GIS & Public Health Informatics

Abstract

GIS & Public Health Informatics

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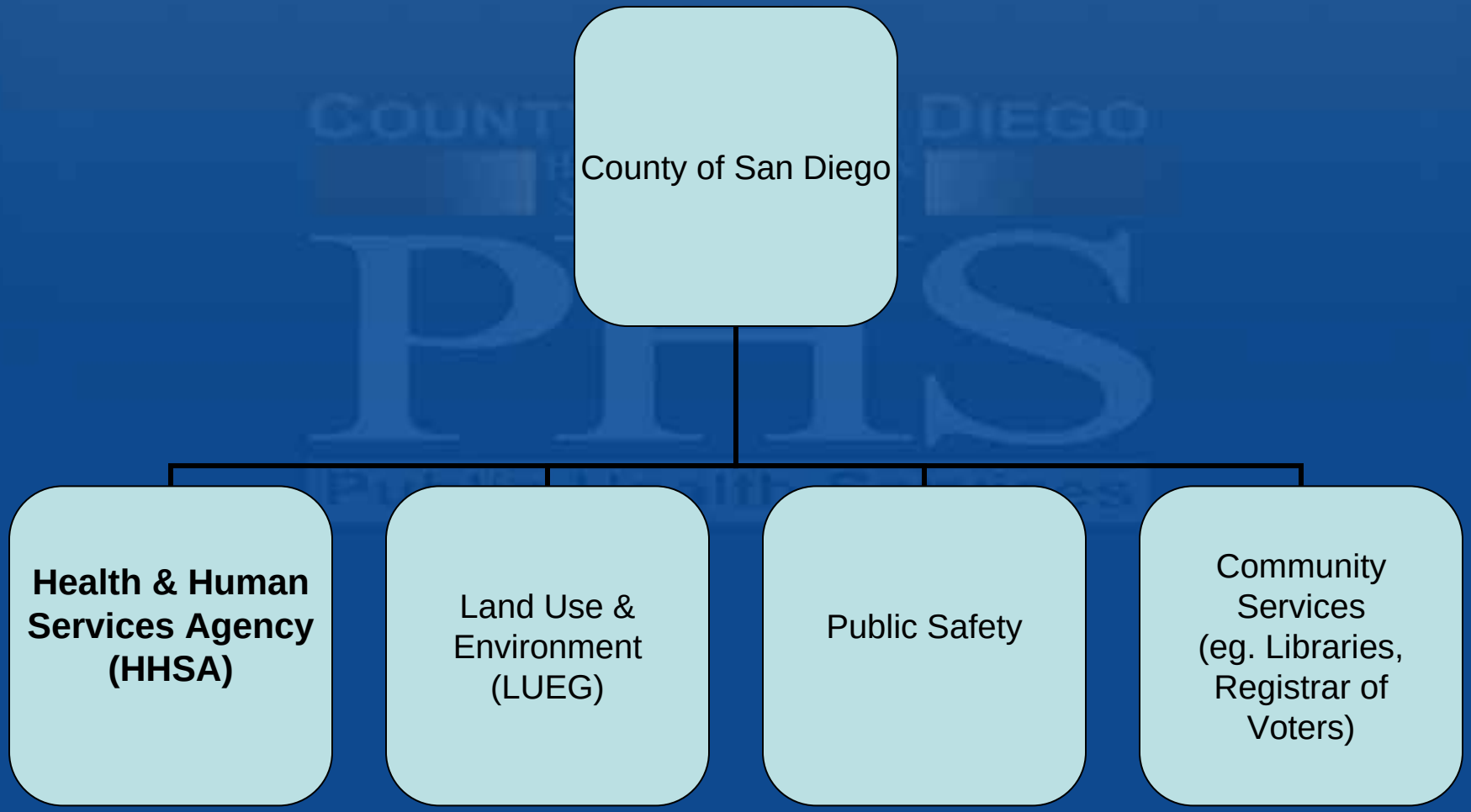
County of San Diego, Health and Human Services Agency, Public Health Services, Community Health Statistics

San Diego County

- **2.7 million acres**
  - **Fifth largest county in United States**
- **3.07 million residents**
  - **29th most populous "state"**
- **Diverse County**
  - **Mountains, Deserts, Coastal**
  - **Urban, Suburban, Rural**
  - **Culturally, Racially, demographically**
  - **Economy, industry**

County of San Diego



Public Health Services Programs

- Community Health Statistics Unit
- Emergency Medical Services
- Community Epidemiology, Public Health Lab
- Maternal, Child, Family Health Services
- TB, Immunizations
- HIV/AIDS, STD, Hepatitis
- Lead Poisoning, Tobacco Control,
- Violence Prevention, Disability Prevention
- REHDI (disparities), Black Infant Health
- Border Health, Dental Health

County Data Sources

- **Population-based Health Data Sources**
  - Vital Records
    - Births
    - Fetal Deaths
    - Infant Deaths
    - Death
  - Medical Care Data
    - Prehospital
    - Emergency Dept
    - Trauma
    - Hospital Patient Discharge
    - Medical Examiner
- **Survey Data**
  - CHIS (CA implementation of NHIS, SD Regional sampling)
  - YRBS
- **Special Group or Service Data**
  - Behavioral Health (alcohol & drug services)
  - Morbidity
    - HIV Counseling & Testing
    - HIV/AIDS Reporting System
    - Sexually Transmitted Diseases (STDs)
    - Tuberculosis (TB)
    - Childhood Lead Poisoning Prevention Program
    - Reportable Diseases
  - Other – Immunization
- **Useful Non-health Data**
  - SANDAG
  - ARJIS
  - SWITRS

Community Health Statistics Unit
the 1-stop-shop for PH data

Rationale: Public Health Officer established this unit in August 2004, in response to community requests for **one central office to access public health data**.

Mission: To provide community health statistics to meet the needs of HHSA regional staff and community partners.

- Help clarify customer data needs
- Get to Know PH Data, Learn to Use PH data Workshops
- If County doesn't have data, we try to find it

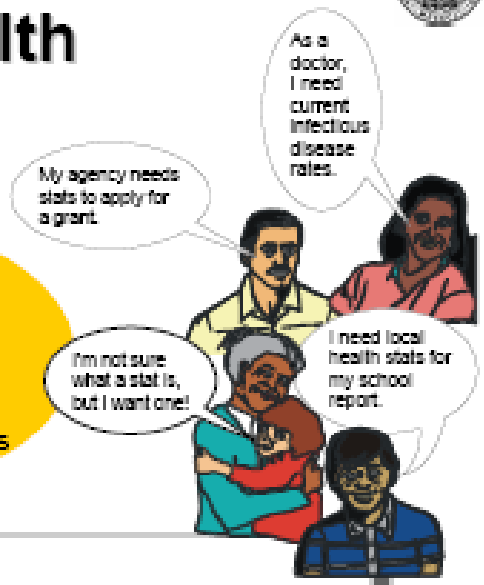
County of San Diego
Health & Human Services Agency

Community Health Statistics Unit

www.sdhealthstatistics.com

The **NEW** health statistics unit is now open! Services are available to:

- Local health professionals
- County regional staff
- Community-based organizations
- The general public



Community Health Statistics Unit

What type of statistics can be provided?
Health statistics can be provided that describe health behaviors, diseases and injuries for specific populations, health trends and comparisons to national targets.

Types of Available Data
Available local, state and national statistics can be provided or referenced.

Consultation
Advise on what data is available for different health topics.

County Website
The latest data and data links are available on the County HHSA website. To access the information, go to www.sdhealthstatistics.com.

What's the Community Health Statistics Unit phone number?
Call (619) 285-6479 to provide us with your health statistics request.

Call (619) 285-6479

We ***KNOW*** Statistics!

County of San Diego Health and Human Services Agency
Public Health Services, Emergency Medical Services
P.O. Box 85222, M.S. S-566, San Diego, CA 92186-5222

Website

- Purchased easy to remember url
  - www.SDHealthStatistics.com
- Access 24/7
- No publishing/printing required
  - (saves $, paper, never outdated)
- As more info is online, we refer more hotline calls to the website
  - Gives customer rapid response
  - Reduces staff time spent on repeated requests

Website

- Workshop, training information
- Links to San Diego County reports
- Links to other resources/data
  - Local
  - State
  - National
- Data products

Online Access to PHS Data

Input

PHS Data Sources

- Birth Certificates
- Death Certificates
- Inpatient Hospitalization
- Emergency Department
- Prehospital (911)
- SWITRS (traffic crashes)
- Medical Examiner
- Reportable Diseases
- STDs, HIV/AIDS
- Immunizations
- CHIS (survey)
- Demographics

Output

Development Process – Data Format ?

- Data
  - Tables
  - Graphs
- Maps –
  - Various data sources (different geographic units)
  - Multiple data at once
  - Great visual
  - Shows context of communities
  - Great resource to provide since people can't easily make their own
- Narrative

Online Access to PHS Data

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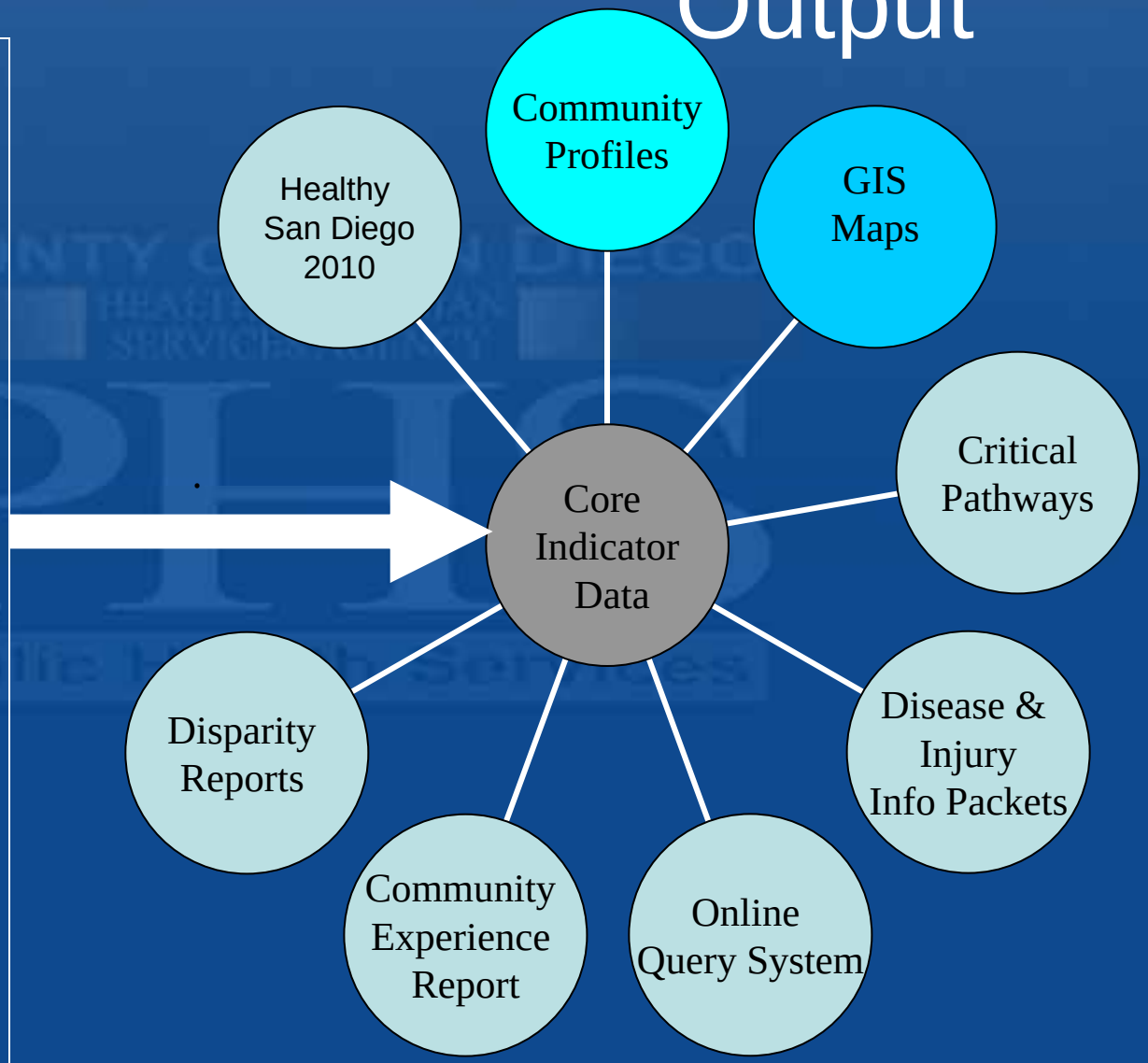
Output



Online Community Profiles

- Living doc, continually updated
  - Databases are updated different times, don't have to wait until all are updated to report
- Interactive, easy to navigate
- Viewed online, no publishing
- Health data
- Non-health data & maps

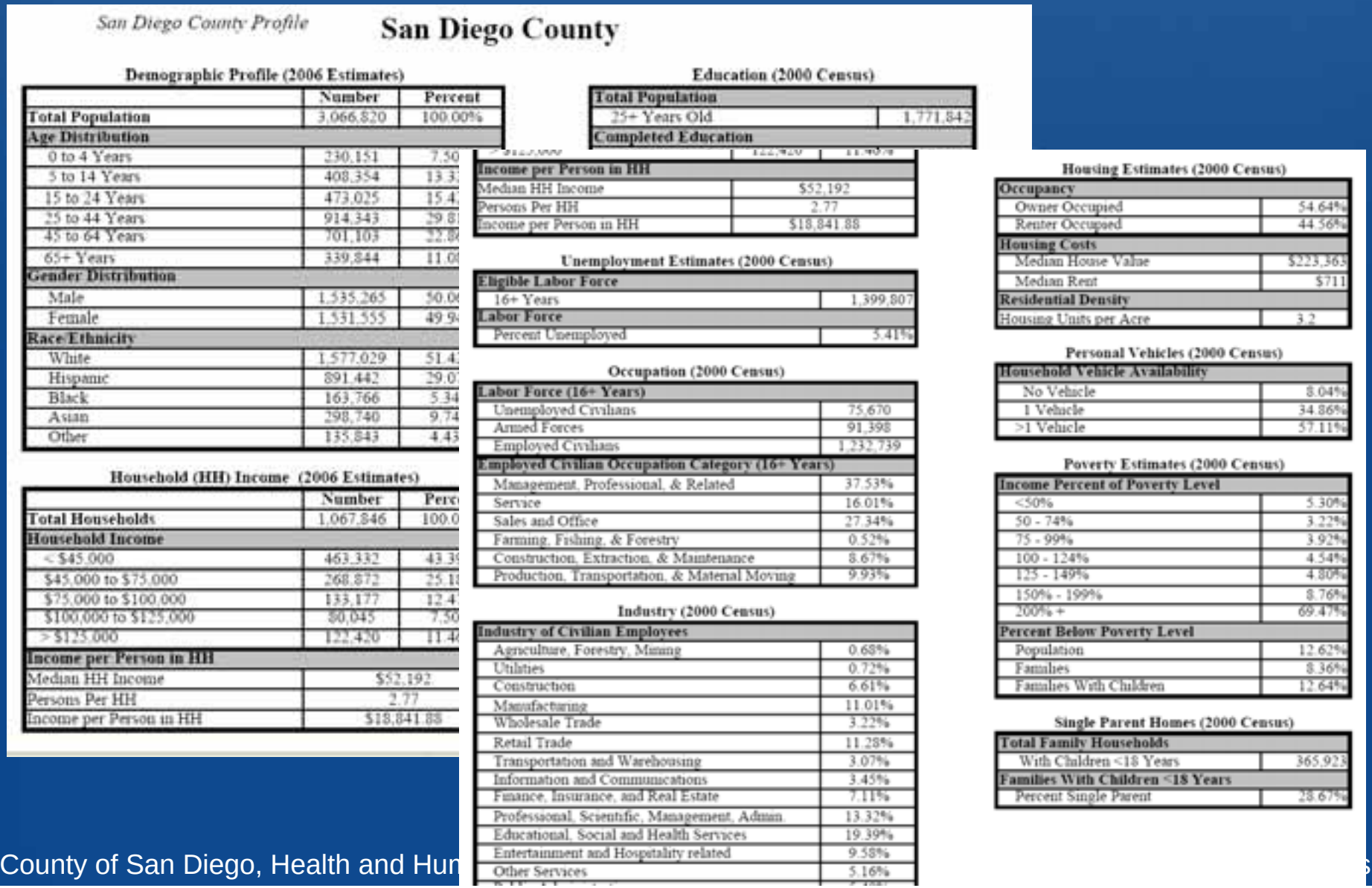
Online Community Profiles - Contents

- Introduction & Data Guide
- Demographic Data
- Public Health Data
- Maps
  - Geographic Boundaries
  - Demographic & Economic data
    - (population, R/E, age, education, income)
  - Infrastructure (parks, libraries, transportation)
  - Medical Facilities

Online Community Profiles

- Geographic units
  - County
  - HHSA Regions (health planning areas)
  - SubRegional Area (SRA) (census tract aggregation)
- Time
  - 2000-current (or earliest available)

Samples – Demographic Tables



San Diego County Profile

San Diego County

Demographic Profile (2006 Estimates)

	Number	Percent
Total Population	3,066,820	100.00%
Age Distribution		
0 to 4 Years	230,151	7.50
5 to 14 Years	408,354	13.3
15 to 24 Years	473,025	15.4
25 to 44 Years	914,343	29.8
45 to 64 Years	701,103	22.8
65+ Years	339,844	11.0
Gender Distribution		
Male	1,535,265	50.0
Female	1,531,555	49.9
Race/Ethnicity		
White	1,577,029	51.4
Hispanic	891,442	29.0
Black	163,766	5.34
Asian	298,740	9.74
Other	135,843	4.43

Household (HH) Income (2006 Estimates)

	Number	Perc
Total Households	1,067,846	100.0
Household Income		
< $45,000	463,332	43.39
$45,000 to $75,000	268,872	25.18
$75,000 to $100,000	133,177	12.47
$100,000 to $125,000	80,045	7.50
> $125,000	122,420	11.46
Income per Person in HH		
Median HH Income	$52,192	
Persons Per HH	2.77	
Income per Person in HH	$18,841.88	

Education (2000 Census)

Total Population	
25+ Years Old	1,771,842
Completed Education	

Income per Person in HH	
Median HH Income	$52,192
Persons Per HH	2.77
Income per Person in HH	$18,841.88

Unemployment Estimates (2000 Census)

Eligible Labor Force	
16+ Years	1,399,807
Labor Force	
Percent Unemployed	5.41%

Occupation (2000 Census)

Labor Force (16+ Years)	
Unemployed Civilians	75,670
Armed Forces	91,398
Employed Civilians	1,232,739
Employed Civilian Occupation Category (16+ Years)	
Management, Professional, & Related	37.53%
Service	16.01%
Sales and Office	27.34%
Farming, Fishing, & Forestry	0.52%
Construction, Extraction, & Maintenance	8.67%
Production, Transportation, & Material Moving	9.93%

Industry (2000 Census)

Industry of Civilian Employees	
Agriculture, Forestry, Mining	0.68%
Utilities	0.72%
Construction	6.61%
Manufacturing	11.01%
Wholesale Trade	3.22%
Retail Trade	11.28%
Transportation and Warehousing	3.07%
Information and Communications	3.45%
Finance, Insurance, and Real Estate	7.11%
Professional, Scientific, Management, Admin.	13.32%
Educational, Social and Health Services	19.39%
Entertainment and Hospitality related	9.58%
Other Services	5.16%

Housing Estimates (2000 Census)

Occupancy	
Owner Occupied	54.64%
Renter Occupied	44.56%
Housing Costs	
Median House Value	$223,365
Median Rent	$711
Residential Density	
Housing Units per Acre	3.2

Personal Vehicles (2000 Census)

Household Vehicle Availability	
No Vehicle	8.04%
1 Vehicle	34.86%
>1 Vehicle	57.11%

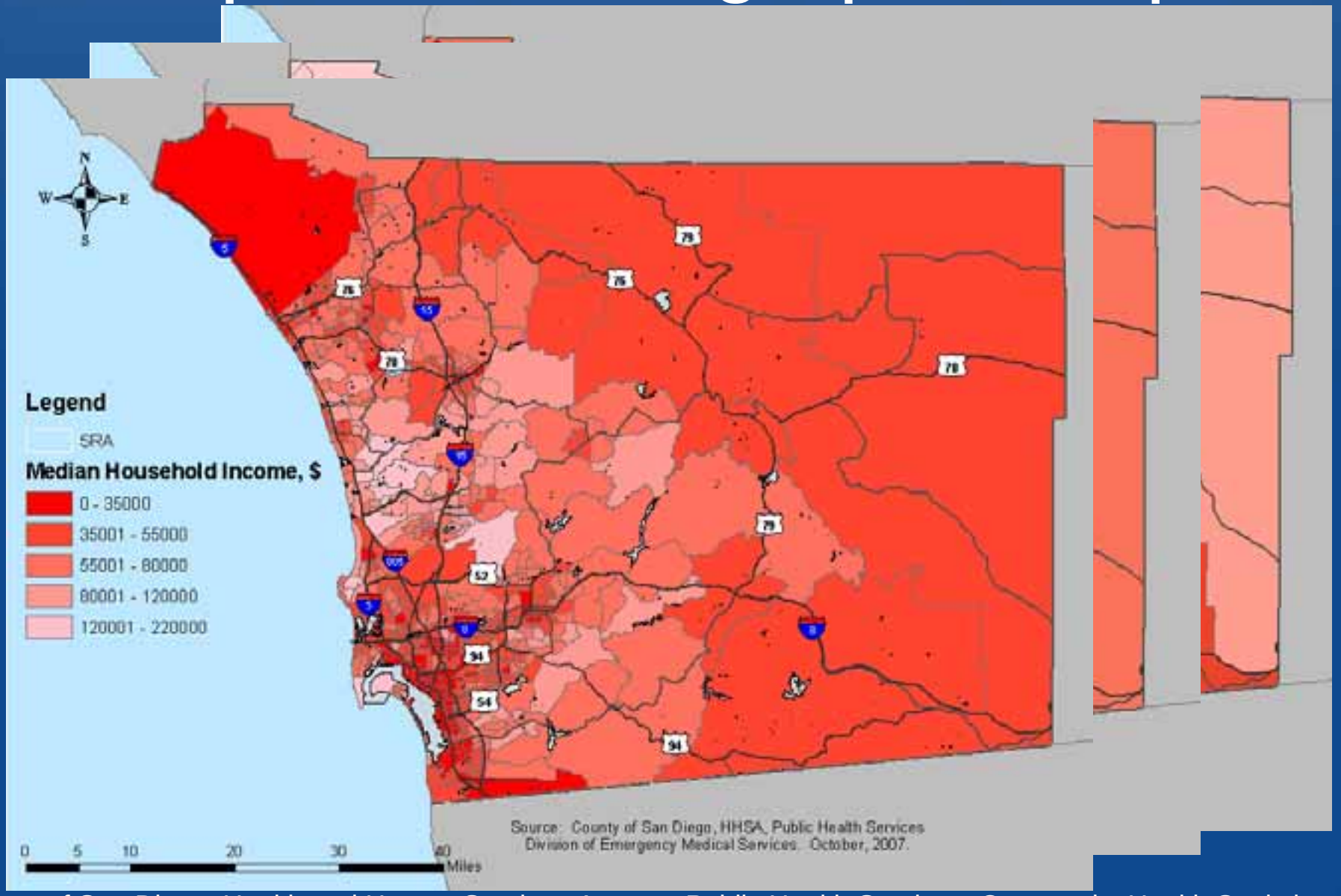
Poverty Estimates (2000 Census)

Income Percent of Poverty Level	
<50%	5.30%
50 - 74%	3.22%
75 - 99%	3.92%
100 - 124%	4.54%
125 - 149%	4.80%
150% - 199%	8.76%
200% +	69.47%
Percent Below Poverty Level	
Population	12.62%
Families	8.36%
Families With Children	12.64%

Single Parent Homes (2000 Census)

Total Family Households	
With Children <18 Years	365,923
Families With Children <18 Years	
Percent Single Parent	28.67%

Samples – Demographic Maps

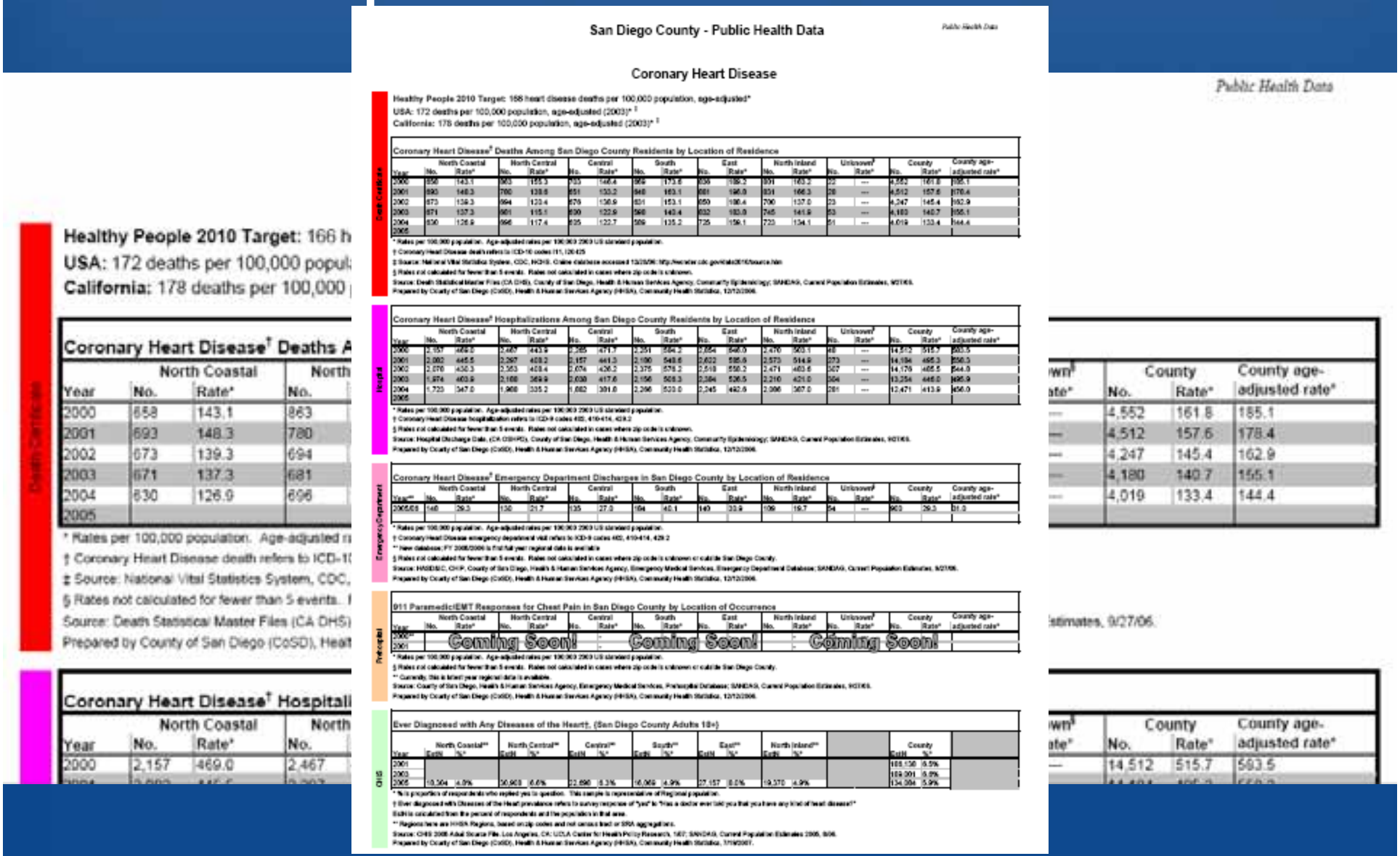


County of San Diego, Health and Human Services Agency, Public Health Services, Community Health Statistics

Health Topics

- Chronic Diseases: Prehosp, ED, Hospital DC, Death
  - Heart Disease
  - Stroke
  - Asthma
  - Diabetes
  - Cancer
- Infectious Diseases: incidence
  - Chlamydia
  - Gonorrhea
  - Hepatitis C
  - HIV/AIDS
  - Syphilis
  - TB, new cases active
- Injury: fatal, nonfatal
  - drowning
  - falls
  - MVA, pedestrian
  - suicide, homicide
  - firearms
  - poisoning
  - Unintentional
- Birth
  - infant mortality
  - late/no prenatal care
  - low birth weight (<2500g)
  - teen births

Samples – PH Data Tables



San Diego County - Public Health Data

Public Health Data

Coronary Heart Disease

Healthy People 2010 Target: 166 h
USA: 172 deaths per 100,000 popul
California: 178 deaths per 100,000

Coronary Heart Disease† Deaths A

Year	North Coastal No.	North Coastal Rate*	North No.
2000	858	143.1	863
2001	893	148.3	780
2002	873	139.3	694
2003	871	137.3	681
2004	830	126.9	696
2005			

* Rates per 100,000 population. Age-adjusted r
† Coronary Heart Disease death refers to ICD-1
‡ Source: National Vital Statistics System, CDC,
§ Rates not calculated for fewer than 5 events.
Source: Death Statistical Master Files (CA DHS)
Prepared by County of San Diego (CoSD), Healt

Coronary Heart Disease† Hospitali

Year	North Coastal No.	North Coastal Rate*	North No.
2000	2,157	469.0	2,467

Year	County No.	County Rate*	County age-adjusted rate*
2000	4,552	161.8	185.1
2001	4,512	157.6	178.4
2002	4,247	145.4	162.9
2003	4,180	140.7	155.1
2004	4,019	133.4	144.4
2005			

Estimates, 9/27/06.

Year	County No.	County Rate*	County age-adjusted rate*
2000	14,512	515.7	593.5

Healthy People 2010 Target: 166 heart disease deaths per 100,000 population, age-adjusted*
USA: 172 deaths per 100,000 population, age-adjusted (2003)* ‡
California: 178 deaths per 100,000 population, age-adjusted (2003)* ‡

Coronary Heart Disease† Deaths Among San Diego County Residents by Location of Residence

Year	North Coastal No.	North Coastal Rate*	North Central No.	North Central Rate*	Central No.	Central Rate*	South No.	South Rate*	East No.	East Rate*	North Inland No.	North Inland Rate*	Unknown§ No.	Unknown§ Rate*	County No.	County Rate*	County age-adjusted rate*
2000	858	143.1	863	155.3	723	146.4	956	173.6	836	186.3	891	163.2	22	---	4,552	161.8	185.1
2001	893	148.3	780	139.8	651	130.2	948	163.1	881	196.0	834	166.3	28	---	4,512	157.6	178.4
2002	873	139.3	694	123.4	579	130.9	831	153.1	859	188.4	700	137.0	23	---	4,247	145.4	162.9
2003	871	137.3	681	115.1	639	122.9	968	149.4	832	183.9	745	141.9	53	---	4,180	140.7	155.1
2004	830	126.9	696	117.4	635	122.7	909	135.2	725	158.1	723	134.1	51	---	4,019	133.4	144.4
2005																	

* Rates per 100,000 population. Age-adjusted rates per 100,000 2003 US standard population.
† Coronary Heart Disease death refers to ICD-10 codes I11, I20-I25
‡ Source: National Vital Statistics System, CDC, WONDER, Online database accessed 12/20/06: http://wonder.cdc.gov/mcd-icd10.html
§ Rates not calculated for fewer than 5 events. Rates not calculated in cases where zip code is unknown.
Source: Death Statistical Master Files (CA DHS), County of San Diego, Health & Human Services Agency, Community Epidemiology; SANDAG, Current Population Estimates, 9/27/06.
Prepared by County of San Diego (CoSD), Health & Human Services Agency (HHSA), Community Health Statistics, 12/12/2006.

Coronary Heart Disease† Hospitalizations Among San Diego County Residents by Location of Residence

Year	North Coastal No.	North Coastal Rate*	North Central No.	North Central Rate*	Central No.	Central Rate*	South No.	South Rate*	East No.	East Rate*	North Inland No.	North Inland Rate*	Unknown§ No.	Unknown§ Rate*	County No.	County Rate*	County age-adjusted rate*
2000	2,157	469.0	2,467	443.9	2,285	471.7	2,251	584.2	2,054	648.0	2,470	503.1	48	---	14,512	515.7	593.5
2001	2,002	445.5	2,267	409.2	2,157	441.3	2,190	548.6	2,022	595.6	2,573	514.9	273	---	14,184	495.3	556.3
2002	2,070	456.3	2,353	408.4	2,074	426.2	2,375	578.2	2,518	550.2	2,471	483.6	307	---	14,178	485.5	544.8
2003	1,974	463.9	2,166	389.9	2,030	417.6	2,156	569.3	2,384	536.5	2,210	421.0	304	---	13,254	446.0	495.9
2004	1,723	347.0	1,908	335.2	1,662	391.0	2,096	503.0	2,245	492.6	2,006	367.0	281	---	12,471	413.9	456.0
2005																	

* Rates per 100,000 population. Age-adjusted rates per 100,000 2003 US standard population.
† Coronary Heart Disease hospitalization refers to ICD-9 codes 402, 410-414, 429.2
§ Rates not calculated for fewer than 5 events. Rates not calculated in cases where zip code is unknown.
Source: Hospital Discharge Data, (CA OSHPD), County of San Diego, Health & Human Services Agency, Community Epidemiology; SANDAG, Current Population Estimates, 9/27/06.
Prepared by County of San Diego (CoSD), Health & Human Services Agency (HHSA), Community Health Statistics, 12/12/2006.

Coronary Heart Disease† Emergency Department Discharges in San Diego County by Location of Residence

Year**	North Coastal No.	North Coastal Rate*	North Central No.	North Central Rate*	Central No.	Central Rate*	South No.	South Rate*	East No.	East Rate*	North Inland No.	North Inland Rate*	Unknown§ No.	Unknown§ Rate*	County No.	County Rate*	County age-adjusted rate*
2005/06	148	26.3	132	21.7	135	27.0	184	40.1	140	33.9	109	19.7	54	---	903	26.5	31.0

* Rates per 100,000 population. Age-adjusted rates per 100,000 2003 US standard population.
† Coronary Heart Disease emergency department visit refers to ICD-9 codes 402, 410-414, 429.2
** New database; FY 2005/2006 is first full year regional data is available.
§ Rates not calculated for fewer than 5 events. Rates not calculated in cases where zip code is unknown or outside San Diego County.
Source: HASD&IC, OHP, County of San Diego, Health & Human Services Agency, Emergency Medical Services, Emergency Department Database; SANDAG, Current Population Estimates, 9/27/06.
Prepared by County of San Diego (CoSD), Health & Human Services Agency (HHSA), Community Health Statistics, 12/12/2006.

911 Paramedic/EMT Responses for Chest Pain in San Diego County by Location of Occurrence

Year**	North Coastal No.	North Coastal Rate*	North Central No.	North Central Rate*	Central No.	Central Rate*	South No.	South Rate*	East No.	East Rate*	North Inland No.	North Inland Rate*	Unknown§ No.	Unknown§ Rate*	County No.	County Rate*	County age-adjusted rate*
2000**	Coming Soon!		-	Coming Soon!		-	Coming Soon!			-	Coming Soon!						
2001																	

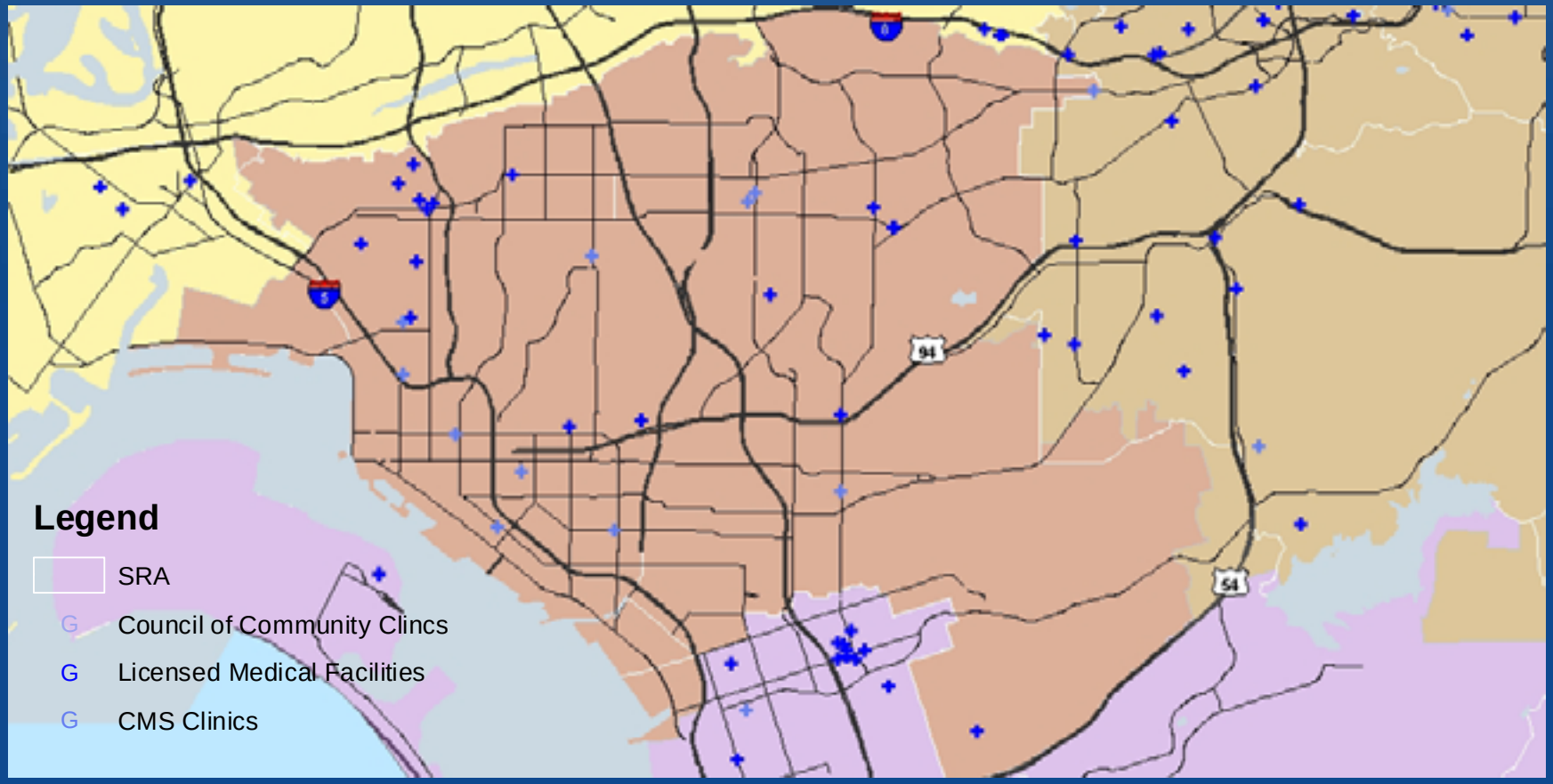
* Rates per 100,000 population. Age-adjusted rates per 100,000 2003 US standard population.
§ Rates not calculated for fewer than 5 events. Rates not calculated in cases where zip code is unknown or outside San Diego County.
** Currently, this is latest year regional data is available.
Source: County of San Diego, Health & Human Services Agency, Emergency Medical Services, Prehospital Database; SANDAG, Current Population Estimates, 9/27/06.
Prepared by County of San Diego (CoSD), Health & Human Services Agency (HHSA), Community Health Statistics, 12/12/2006.

Ever Diagnosed with Any Diseases of the Heart‡, (San Diego County Adults 18+)

Year	North Coastal** Estimate	North Coastal** %	North Central** Estimate	North Central** %	Central** Estimate	Central** %	South** Estimate	South** %	East** Estimate	East** %	North Inland** Estimate	North Inland** %			County Estimate	County %	
2001															105,150	6.5%	
2003															102,001	6.0%	
2005	19,504	4.9%	30,903	6.6%	22,690	5.3%	16,069	4.9%	27,157	8.0%	19,370	4.9%			134,394	5.9%	

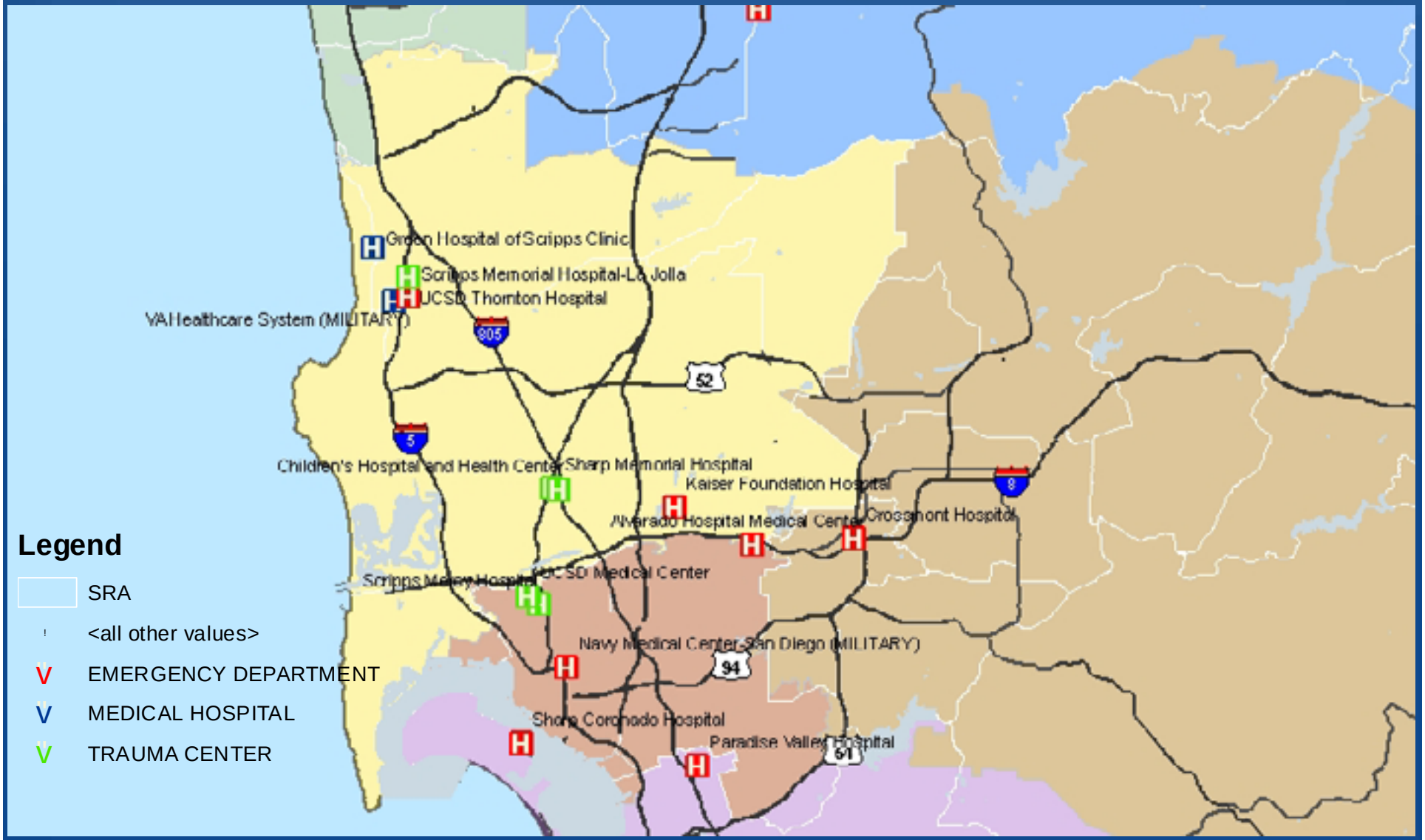
* % is proportion of respondents who replied yes to question. This sample is representative of Regional population.
‡ Ever diagnosed with Diseases of the Heart prevalence refers to survey response of "yes" to "Has a doctor ever told you that you have any kind of heart disease?"
Estimate is calculated from the percent of respondents and the population in that area.
** Regions here are HHSA Regions, based on zip codes and not census tract or SRA aggregations.
Source: CHIS 2005 Adult Source File, Los Angeles, CA: UCLA Center for Health Policy Research, 1/07; SANDAG, Current Population Estimates 2005, 9/06.
Prepared by County of San Diego (CoSD), Health & Human Services Agency (HHSA), Community Health Statistics, 1/19/2007.

Samples – Health Facilities – Clinics

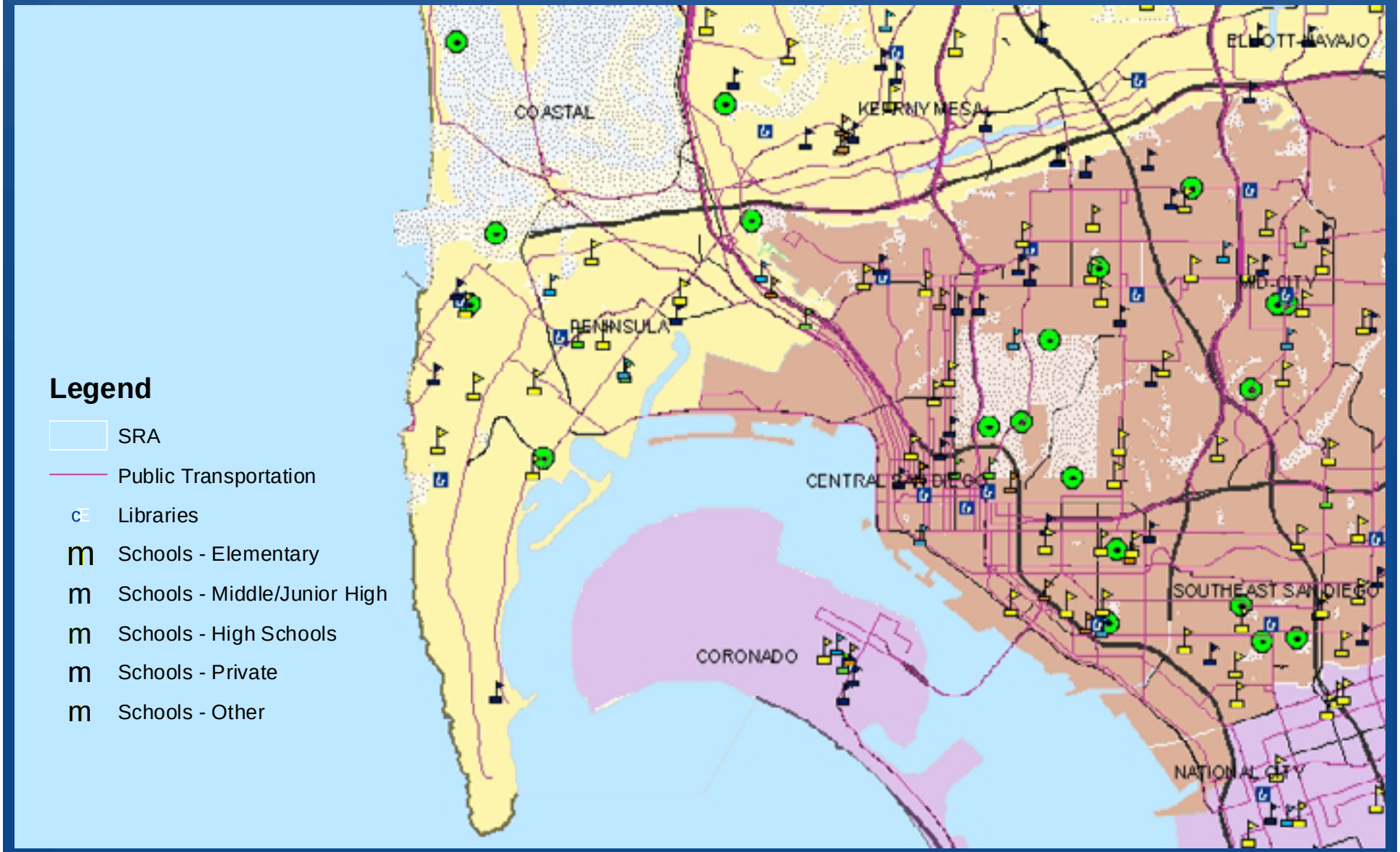


County of San Diego, Health and Human Services Agency, Public Health Services, Community Health Statistics

Samples – Health Facilities – Hospitals



Samples – Community Infrastructure



County of San Diego, Health and Human Services Agency, Public Health Services, Community Health Statistics

Information being used by …

- Regional planners
- Policy & decision makers
- Specific health interest groups
  - (ie American Lung Association, Obesity Action Plan)
- Health promotion
- Hospitals & providers
- Grant writers
- Students

Convenient for Many User Approaches

- Disease focus
  - Heart disease death, hospitalization, emergency dept, survey
- Community based focus
  - What diseases are high in my community
- Special population focus
  - Where are special populations concentrated
  - What health issues impact special populations

Future

- Improved mapping
  - More infrastructure information
  - More health data
- Geospatial statistics to evaluate health in communities
- Maps in clickable PDF format (ArcGIS 9.2)
  - Multiple layers available on a single map & users can choose which layers to include

Acknowledgements

- Data Providers
  - Public Health Services
  - SANDAG
  - SanGIS

Contact

County of San Diego
Community Health Statistics Unit
6255 Mission Gorge Road
San Diego, CA 92120
www.sdhealthstatistics.com
Data Requests (619) 285-6479

julie.cooke@sdcounty.ca.gov