.98%
Other	1.81%	2.87%	1.88%	1.95%	2.44%	1.93%
Self-pay	7.09%	5.83%	4.42%	8.69%	8.83%	4.52%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

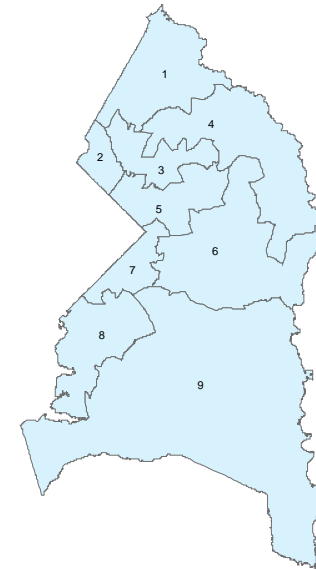
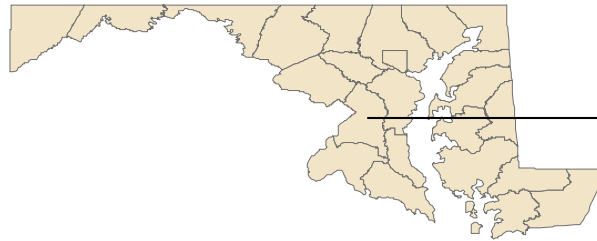
% of Outpatient Cases by Payer - FYs 2003 and 2004

Payer	FY 2003			FY 2004		
	PGHC	Laurel	Statewide	PGHC	Laurel	Statewide
Commercial	35.76%	52.64%	46.35%	33.97%	49.18%	45.33%
Medicaid	22.39%	9.02%	17.19%	23.06%	11.20%	17.69%
Medicare	7.35%	10.45%	16.54%	6.86%	10.16%	16.75%
Other	2.94%	4.42%	4.59%	2.69%	4.19%	4.43%
Self pay	31.56%	23.47%	15.33%	33.42%	25.27%	15.80%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

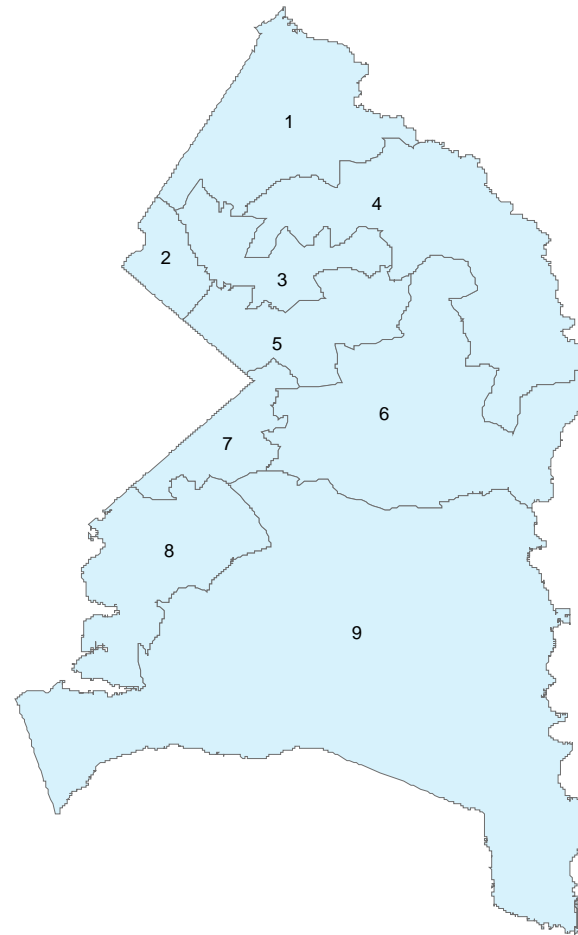
- * Data represents hospitals' reporting of "expected payer" during patient stay.
- * "Other" includes Workers' Compensation, Title IV, Donors and Charity Care
- * "self-pay" includes expected bad debt and payment from patients without insurance



Prince George's County: Location



- Council district
 - 9 in Prince George's County
- Population data
 - 2000 Census
 - Prince George's county stats
 - BRFSS
 - Variables:
 - Total population
 - Race/ethnicity
 - Gender
 - Age



- Kaiser Permanente member data
 - EMR
 - Continuous health data (2006)
 - Variables:
 - Address
 - Gender
 - Age
 - Health Indicators
 - Diabetes
 - CAD
 - Weight Management cohort
 - Hypertension



- Total population*:
 - 801,515
- Mean Age*/**:
 - 33.6/47.6 years
- Gender*:
 - 52.2% female
 - 47.8% male
- Race/ethnicity*:
 - Caucasian: 27%
 - African-American: 62.7%
 - Asian: 3.9%
 - Other: 6.4%

*2000 Census

**BRFSS



Kaiser Permanente's Demographics



- **Total KP Population*:**
 - 264,327
 - 40% of total population
- **Mean age of members*:**
 - 36.1 years
 - Mean age of population: 33.6 years
- **Gender*:**
 - 54.6% female
 - 52.2 %
 - 45.4% male
 - 47.8%
- **Race/ethnicity**
 - Not collected at this time by KP

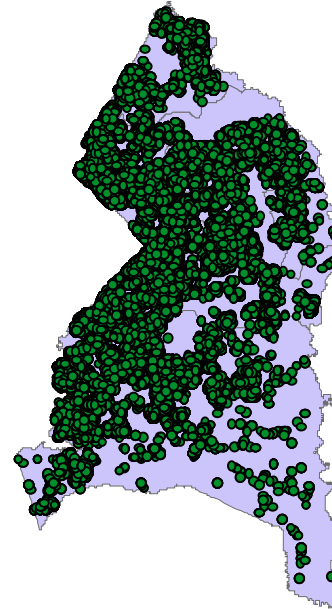
*Data from 2006 EMR



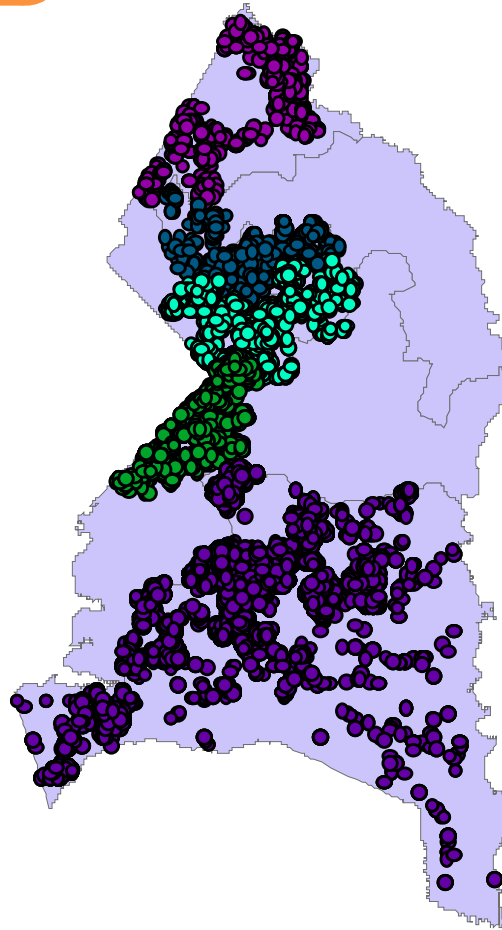
- **ArcGIS 9.2**
 - Base map from US Census
 - Council district map from Dept. of Health – Prince George's County
- **SPSS 15.1**
 - Data management, cleaning
 - Basic analysis
- **Geocoded KP members**
 - 78% Maryland (n=206,175)
 - 93% Washington D.C. (n=44,137)
 - Remainder: P.O. Boxes, not in state, etc.



- Two spatial merges completed
 - KP members into counties
 - KP members into council districts



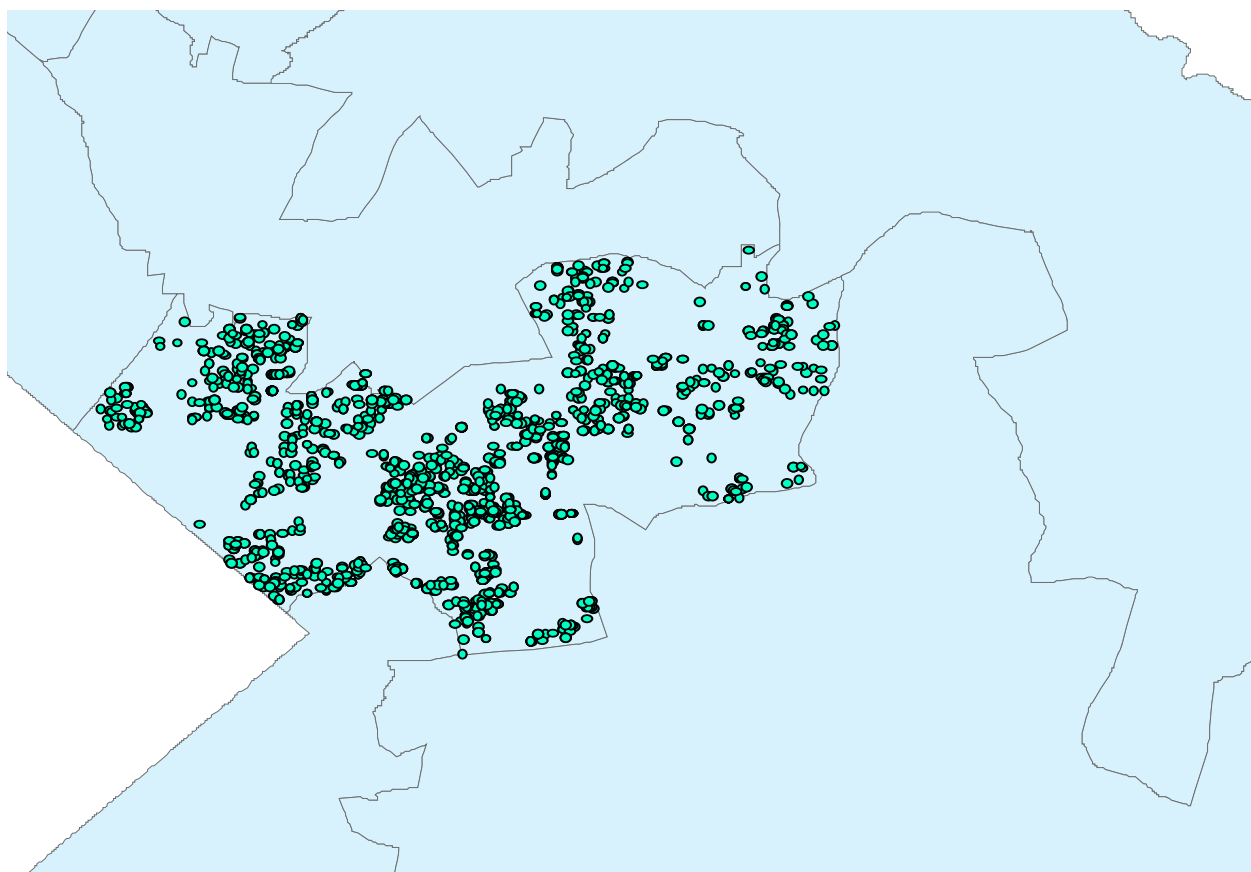
Mapping cont...



- **Applied 4 health indicators:**
 - CAD
 - Diabetes
 - Hypertension
 - Comorbidity
- **Applied 1 loose indicator**
 - Weight management cohort
- **Mapped positives by council district**



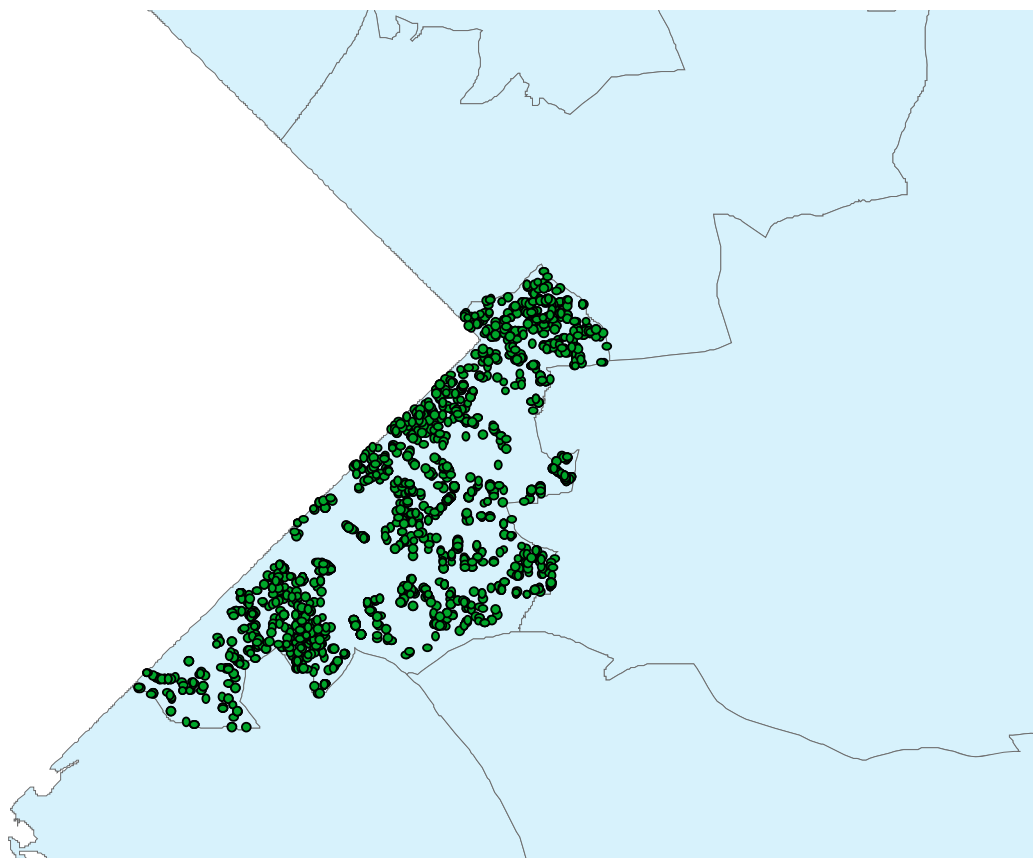
Results



District 5: KP Members in Weight Management (n=1807)



Results



District 7: KP Members with Hypertension (n=1965)



Results

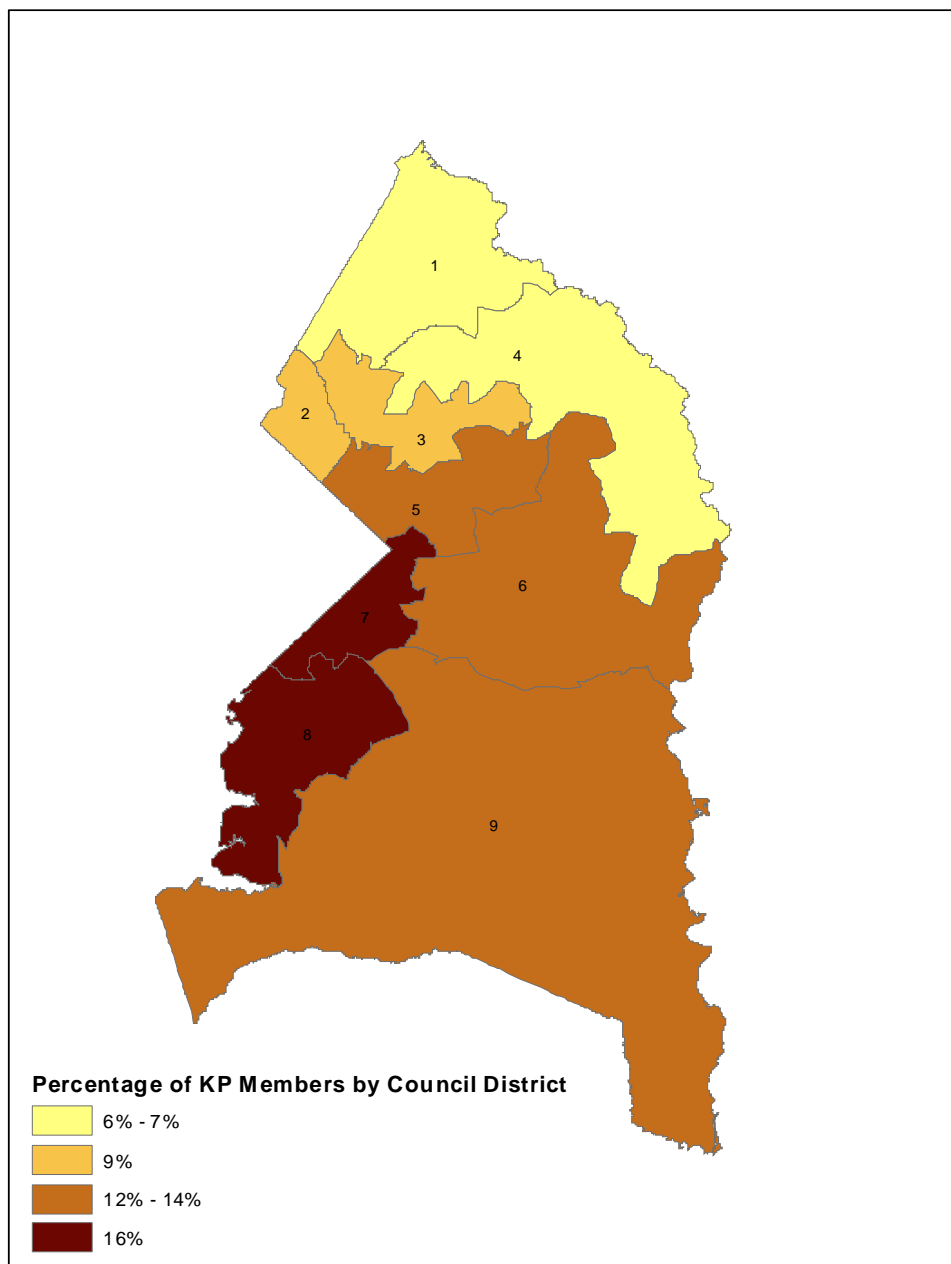


District	Total Population*	KP Population	Percent Total Population KP
1	84744	6334	7%
2	82849	7296	9%
3	86857	7513	9%
4	95364	6197	6%
5	79375	11007	14%
6	103865	12793	12%
7	87531	13776	16%
8	86843	14328	16%
9	94087	12427	13%
Total	801515	91671	11.4%

**Table 1: Total population of Prince George's
County by general population and Kaiser Permanente members**

*2000 Census



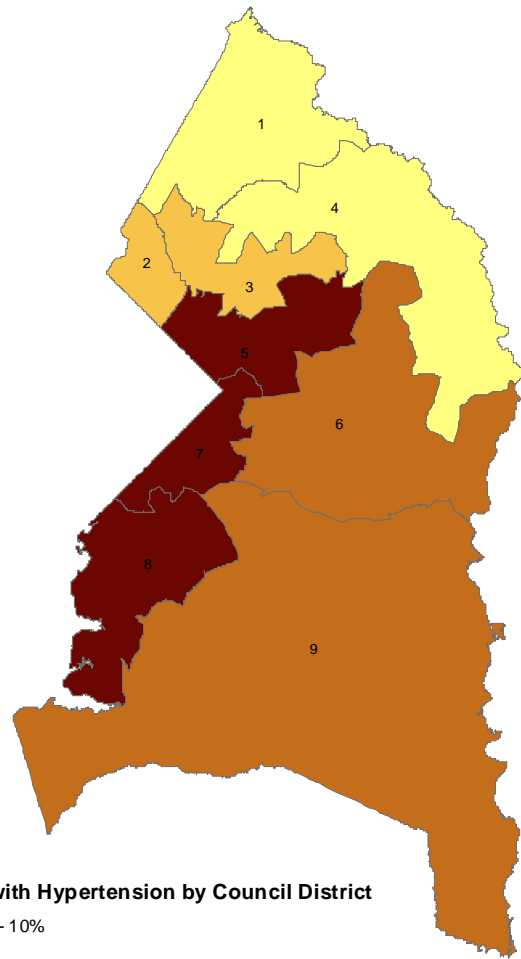


Results

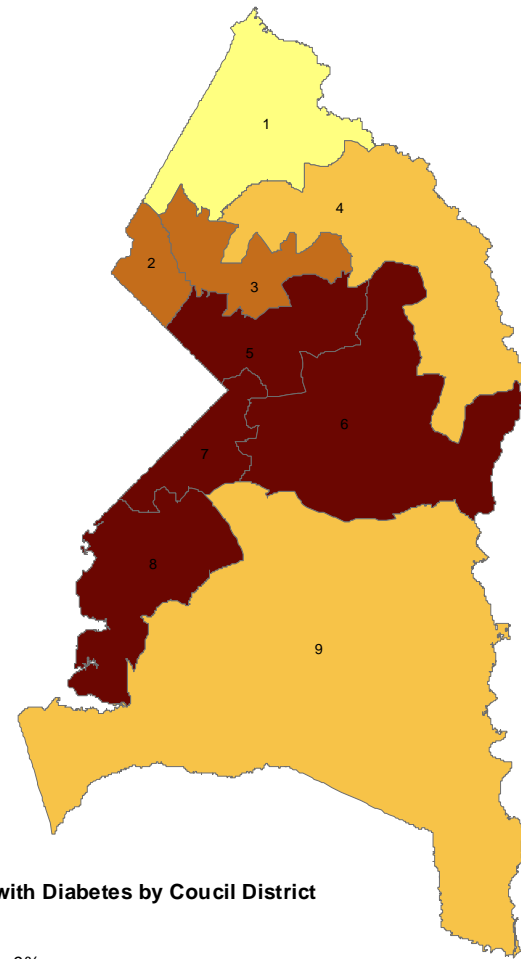
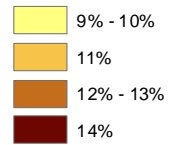
District	Hypertension	CAD	Diabetes	Weight Management	2 or more conditions
1	574	138	460	654	664
2	838	195	731	972	976
3	851	186	736	972	1000
4	629	169	498	743	746
5	1491	337	1181	1807	1630
6	1705	382	1350	2012	1910
7	1965	436	1596	1847	2164
8	1964	470	1594	1586	2202
9	1464	304	1152	1306	1647

Table 2: KP Disease Prevalence by Council District

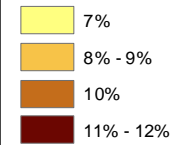


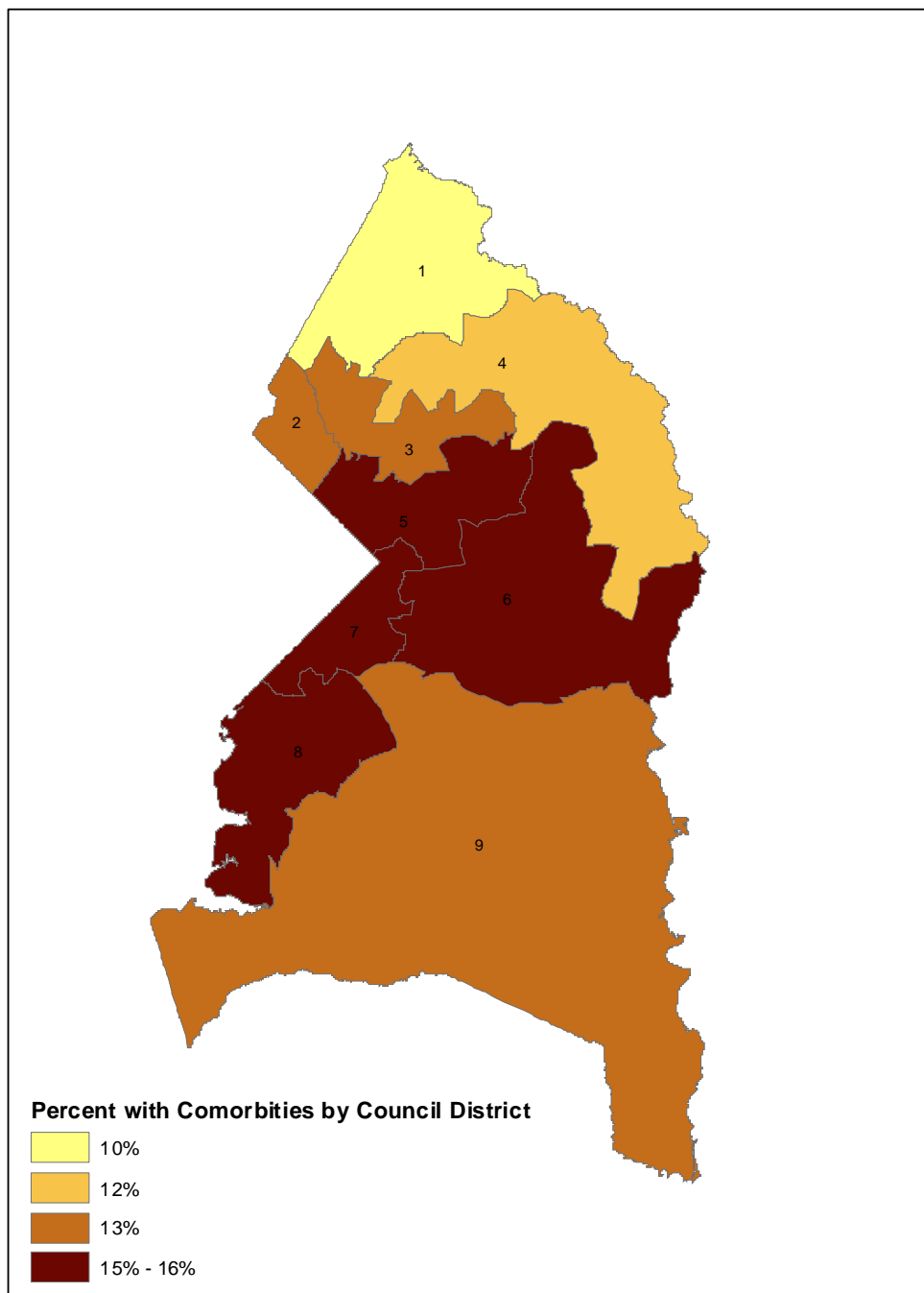


Percent with Hypertension by Council District

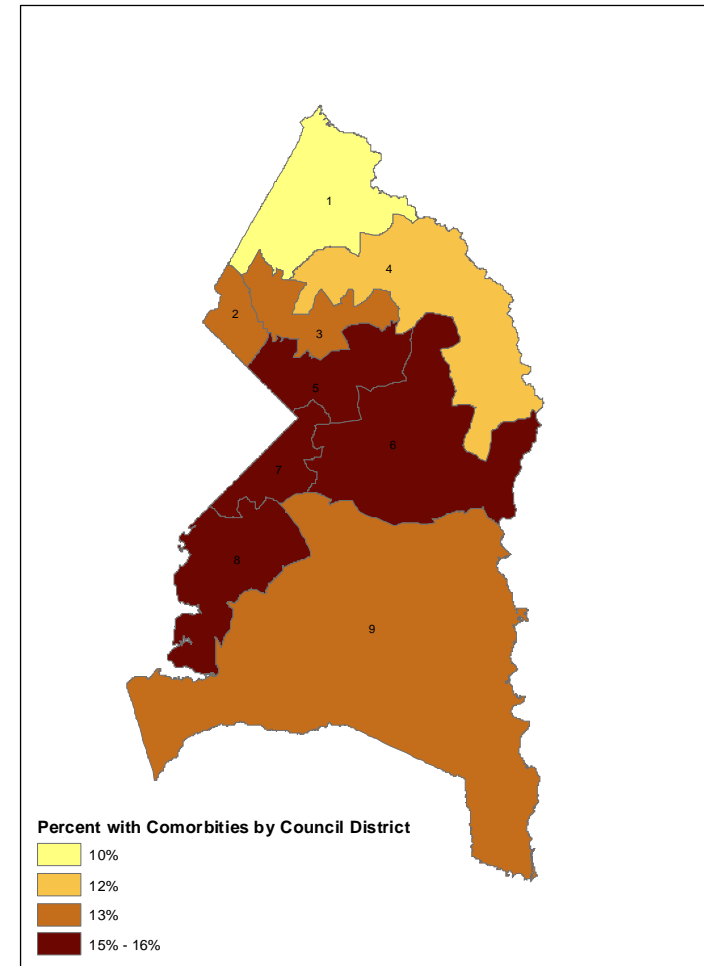
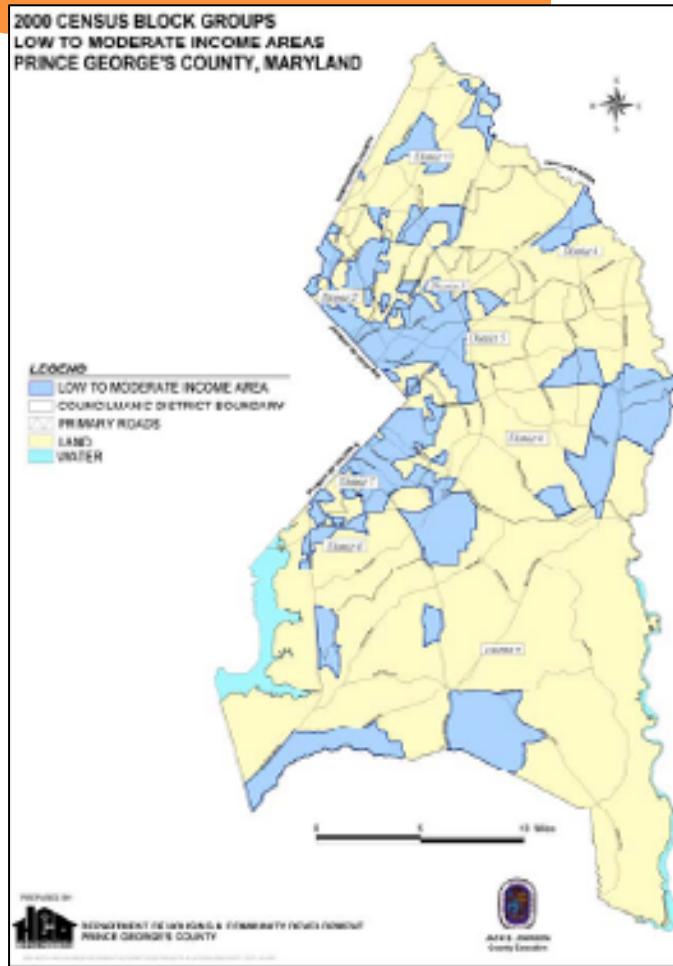


Percent with Diabetes by Council District



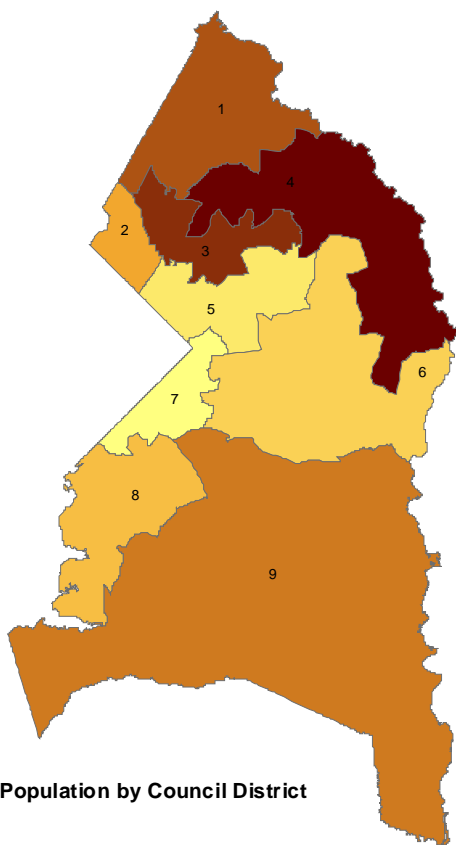


Low/Moderate Block Groups

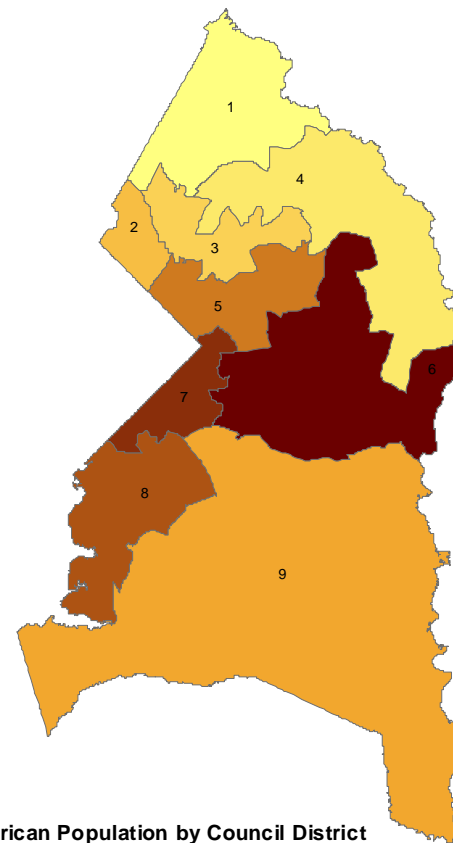
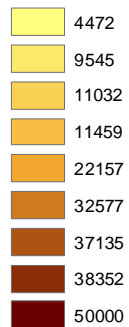


Housing and Community Development Action Plan FY 2007

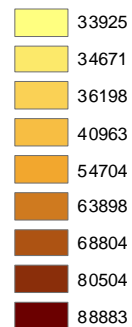




Caucasian Population by Council District



African-American Population by Council District



Race/Ethnicity



District	White	African American	Native American	Asian	Pacific Native	Other
1	37135	33925	255	6236	78	4156
2	22157	40963	439	3180	69	12024
3	38352	36198	312	5528	58	4057
4	50000	34671	288	6256	41	1470
→ 5	9545	63898	224	1304	25	2458
→ 6	11032	88883	285	1236	25	589
→ 7	4472	80504	216	503	25	496
→ 8	11459	68804	277	3693	78	875
9	32577	54704	499	3096	48	953
Total	216729	502550	2795	31032	447	27078

Table 3: Race/Ethnicity by Council District – 2000 Census

60.1% of the African-American population



Conclusions

- **Points of interest**
 - KP members in high minority and low/moderate income areas more likely to have disease.
- **Use data to:**
 1. Identify possible intervention sites
 2. Tool to get support from influential people
 3. Point tracking for initiative evaluation



- Apply mapping, techniques, lessons learned to other communities.
- Format and disseminate data to communities.
- Map resources in communities.
- What does KP needs to do?






thrive

