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Letter to the Community

To effectively respond to the health needs of our community, we must have a deep understanding of the challenges we face. This report, which outlines the priority health issues for Knox County, is the culmination of more than one and half years of data collection and evaluation. This extensive process, based on a national model, involved dozens of partners and thousands of residents.

We are uniquely positioned to conduct this work because of our expertise in this area, namely in our epidemiology division. Even so, we devote time and resources to this for a variety of reasons. This assessment is not only a crucial part of our own strategic approach to improve health, but it also informs the work of our partners, medical providers, nonprofits and many others. In addition, we produce this report in support of the Community Health Council’s health improvement plan, which brings together a diverse group of organizations from across the community.

The Community Health Assessment draws on data and information gathered from four assessments recommended under the national Mobilizing for Action through Planning and Partnerships (MAPP) framework. All of the information gathered from the assessments was then synthesized by our epidemiologists, resulting in the 14 topic areas outlined. The topic areas were determined either by statistical relevance using a variety of valid sources, or were cited repeatedly during key informant interviews and focus groups.

As you’ll read in this report, some groups of people have higher rates of certain diseases compared to others. We have noted these differences when they are statistically significant. It is important to recognize these disparities because race, ethnicity, gender, socioeconomic status and other social factors can play a major role in an individual’s health. Therefore, to improve the health of everyone in our community, we must be aware of and address these social determinants of health.

This is the second Community Health Assessment we’ve conducted; the first was in 2010. As part of our commitment to improving the health of our community, we plan to release a similar assessment every few years, and we hope they serve as useful tools and references for all readers. If you have any questions or suggestions for future reports, please contact our Director of Community Assessment at 865-215-5095.

Sincerely,

Dr. Martha Buchanan
Director, Knox County Health Department
Acknowledgements

The Knox County Health Department thanks the following individuals and organizations for their invaluable contributions to this report.

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Mahasti Vafaie, Tomato Head Restaurants
Lisa Wagoner, Knox County Schools
Dirk Weddington, Knox County Juvenile Court

Host Sites for Focus Groups
Cherokee Health Systems
City County Building
The Community of St. Ninian Compassion Coalition
Holy Ghost Catholic Church
Knox County Senior Centers
Knoxville-Knox County Community Action Committee Leadership Knoxville
Mayor’s Council on Disability Issues – City of Knoxville St. John’s Lutheran Church
Town of Farragut
University of Tennessee Medical Center
Introduction
The 2014-2015 Community Health Assessment was conducted by the Knox County Health Department in support of Together Healthy Knox, an initiative of the Community Health Council. Created in part to guide a community health improvement process, the council is an independent entity made up of various community members that serves the City of Knoxville, Knox County and the Town of Farragut.

This assessment details the priority health issues for Knox County after consideration of all the data collected. The Community Health Council will select four top issues from this assessment to integrate into a Community Health Improvement Plan.

Methodology
In 2014, the Knox County Health Department held monthly meetings with partner agencies to organize and coordinate the assessment data collection process (12 focus groups, 26 key informant interviews, a quality of life survey with more than 2,000 responses, etc.). Once the qualitative assessments were underway, the meetings were used to review the 2010 Knox County Community Health Assessment to determine any new data needs. Additionally, the Knox County Health Department epidemiology staff reviewed local and state health assessments for methodology and data collection comparisons. Information from the Behavior Risk Factor Survey (BRFS), conducted every three years in Knox County, and the Youth Risk Behavior Survey (YRBS), conducted every two years in Knox County public middle and high schools, was combined with local birth, mortality and disease prevalence data. To set a benchmark, the data were compared to the applicable targets outlined in Healthy People 2020, a national set of standards created to improve health. The health department’s epidemiology staff also noted areas of limitation in which County-level data were not available. All data were evaluated to reveal the health issues for Knox County. These health issues were then narrowed down to 14 topic areas that represent the priority health issues for Knox County.

Public input on a summary of this assessment was sought in person and online in June 2015. Obesity, nutrition and physical activity were most commonly cited as major community issues.
The Knox County Health Department epidemiology staff identified the following health priorities for the county, based on all data collected. This information was presented to the Community Health Council for review.

<table>
<thead>
<tr>
<th>TOPIC AREAS IDENTIFIED</th>
<th>HEALTH PRIORITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to Health Services</td>
<td>• Increase health coverage for Knox County residents (emphasis on unemployed)</td>
</tr>
<tr>
<td>Cancer</td>
<td>• Decrease lung cancer mortality</td>
</tr>
<tr>
<td></td>
<td>• Increase radon awareness</td>
</tr>
<tr>
<td>Diabetes</td>
<td>• See obesity, nutrition, physical activity</td>
</tr>
<tr>
<td>Environmental Health</td>
<td>• Increase access and availability of safe greenways, sidewalks and parks</td>
</tr>
<tr>
<td>Food Access</td>
<td>• Increase access and availability of healthy food versus unhealthy food</td>
</tr>
<tr>
<td></td>
<td>• Address potential misconceptions around perceived cost of healthy food versus unhealthy food</td>
</tr>
<tr>
<td>Heart Disease</td>
<td>• See obesity, nutrition, physical activity</td>
</tr>
<tr>
<td>Injury and Violence</td>
<td>• Decrease bullying among adolescents</td>
</tr>
<tr>
<td></td>
<td>• Decrease poisoning deaths (especially those related to opioid and meth use)</td>
</tr>
<tr>
<td>Maternal, Infant and Child Health</td>
<td>• Increase the number of women receiving adequate preconception/prenatal care</td>
</tr>
<tr>
<td></td>
<td>• Decrease Neonatal Abstinence Syndrome (NAS) incidence</td>
</tr>
<tr>
<td>Mental Health</td>
<td>• Increase access to mental health services</td>
</tr>
<tr>
<td></td>
<td>• Decrease depression/suicidal thoughts among adolescents</td>
</tr>
<tr>
<td>Obesity, Nutrition, Physical Activity</td>
<td>• Decrease screen time in youth</td>
</tr>
<tr>
<td></td>
<td>• Increase availability of physical education in schools</td>
</tr>
<tr>
<td></td>
<td>• Decrease unhealthy food choices</td>
</tr>
<tr>
<td>Oral Health</td>
<td>• Increase access to oral health services for youth, the unemployed and those unable to work</td>
</tr>
<tr>
<td>Reproductive and Sexual Health</td>
<td>• Increase birth control education</td>
</tr>
<tr>
<td>Substance Use</td>
<td>• Decrease opioid abuse</td>
</tr>
<tr>
<td></td>
<td>• Decrease marijuana use and binge drinking in youth</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>• Decrease tobacco use, particularly in youth and pregnant women</td>
</tr>
</tbody>
</table>
Access to Health Services

Health Priorities and Areas of Concern
- Increase health care coverage for Knox County residents (emphasis on unemployed)
- Impact of the Affordable Care Act

Benchmark
Persons with medical insurance:
- Healthy People 2020 target: 100 percent
- Knox County: 86.4 percent

Disparities
Percent of adults who reported they have health coverage:

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Less than $15,000</td>
<td>68.6%</td>
<td>71.3%</td>
<td>74.4%</td>
<td>77.0%</td>
</tr>
<tr>
<td>$15,000-$24,999</td>
<td>78.1%</td>
<td>81.7%</td>
<td>84.8%</td>
<td>87.8%</td>
</tr>
<tr>
<td>$25,000-$34,999</td>
<td>84.0%</td>
<td>87.4%</td>
<td>90.4%</td>
<td>92.8%</td>
</tr>
<tr>
<td>$35,000-$49,999</td>
<td>92.0%</td>
<td>95.0%</td>
<td>97.3%</td>
<td>98.4%</td>
</tr>
<tr>
<td>More than $50,000</td>
<td>97.0%</td>
<td>98.0%</td>
<td>99.3%</td>
<td>99.9%</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than high school</td>
<td>62.0%</td>
<td>65.0%</td>
<td>68.0%</td>
<td>71.0%</td>
</tr>
<tr>
<td>High school</td>
<td>77.5%</td>
<td>80.5%</td>
<td>83.5%</td>
<td>86.5%</td>
</tr>
<tr>
<td>Some college</td>
<td>86.0%</td>
<td>89.0%</td>
<td>92.0%</td>
<td>95.0%</td>
</tr>
<tr>
<td>College grad</td>
<td>95.0%</td>
<td>98.0%</td>
<td>99.5%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Unable to see a doctor due to cost:

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15.4%</td>
<td>15.4%</td>
<td>13.3%</td>
<td>15.8%</td>
</tr>
</tbody>
</table>

Percent of adults who reported they couldn't see a doctor in the past 12 months due to cost:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $15,000</td>
<td>29.2%</td>
<td>27.6%</td>
<td>23.9%</td>
<td>15.1%</td>
</tr>
<tr>
<td>$15,000-$24,999</td>
<td>25.0%</td>
<td>23.3%</td>
<td>19.5%</td>
<td>12.5%</td>
</tr>
<tr>
<td>$25,000-$34,999</td>
<td>20.5%</td>
<td>18.8%</td>
<td>15.0%</td>
<td>8.5%</td>
</tr>
<tr>
<td>$35,000-$49,999</td>
<td>15.4%</td>
<td>13.7%</td>
<td>10.5%</td>
<td>7.0%</td>
</tr>
<tr>
<td>More than $50,000</td>
<td>5.9%</td>
<td>5.5%</td>
<td>4.5%</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

Contributing Factors

Source: BRFS, 2014
15.8 percent of Knox County adults (14.9 percent white, 16.9 percent black) reported that they couldn’t see a doctor in the past year due to cost. This is more than three times higher than the Healthy People 2020 target of reducing the proportion of persons who are unable to obtain or delay in obtaining necessary medical care (4.2 percent).

43.8 percent of unemployed adults reported they were unable to see a doctor in the past year due to cost (compared to 15.9 percent of employed adults).

I think a healthy community is where everyone can get health care, whether it’s mental health care or physical, but ... where everyone can get some health care.

– Focus Group, 2014

66% of Knox County adults aged 40+ reported having insurance for eye care.

Source: BRFS, 2014

POSITIVES/RESOURCES
• Hospitals/physicians per capita
• TennCare system
• Knox County Indigent Care Program
• City of Knoxville Office on Homelessness
• Cherokee Health Systems integrated care
• InterFaith Health Clinic
• The Free Medical Clinic
• Knox Area Project Access

Target Knox

Source: BRFS, 2014
Cancer

Health Priorities and Areas of Concern

- Lung cancer mortality
- See Obesity, Tobacco, Nutrition and Physical Activity
- Radon awareness

Benchmarks

Death rates for all types of cancer

- **Healthy People 2020 target**: 179.3 deaths per 100,000
- **Knox County**: 197.5 deaths per 100,000
  - White: 211.0 per 100,000
  - Black: 151.5 per 100,000

Lung cancer death rate

- **Healthy People 2020 target**: 45.5 deaths per 100,000
- **Knox County**: 58.9 deaths per 100,000 (disparities evident)
  - Smoking causes approximately 90 percent of all lung cancer deaths.
  - Radon continues to be a risk for lung cancer in Knox County.

Breast cancer death rate

- **Healthy People 2020 target**: 20.7 deaths per 100,000 females
- **Knox County**: 22.7 deaths per 100,000 females

Colorectal cancer death rate

- **Healthy People 2020 target**: 14.5 deaths per 100,000
- **Knox County**: 15.2 deaths per 100,000

Sources: Health Information Tennessee, 2009; 2010-2013 vital records provided by the Office of Policy, Planning and Assessment, Tennessee Department of Health; Centers for Disease Control and Prevention

Causes of Cancer Include

- Tobacco use
- Poor diet and physical inactivity
- Sun and UV exposure
- Radiation exposure
- Genetics
- Environmental carcinogens (including radon exposure)

Source: American Cancer Society website, 2015

Screening for cervical, colorectal, and breast cancers helps find these diseases at an early, often highly treatable stage.

Knox County adults met the Healthy People 2020 target for breast cancer and colon cancer screening.

All Cancer Mortality

Per 100,000

<table>
<thead>
<tr>
<th>Year</th>
<th>Knox County</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>197.1</td>
</tr>
<tr>
<td>2011</td>
<td>206.7</td>
</tr>
<tr>
<td>2012</td>
<td>193.1</td>
</tr>
<tr>
<td>2013</td>
<td>197.5</td>
</tr>
</tbody>
</table>

Sources: 2010-2013 vital records provided by the Office of Policy, Planning and Assessment, Tennessee Department of Health

Contributing Factors
**Disparities**

- **Lung cancer** mortality is greatest among black males (95.8 deaths per 100,000) compared to white males (79.5 per 100,000). However, lung cancer mortality is greater among whites than blacks in general.

- **Breast cancer** mortality is greater among black females (27.6 deaths per 100,000) compared to white females (22.4 per 100,000).

- **Colon cancer** mortality is greater among black males (25.6 deaths per 100,000) compared to white males (19.4 deaths per 100,000).

- Males experience a greater mortality from **colon cancer** than females (19.8 deaths per 100,000 males compared to 11.9 deaths per 100,000 females).

Source: Health Information Tennessee, 2009

---

**Knox County Rates of Diagnosis**

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>All cancer</td>
<td>497.9</td>
</tr>
<tr>
<td>Prostate cancer</td>
<td>165.5</td>
</tr>
<tr>
<td>All childhood cancer (0-19 years)</td>
<td>156.5</td>
</tr>
<tr>
<td>Female breast cancer</td>
<td>130.9</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>78.9</td>
</tr>
<tr>
<td>Colorectal cancer</td>
<td>39.1</td>
</tr>
<tr>
<td>Skin melanoma</td>
<td>30.0</td>
</tr>
<tr>
<td>Pancreatic cancer</td>
<td>12.6</td>
</tr>
</tbody>
</table>

Source: Cancer in Tennessee, 2007-2011

**FACT**

*Cancer (all types)* was the **leading cause of death** in Knox County in 2013.

Source: 2013 vital records provided by the Office of Policy, Planning and Assessment, Tennessee Department of Health

---

**POSITES/RESOURCES**

- The number of adults who reported they smoked is gradually decreasing in Knox County.
- American Cancer Society
- Hospitals and oncologists in community for treatment
- Cancer Support Community of East Tennessee
- Reported cancer screening rates in Knox County meets *Healthy People 2020* targets.
**Diabetes**

**Prevalence**
- Male: 11%
- Female: 10.1%
- White: 10.9%
- Black: 12.6%

**Health Priorities and Areas of Concern**
- Rising number of Type 2 diabetes in Knox County Youth
- See Obesity, Nutrition and Physical Activity

**Mortality** (Deaths per 100,000 population)
- Total population: 19.3
- White: 18.0
- Black: 42.8

We should also mention affordable medications for people that require them ... I have Type 1 diabetes. I spend lots of money on medications and pump supplies and things in a year. I have no choice. To survive, to live another day, I must buy these things. So I am at the mercy of a whole lot of systems, insurance companies, physicians, on what I can take, what I can’t, what is regulated. – Focus Group, 2014

**Diabetes Hospitalizations, 2010**

**Percent of Knox County adults who reported they were diagnosed with diabetes during their lifetime:**
- 2005: 8.2%
- 2008: 9.5%
- 2011: 9.8%
- 2014: 10.5%


**Diabetes Hospitalizations, 2010**

**Incidence rate per 10,000 residents, by ZIP code**

Source: 2010 vital records provided by the Tennessee Department of Health Office of Policy, Planning and Assessment

*Rates for some ZIP codes are not reported because the ZIP code has significant population across the county line, rendering the rate inaccurate. For the University of Tennessee campus area, rates are inaccurate because most students obtain health care using their parents' insurance, with illnesses recorded as occurring at their home address.
The proportion of adults with diabetes who perform self-blood glucose monitoring at least once daily.
- Healthy People 2020 target: 70.4 percent
- Knox County: 65 percent

The proportion of persons with diagnosed diabetes who receive formal diabetes education.
- Healthy People 2020 target: 62.5 percent
- Knox County: 51 percent

Source: BRFS, 2014

The prevalence of diabetes, especially in the African-American community, was cited as a critical health issue in the key informant interviews.

Source: Key informant interviews, 2014

**Benchmarks**

**Target Knox**

The proportion of adults with diabetes who perform self-blood glucose monitoring at least once daily.
- Healthy People 2020 target: 70.4 percent
- Knox County: 65 percent

The proportion of persons with diagnosed diabetes who receive formal diabetes education.
- Healthy People 2020 target: 62.5 percent
- Knox County: 51 percent

Source: BRFS, 2014

**FACT**

The prevalence of diabetes, especially in the African-American community, was cited as a critical health issue in the key informant interviews.

Source: Key informant interviews, 2014

37% of Quality of Life survey respondents chose diabetes as an important health problem among Knox County adults.

- Quality of Life Survey, 2014

**Disparities**

<table>
<thead>
<tr>
<th>Household Income</th>
<th>Percent of adults who reported they were diagnosed with diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $15,000</td>
<td>20.3</td>
</tr>
<tr>
<td>$15,000-$24,999</td>
<td>13.8</td>
</tr>
<tr>
<td>$25,000-$34,999</td>
<td>8.6</td>
</tr>
<tr>
<td>$35,000-$49,999</td>
<td>13.3</td>
</tr>
<tr>
<td>$50,000 or more</td>
<td>6.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education</th>
<th>Percent of adults who reported they were diagnosed with diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than high school</td>
<td>18.7</td>
</tr>
<tr>
<td>High school</td>
<td>13.9</td>
</tr>
<tr>
<td>Some college</td>
<td>9.1</td>
</tr>
<tr>
<td>College graduate</td>
<td>7.3</td>
</tr>
</tbody>
</table>

Source: BRFS, 2014

**Complications**

Diabetes can cause serious health complications including heart disease, blindness, kidney failure and lower-extremity amputations. Diabetes is the seventh leading cause of death in the U.S. and the eighth leading cause of death in Knox County.

**POSSIBLE RESOURCES**

- Hospitals/physicians in area
- YMCA Diabetes Prevention Program
- Knox County Health Department diabetes management classes
- Community awareness
Environmental Health

Health Priorities and Areas of Concern

- Access and availability of safe greenways, sidewalks
- Built environment factors contributing to poor health

FACT

Only 23 percent of individuals live within one-half mile of a park in Knox County. Data show a lack of access to parks contributes to a sedentary lifestyle and obesity.

Safety

The Knox County Health Department performed an analysis of automobile-pedestrian and automobile-bicycle crashes in Knox County that occurred Dec. 2006 - June 2011, based on data provided by the Knoxville Regional Transportation Planning Organization (TPO).

In that time period, there were 494 crashes involving pedestrians or bicyclists. Of those: • 348 crashes involved pedestrians • 145 crashes involved cyclists • 1 crash involved both

Given the relatively small percentage of pedestrians and bicyclists in Knox County the statistics reinforce the importance for everyone to safely share our roads.

Source: Pedestrian/Bicycling Crash Data Assessment for Knox County, Tennessee, 2012

Contributing Factors

- Air Quality
  Knox County has met Healthy People 2020 goals in 2013 and 2014. Prior to that, air quality was slowly improving despite a growing population.

- Drinking water
  In the past decade, there have been no reported waterborne disease outbreaks connected to any of our utility providers in Knox County.

- Waterways
  Since 2004, 500 miles of waterways have been added to the region’s list of impaired waterbodies in East Tennessee, meaning they are not safe for swimming or fishing.


Percentage of Knox County population with park access (within 0.5 mile of a park), by tract

TREND: STABLE

Source: ESRI/OSM 2013
A 2014 study found that, excluding the elderly, residents of neighborhoods with greater walkability had on average 13 percent lower development of diabetes over 10 years versus those in less walkable neighborhoods. Obesity was also lowest in the most walkable neighborhoods.

- People living in highly walkable neighborhoods are three times more likely to walk or bicycle and half as likely to drive as a means of transportation.

**Benchmarks**

- Knox County meets several goals for healthy drinking water supplies addressed in Healthy People 2020.
- Knox County also meets the Healthy People 2020 target for air quality, which aims to reduce the number of days the Air Quality Index (a figure created to measure outdoor air pollution) exceeds 100. In 2013 and 2014, Knox County Air Quality Management’s monitoring stations recorded no days with AQI over 100.

**Drinking water demand**

While there is a sufficient water supply available in East Tennessee at present, there is a rapidly increasing demand for drinking water that must be addressed in planning for the future.

**Housing Disparities**

29.7 percent of housing in Knox County meets one or more of these four conditions:

- Lack of complete plumbing
- Lack of complete kitchen facilities
- Gross rent or selected owner costs are greater than 30 percent of household income
- More than one person per room is living in the household

These factors can contribute to poor health in multiple ways.

Source: Economic Research Service of USDA, 2007-2011 or Knox County Community Health Status Indicators, 2015

**Walkability**

- A 2013 survey by the National Association of Realtors found that 8 in 10 Americans prefer being in a community that offers sidewalks and good places to walk.
- Six in 10 prefer a neighborhood featuring a mix of houses, shops and services within an easy walk versus a neighborhood that requires a car for every errand. Prices are higher and time to sell shorter for homes with sidewalks.


**POSSIVES/RESOURCES**

- Multiple greenways and parks in the area
- City of Knoxville Complete Streets Ordinance
- Safe Routes to School Partnership
- Legacy Parks Foundation
- Knox and Blount counties and a portion of Anderson County are now considered to be in attainment, a U.S. Environmental Protection Agency declaration that the area complies with key air-pollution standards.

Source: ET Index Livability Report Card 2015, Plan East Tennessee
Food Access

Health Priorities and Areas of Concern
- Access and availability of healthy food versus unhealthy food
- Potential misconceptions around perceived cost of healthy food versus unhealthy food

Benchmarks
- Diet Choices/Food Deserts
  Knox County high school students surveyed consistently eat fewer fruits and vegetables than state or national averages, a risk factor for obesity. In the YRBS, when high school students were asked if they ate five or more servings of fruit or vegetables during the previous week, the percent answering “yes” consistently fell 1-2 percent below state percentages and 4-5 percent below national percentages.

According to the USDA, food deserts are communities without ready access to fresh, healthy, and affordable food. The low-income neighborhoods shaded in dark green on the map at right have less access to markets where their families can obtain fresh fruits and vegetables.

FACT
Eating fruits and vegetables lowers the risk of developing many chronic diseases, and can also help with weight management.

Contributing Factors

Additional information on food choice behaviors of Knox County residents and students are reported in the section on Nutrition and Physical Activity, pages 26-27.
### PRODUCTION OF AND ACCESS TO FRUITS AND VEGETABLES

#### Food Production

<table>
<thead>
<tr>
<th></th>
<th>U.S.</th>
<th>Tenn.</th>
<th>Knox County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of cropland acreage harvested for fruits and vegetables (vegetables + orchards + berries)</td>
<td>2.4</td>
<td>0.6</td>
<td>0.30</td>
</tr>
<tr>
<td>Percentage of total land acreage harvested for fruits and vegetables (vegetables + orchards + berries)</td>
<td>0.4</td>
<td>0.1</td>
<td>0.03</td>
</tr>
</tbody>
</table>

#### Food Access

<table>
<thead>
<tr>
<th></th>
<th>U.S.</th>
<th>Tenn.</th>
<th>Knox County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of farmers markets per 100,000 residents</td>
<td>2.5</td>
<td>1.5</td>
<td>1.60</td>
</tr>
<tr>
<td>Percentage of farmers markets that accept SNAP</td>
<td>21.0</td>
<td>11.8</td>
<td>29.00</td>
</tr>
</tbody>
</table>

Sources: USDA Ag Census 2012; CDC State Indicator Report on Fruits and Vegetables, 2013

### Disparities

18.2% of black adults versus 13.1 percent of white adults reported always or usually feeling stressed about preparing nutritious meals.

38.9% of those with income less than $15,000 per year reported being stressed about preparing nutritious meals and 4.2 percent of those with income greater than $50,000 per year report the same.

37.2% of adults unable to work reported always or usually feeling stressed about preparing nutritious meals.

Source: BRFS, 2014

#### High schoolers and green vegetables

Percentage of high school students surveyed who ate green salad, carrots or other vegetables (excluding potatoes) three or more times per day during the seven days before the survey, 2013:

<table>
<thead>
<tr>
<th></th>
<th>Other race/ethnicity*</th>
<th>Black*</th>
<th>White</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Black</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.3</td>
</tr>
<tr>
<td><strong>White</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.8</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.6</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.7</td>
</tr>
</tbody>
</table>

* Limited reliability – interpret with extreme caution

Source: High School YRBS, 2013

### POSITIVES/RESOURCES

- Emergency food resources
- Knox County Schools Nutrition Program
- Increase in farmers markets and those that accept SNAP/EBT.
- The Knoxville-Knox County Food Policy Council is the oldest municipal food policy council in the U.S., formed in 1982 as a result of efforts of the then Department of Planning at the University of Tennessee.
Heart Disease

Health Priorities and Areas of Concern

- See Obesity, Nutrition and Physical Activity.
- Race, income and education disparities for hypertension and heart disease

<table>
<thead>
<tr>
<th>Adults who reported they have had a heart attack:</th>
<th>2005</th>
<th>2008</th>
<th>2011</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults who reported they have hypertension:</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>


Benchmark:

- **Coronary heart disease deaths**
  - **Healthy People 2020 target:** 103.4 deaths per 100,000
  - **Knox County:** 133.5 deaths per 100,000
  
  Source: Health Information Tennessee, 2012

- **Proportion of adults with hypertension**
  - **Healthy People 2020 target:** 29.9 percent
  - **Knox County:** 33.4 percent
  
  Source: BRFS, 2014

---

... the less economically secure you are, the more stress you’re under on a constant daily basis, at your job, at home and wherever. And that in and of itself then becomes a contributor to all sorts of bad health conditions and so on.

—Focus Group, 2014

FACT

Diseases of the heart are the second leading cause of death in Knox County.

Source: 2013 vitals records provided by the Office of Policy, Planning and Assessment, Tennessee Department of Health
1.9% of individuals who are employed reported having had a heart attack ...

Compared to **14.2 percent** of individuals who are unable to work.

Males were more likely to report having a heart attack than females.

**Males**

6.2% compared to **3.5%** of females.

**Disparities**

**Education**

Individuals who did not achieve a high school education were most likely to report being told by a health professional that they had angina or coronary heart disease (**11 percent**) than college graduates (**5.2 percent**).

**Wealth**

Individuals who had an annual household income less than $15,000 were most likely to report having a heart attack (**8.4 percent**) than individuals with a household income greater than $50,000 (**2.9 percent**).

**Race**

Blacks (**46.3 percent**) were more likely to report that they were told by a health professional that they have hypertension than whites (**34 percent**) or individuals of other races/ethnicities (**13.9 percent**).

**Key Risk Factors**

About **half of Americans** have at least one of the following three risk factors:

- High blood pressure
- High LDL cholesterol
- Smoking

These medical conditions put people at higher risk for heart disease:

- Diabetes
- Excessive weight
- Obesity
- Poor diet
- Physical inactivity
- Excessive alcohol use

Sources: Centers for Disease Control and Prevention; Heart Disease Facts, 2015

POSITIVES/RESOURCES

- Hospitals/physicians in area
- Awareness in community

Source: BRFS, 2014
Injury and Violence

Health Priorities and Areas of Concern

- Bullying among adolescents
- Poisoning deaths (often related to opioid and meth use)
- Falls among adults 65 and older
- Motor vehicle accidents

Prevalence - Youth Violence

- 1 in 5 high school students surveyed reported being bullied.
- Nearly half of middle school students surveyed reported being bullied.
- 13.9 percent of middle school students surveyed said they rarely or never felt safe and secure at school.

- Broken down by race:
  - White: 11.4%
  - Black: 24.1%
  - Other race/ethnicity: 15.7%

Poisoning deaths (often related to opioid and meth use) have surpassed motor vehicle deaths (ages 12 and older).

Contributing Factors

Accidents are the third leading cause of death in Knox County after cancer and heart disease. The majority of these accidents are related to poisonings and motor vehicle incidents.
Benchmarks - Injury

Poisoning deaths among all persons
- Healthy People 2020 target: 13.2 deaths per 100,000
- Knox County (2007-2009, 3 year average): 17.4 deaths per 100,000 deaths due to accidental poisoning and exposure to noxious substances.

Unintentional injuries
- Healthy People 2020 target: 36.4 deaths per 100,000
- Knox County: 52.6 deaths per 100,000

Sources: High School and Middle School YRBS, 2013; Health Information Tennessee, 2009; 2013 vital records provided by the Office of Policy, Planning and Assessment, Tennessee Department of Health

Disparities

Youth Violence
- 7.3 percent of high school students surveyed reported being physically forced to have unwanted sexual intercourse.
- Students receiving grades of mostly D's or F's were most likely to report being electronically bullied.
  - A's: 12.8%
  - B's: 14.7%
  - C's: 17.4%
  - D/F's: 28.8%

Going armed
- Percentage of high school students surveyed who reported they had carried a weapon (gun, knife or club) in the past 30 days:
  - Males: 30.8%
  - Females: 8%
- 82.2% of middle school students surveyed reported having been in a physical fight.

Reported Crimes
Knox County Sheriff's Office and Knoxville Police Department

<table>
<thead>
<tr>
<th>Crime</th>
<th>2010</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic violence</td>
<td>3,772</td>
<td>3,922</td>
</tr>
<tr>
<td>Crimes against persons</td>
<td>7,517</td>
<td>7,169</td>
</tr>
</tbody>
</table>


FACT
In 2013, more juveniles were arrested for simple assault than any other crime committed by juveniles.

Source: Middle and High School YRBS, 2013

POSITES/RESOURCES
- Metropolitan Drug Commission
- Law enforcement community
- Education about bullying is available to Knox County Schools teachers
- Knoxville-Knox County Senior Safety Task Force
- Knox County Health Department's Senior Fall Prevention Program
Maternal, Infant and Child Health

Health Priorities and Areas of Concern

- Barriers or gaps in service for preconception care/prenatal care access
- Neonatal Abstinence Syndrome (NAS) and substance use among pregnant women

Prevalence

- In 2013, 70 percent of new mothers in Knox County received adequate prenatal care.
- In 2014, there were 20.2 reported NAS cases per 1,000 live births in Knox County. The state average is 12.3.
- There were 4.3 substantiated child abuse and neglect cases per 1,000 youth in 2013, down from 6 cases/1,000 youth in 2009.

Sources: 2013 vital records provided by the Office of Policy, Planning and Assessment, Tennessee Department of Health; Health Information Tennessee for appropriate years

Neonatal Abstinence Syndrome in Tennessee, 1999-2014

Neonatal Abstinence Syndrome (NAS) occurs when an infant is born dependent on drugs. As of Jan. 1, 2013, NAS is a reportable disease in Tennessee, a designation which is important in the planning and evaluation of prevention programs.

Percentage of births with adequate prenatal care:

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>74.7%</td>
<td>83.0%</td>
<td>77.8%</td>
<td>67.4%</td>
<td>70.0%</td>
<td>70.0%</td>
</tr>
</tbody>
</table>

Sources: Tennessee Department of Health; Office of Health Statistics; Tennessee Department of Health Neonatal Abstinence Syndrome Weekly Surveillance Summary, 2013 and 2014; Hospital Discharge Data System (HDDS) and Birth Statistical System. Analysis includes inpatient hospitalizations with age less than one, and any diagnosis of drug withdrawal syndrome of newborn (ICD-9-CM 779.5). HDDS records may contain up to 18 diagnoses. Infants were included if any of these diagnosis fields were coded 779.5. Note that these are discharge-level data and not unique patient data.
Non-Hispanic black women were at greater risk for having a low birth weight child and/or pre-term delivery compared to women of other races/ethnicities.

Sources: 2013 vital records provided by the Office of Policy, Planning and Assessment, Tennessee Department of Health

Preterm birth (birth before 37 weeks gestation) is the leading cause of newborn death in the U.S. Infant mortality is higher for infants born with inadequate prenatal care. Babies who survive an early birth often have breathing problems, cerebral palsy, intellectual disabilities and other lifelong problems. Even babies born just a few weeks early have higher rates of hospitalization and illness than full-term infants. In addition, preterm births cost the nation more than $26 billion annually, according to the Institute of Medicine.

- Premature births accounted for 16.9 percent of all infant deaths in the U.S. in 2010.
- That same year, the rate of infant deaths due to prematurity and low birth weight was 145.9 deaths /100,000 live births for Tennessee, compared to 103.8 deaths /100,000 live births in the U.S.

Neonatal Abstinence Syndrome

In addition to the human cost, the average monetary cost to stabilize a newborn with Neonatal Abstinence Syndrome (NAS) is $62,973 versus $7,258 to stabilize a newborn not suffering withdrawals. The Tennessee Department of Health estimates that from January to October 13, 2013, NAS cost the state $36,771,900.

- In the 2014 state NAS report, Knox County had the highest percentage (11 percent) of NAS cases.
- In 2014, 36.6 percent of NAS cases in Knox County were attributed to illicit drug use, 27.7 percent were attributed to prescription drugs, and 35.7 percent are a combination of the two.


Distribution of NAS Cases by Region, 2013

As percentage of total infants born in 2013

- Knox County: 8.4 percent (2013)
- Healthy People 2020 target: 7.8 percent
- Knox County: 70 percent (2013)
- Healthy People 2020 target: 77.6 percent
- Knox County: 10.8 percent (2013)
- Healthy People 2020 target: 6.0/1,000 live births
- Knox County: 4.9/1,000 live births (2013)
- Healthy People 2020 target: 11.4 percent

POSITIVES/RESOURCES

- Metropolitan Drug Commission
- Great Starts and Susannah’s House treatment programs
- East Tennessee Children’s Hospital
- Area prenatal care providers
- Local child abuse prevention agencies
Mental Health

Health Priorities and Areas of Concern

- Access to mental health services
- Depression/suicidal thoughts among adolescents

### Benchmarks

**Suicide attempts by adolescents**

- **Healthy People 2020 target:** 1.7 percent of adolescents attempting suicide.
- **Knox County:** 6.2 percent of high school students surveyed reported they attempted suicide in the past 12 months.

### Contributing Factors

- **Healthy People 2020 target:** 1.7 percent of adolescents attempting suicide.
- **Knox County:** 6.2 percent of high school students surveyed reported they attempted suicide in the past 12 months.

#### Sources:

- Health Information Tennessee, 2009
- High School and Middle School YRBS, 2013
17% of U.S. adults (estimated) are considered to be in a state of optimal mental health. There is emerging evidence that positive mental health is associated with improved health outcomes.

East Tennessee is home to more than one million residents, of whom 26.2% will need mental health treatment in any single year, and 51% will need mental health treatment in their lifetime according to the National Institute of Mental Health.

Fewer than four of every ten people in need of mental health treatment receive care in any given year.

Untreated mental illness will worsen over time leading to impairment and disability. Mental illness is the leading cause of disability in people ages 15-44.

Disparities

17.2% of individuals who did not complete high school reported they were dissatisfied or very dissatisfied with their lives compared to 3.7% of individuals who graduated from college.

20% of individuals with a household income less than $15,000 reported feeling dissatisfied or very dissatisfied with their lives.

On the survey instrument, poor mental health days were described as those that included stress, depression and problems with emotions.

Middle school students surveyed reported seriously thinking about suicide:

<table>
<thead>
<tr>
<th>Other race/ethnicity</th>
<th>Black</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.0%</td>
<td>15.1%</td>
<td>19.2%</td>
</tr>
</tbody>
</table>

Middle school and high school females were more likely to report seriously thinking about suicide than males.

Middle school students surveyed reported ever attempting suicide:

<table>
<thead>
<tr>
<th>Other race/ethnicity</th>
<th>Black</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.2%</td>
<td>11.1%</td>
<td>5.1%</td>
</tr>
</tbody>
</table>

*On the survey instrument, poor mental health days were described as those that included stress, depression and problems with emotions.

POSITIVES/RESOURCES:
- Cherokee Health Systems
- Helen Ross McNabb Center
- Mental Health Association of East Tennessee
**Health Priorities and Areas of Concern**
- Physical education in schools
- Vegetable and fruit consumption by children/adolescents
- Access to healthy foods
- Screen time in youth
- See *Environmental Health*

### Prevalence

- **35.8 percent** of high school students surveyed reported playing video games or using the computer for non-academic purposes for three or more hours on an average school day.
- **17.8 percent** of high school students surveyed reported they attended physical education classes every day during the school week.
- Only **9.7 percent** of high school students surveyed reported eating vegetables three or more times per day during the seven days before the survey.
- **23.8 percent** of high school students surveyed report watching TV for three or more hours on an average school day.
- **56.5 percent** of high school students surveyed played on at least one sports team in the previous year.

### Contributing Factors

- High school students surveyed who reported attending physical education classes every day during the school week:
  - 2005: 17.3%
  - 2007: 19.3%
  - 2009: 23.2%
  - 2011: 20.6%
  - 2013: 17.8%

- High school students surveyed who played video games or used the computer for something other than school work for three or more hours on an average school day:
  - No data (2005)
  - 2007: 18.9%
  - 2009: 18.7%
  - 2011: 26.2%
  - 2013: 35.5%

- Knox County adults who reported no leisure time physical activity in the past 30 days:
  - No data (2008)
  - 2009: 23.7%
  - 2011: 21.1%
  - 2014: 21.4%

- Knox County adults who reported they always or usually stress about having enough money to pay for nutritious meals:
  - No data (2011)
  - 2014: 8.8%

Sources: YRBS, BRFS for appropriate years

**The Centers for Disease Control and Prevention estimates that more than $75 billion in health care costs can be linked to lack of physical activity.**

*Source: CDC Preventing Obesity and Chronic Diseases Through Good Nutrition and Physical Activity, 2008*
Disparities

21.6% of female middle school students surveyed reported fasting 24 hours or more to lose weight or to keep from gaining weight versus 11.3% of male middle school students.

28.9% of black adults reported no leisure time physical activity in the past 30 days.

20.6% of white adults reported the same.

46.2% of adults with less than a high school education reported no leisure time activity in past 30 days.

13.2% of adults with a college degree reported the same.

Most of the health problems I see amongst my neighbors are related to poverty. Just literally not having cash to make good food choices.

“Focus Group, 2014

POSITIVES/RESOURCES:

• Increase of farmers markets and farmers accepting SNAP
• Greenways/parks in the community
• Events to increase physical activity in the community (races, Let’s Move event)
• Passing of the Urban Agriculture Zoning Ordinance
• Knox County Health Department Nutrition Education Activity Training (NEAT) program

Source: BRFS, 2014

• Adults earning less than $15,000 per year reported they were always or usually stressed about preparing nutritious meals at a far greater rate than those with incomes between $35,000 and $49,999.

31.4% Poorer

6.6% Wealthier

27.6% of students reporting D’s and F’s versus students reporting A’s (12.7%).

This was also more common in students reporting D’s and F’s (27.6%) versus students reporting A’s (12.7%).

Source: Middle School YRBS, 2013

Source: BRFS, 2014

21.6% of female middle school students surveyed reported fasting 24 hours or more to lose weight or to keep from gaining weight versus 11.3% of male middle school students.

28.9% of black adults reported no leisure time physical activity in the past 30 days.

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• Passing of the Urban Agriculture Zoning Ordinance
• Knox County Health Department Nutrition Education Activity Training (NEAT) program

Source: BRFS, 2014
**Health Priorities and Areas of Concern**

- See Nutrition and Physical Activity
- See Food Access
- See Environmental Health

**Prevalence**

**Students**
- **13.5 percent** of high school students surveyed were obese, based on self-reported height and weight.
- **24.0 percent** of middle school students surveyed described their weight to be slightly overweight or overweight.
- **45.3 percent** of middle school students surveyed reported they are trying to lose weight.
  
  Source: High School and Middle School YRBS, 2013

**Adults**
- **28.6 percent** of Knox County adults are obese based on self-reported height and weight.
- **32.9 percent** of Knox County adults are overweight based on self-reported height and weight.

  Source: BRFS, 2014

**Trends**

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Obese Knox County adults (self-reported):</td>
<td><strong>21.1%</strong></td>
<td><strong>24.4%</strong></td>
<td><strong>28.3%</strong></td>
<td><strong>27.6%</strong></td>
<td><strong>28.6%</strong></td>
</tr>
</tbody>
</table>

Source: BRFS for appropriate years

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<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Overweight Knox County adults (self-reported):</td>
<td><strong>34.5%</strong></td>
<td><strong>36.3%</strong></td>
<td><strong>33.4%</strong></td>
<td><strong>35.3%</strong></td>
<td><strong>32.9%</strong></td>
</tr>
</tbody>
</table>

Source: BRFS for appropriate years

<table>
<thead>
<tr>
<th>Year</th>
<th>2010-2011</th>
<th>2011-2012</th>
<th>2012-2013</th>
<th>2013-2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knox County students surveyed who measured as obese:</strong></td>
<td><strong>18.7%</strong></td>
<td><strong>17.9%</strong></td>
<td><strong>16.9%</strong></td>
<td><strong>17.4%</strong></td>
</tr>
</tbody>
</table>

Based on actual height and weight measures.

Source: Knox County Schools BMI Report for applicable years

**Benchmarks**

**Proportion of children and adolescents ages 2 to 19 who are obese**
- **Healthy People 2020 target**: 14.5 percent
- **Knox County**: 17.4 percent

**Proportion of adolescents age 12 to 19 who are obese**
- **Healthy People 2020 target**: 16.1 percent
- **Knox County**: 13.5 percent (self-reported data only)

**Proportion of adults who are obese**
- **Healthy People 2020 target**: 30.5 percent
- **Knox County**: 28.6 percent (self-reported data only)

**Proportion of adults who are at a healthy weight**
- **Healthy People 2020 target**: 33.9 percent
- **Knox County**: 38.5 percent (self-reported data only)

Sources: Knox County Schools BMI report, 2013-2014; YRBS, 2013; BRFS, 2014
Obesity-related health issues include but are not limited to hypertension, heart disease, stroke, certain cancers, asthma, diabetes and osteoarthritis.

**POSITIVES/RESOURCES:**
- Childhood Obesity Coalition
- Parks/recreation areas/greenways in community
- Farmers markets
- Knox County Health Department’s Project Diabetes grant work

I mean we’re talking about obesity and, you know, problems with the kids. They’ve got to get out. They’ve got to do things, and the only way to do that is to require them. I’m a firm believer in that.

– Focus Group, 2014
Oral Health

Health Priorities and Areas of Concern

- Access to oral health services for the unemployed and those unable to work
- Disparities in receiving oral health services
- Dental health in youth

Prevalence

- Percent of Knox County adults over 65 who reported they had all teeth extracted due to infection, tooth decay or gum disease:
  21.4%
  Sources: BRFS, 2014

- Percent of Knox County adults who reported visiting a dentist in the past year:
  62.7%
  Sources: BRFS, 2014

- Knox County dentist/resident ratio:
  55.8/100,000
  Source: Annie E. Casey Foundation’s Kids Count data for Knox County, 2014

Contributing Factors

- Source: Annie E. Casey Foundation’s Kids Count data for Knox County, 2014

Trends

Percentage of adults who have had one or more tooth extractions due to infection:

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>41.7%</td>
</tr>
<tr>
<td>2011</td>
<td>40.7%</td>
</tr>
<tr>
<td>2014</td>
<td>43.8%</td>
</tr>
</tbody>
</table>

Percentage of adults who have had all of their teeth extracted:

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>6.7%</td>
</tr>
<tr>
<td>2011</td>
<td>7.8%</td>
</tr>
<tr>
<td>2014</td>
<td>8.6%</td>
</tr>
</tbody>
</table>

Percentage of adults who reported visiting a dentist in the past year:

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>68.7%</td>
</tr>
<tr>
<td>2008</td>
<td>66.8%</td>
</tr>
<tr>
<td>2011</td>
<td>70.4%</td>
</tr>
<tr>
<td>2014</td>
<td>62.7%</td>
</tr>
</tbody>
</table>

Percentage of adults 65 years and older who reported they had all of their teeth extracted due to infection, tooth decay or gum disease:

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>25.8%</td>
</tr>
<tr>
<td>2008</td>
<td>20.3%</td>
</tr>
<tr>
<td>2011</td>
<td>24.1%</td>
</tr>
<tr>
<td>2014</td>
<td>21.4%</td>
</tr>
</tbody>
</table>

Sources: BRFS for appropriate years
Income, health status and oral health literacy are some of the barriers to accessing oral health care.

Poor dental health impacts the quality of life for those affected. Pain, diet, social interaction, speech, physical appearance and self-esteem are issues that many face.

**Disparities**

- Percent of adults over 65 who reported they had all teeth extracted:
  - **Black non-Hispanic**
    - 36.6%
  - **White non-Hispanic**
    - 19.3%

- Percent of adults over 65 with less than a high school education who reported they had all teeth extracted compared to 6.7 percent of those with a college degree.

- Percent of adults reporting they visited a dentist in the past year:
  - **Other race/ethnicity**
    - 41.2%
  - **Black**
    - 48.2%
  - **White**
    - 65.7%

**Percentages of Knox County adults who reported seeing a dentist within the past year.**

- Adults with household income greater than $50,000: 84.6%
- Adults with household income less than $15,000: 34%

**Positives/Resources**

- Comparable number of dentists per 100,000 residents with other Tennessee metropolitan areas
- Knox County Health Department dental clinic and in-school sealant program
- Elgin Foundation Dental Program at Knox County’s Community Schools

Source: BRFS, 2014
Reproductive and Sexual Health

Health Priorities and Areas of Concern

- Birth control education
- Increase in sexually transmitted infection rates

Benchmarks

- Percentage of males and females 15-17 who have never had sexual intercourse:
  - Healthy People 2020 target females: 80.2%
  - Knox County females: 63.3%
  - Healthy People 2020 target males: 79.2%
  - Knox County males: 61.2%

- The proportion of sexually active males and females ages 15-19 who used a condom at last intercourse:
  - Healthy People 2020 target females: 55.6%
  - Knox County females: 46.4%
  - Healthy People 2020 target males: 81.5%
  - Knox County males: 61.7%

- The proportion of males and females who received formal instruction on sexually transmitted diseases before they are 18 years old:
  - Healthy People 2020 target, females: 95.8%
  - Healthy People 2020 target, males: 93.8%
  - Knox County: 89.9 percent among high school students

Gonorrhea rates among males and females ages 15-44, per 100,000 population:

- Healthy People 2020 target:
  - FEMALES: 251.9
  - MALES: 194.8
- Knox County:
  - FEMALES: 236.6
  - MALES: 266.1

Contributing Factors

Sources: Knox County Patient Reporting Investigating Surveillance Manager (PRISM) data, 2013
Disparities

- Knox County high school students who reported grades of mostly D’s or F’s were most likely to report having sexual intercourse with one or more people during the past three months compared to students making mostly A’s.

**Grades: D’s/F’s**

37.9%

**Grades: A’s**

16.7%

Source: High School YRBS, 2013

- In 2013, 30.9 percent of white infants were born to unmarried women while 75.4 percent of black infants were born to unmarried women.

Source: 2013 vital records provided by the Office of Policy, Planning and Assessment, Tennessee Department of Health

- Sexually active students reporting condom use:

**9th Graders**

48.4%

**Seniors**

60.2%

Source: High School YRBS, 2013

CHLAMYDIA: BLACKS VS. WHITES

- Incidence rates of chlamydia are greatest among black females and males between the ages of 15 and 34. **The incidence of chlamydia among blacks is six times greater than incidence among whites.**

**CHLAMYDIA: BLACKS & WHITES, 2013**

(Rate per 100,000 people)

<table>
<thead>
<tr>
<th>Ages</th>
<th>Blacks</th>
<th>Whites</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>6,332</td>
<td>952</td>
</tr>
<tr>
<td>20-24</td>
<td>8,987</td>
<td>1,519</td>
</tr>
<tr>
<td>25-29</td>
<td>4,797</td>
<td>729</td>
</tr>
<tr>
<td>30-34</td>
<td>2,773</td>
<td>356</td>
</tr>
<tr>
<td>35-39</td>
<td>1,591</td>
<td>140</td>
</tr>
<tr>
<td>40-44</td>
<td>738</td>
<td>69</td>
</tr>
<tr>
<td>45-54</td>
<td>216</td>
<td>32</td>
</tr>
</tbody>
</table>

Source: Knox County Patient Reporting Investigating Surveillance Manager data (PRISM), 2013

- Chlamydia incidence is stable over the past several years, but remains consistently high in teens and young adults.

POSITIVES/RESOURCES

- Hospitals and physicians in the area
- Lisa Ross Birth and Women’s Center
- Health department programs to track, prevent and treat sexually transmitted infections.
- Knox Adolescent Partners in Prevention Initiative (KAPPI)
- Women’s Health Clinic at the Knox County Health Department

They hear everybody talking about it, and they think it’s some big great thing, and it can be, but when you’re 12, 13 and 14 years old you’re not ready for the consequences ... and the kids need that in school. I think it should be a class, and you can consent to take it or not.  — Focus Group, 2014
Substance Use

Health Priorities and Areas of Concern

• Marijuana access/use among youth
• Opioid access and use
• Binge drinking among youth

Benchmarks

• Proportion of adolescents who reported using alcohol or any illicit drugs in the past 30 days
  • Healthy People 2020 target: 16.6 percent
  • Knox County: 29.8 percent report alcohol use; 23.3 percent report marijuana use

• Proportion of adolescents who reported using marijuana in the past 30 days
  • Healthy People 2020 target: 6 percent
  • Knox County: 23.3 percent

• Proportion of students who reported being offered, given or sold illegal drugs on school property
  • Healthy People 2020 target: 20.4 percent
  • Knox County: 22.5 percent

• Proportion of adolescents ages 12 to 17 who reported engaging in binge drinking in the past month
  • Healthy People 2020 target: 8.6 percent
  • Knox County: 18.3 percent

High school students

Reported binge drinking in the past 30 days:

<table>
<thead>
<tr>
<th>Year</th>
<th>No data</th>
<th>Knox County</th>
<th>Knox County target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>16.5%</td>
<td>23.3%</td>
<td>19.3%</td>
</tr>
<tr>
<td>2009</td>
<td>19.5%</td>
<td>22.8%</td>
<td>18.3%</td>
</tr>
<tr>
<td>2011</td>
<td>20.7%</td>
<td>23.3%</td>
<td>19.3%</td>
</tr>
<tr>
<td>2013</td>
<td>22.5%</td>
<td>23.3%</td>
<td>19.3%</td>
</tr>
</tbody>
</table>

Reported non-medical use of prescription drugs:

<table>
<thead>
<tr>
<th>Year</th>
<th>No data</th>
<th>Knox County</th>
<th>Knox County target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>19.6%</td>
<td>22.5%</td>
<td>18.6%</td>
</tr>
<tr>
<td>2009</td>
<td>20.7%</td>
<td>23.3%</td>
<td>18.6%</td>
</tr>
<tr>
<td>2011</td>
<td>29.0%</td>
<td>23.3%</td>
<td>18.6%</td>
</tr>
<tr>
<td>2013</td>
<td>22.5%</td>
<td>23.3%</td>
<td>18.6%</td>
</tr>
</tbody>
</table>

Were offered, given or sold illegal drugs on school property year before:

<table>
<thead>
<tr>
<th>Year</th>
<th>Knox County</th>
<th>Knox County target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>19.3%</td>
<td>23.3%</td>
</tr>
<tr>
<td>2009</td>
<td>23.3%</td>
<td>23.3%</td>
</tr>
<tr>
<td>2011</td>
<td>22.2%</td>
<td>23.3%</td>
</tr>
<tr>
<td>2013</td>
<td>23.3%</td>
<td>23.3%</td>
</tr>
</tbody>
</table>

Reported marijuana use in the past 30 days:

<table>
<thead>
<tr>
<th>Year</th>
<th>Knox County</th>
<th>Knox County target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>19.3%</td>
<td>23.3%</td>
</tr>
<tr>
<td>2009</td>
<td>23.3%</td>
<td>23.3%</td>
</tr>
<tr>
<td>2011</td>
<td>22.2%</td>
<td>23.3%</td>
</tr>
<tr>
<td>2013</td>
<td>23.3%</td>
<td>23.3%</td>
</tr>
</tbody>
</table>

Source: YRBS for appropriate years.

Neonatal Abstinence Syndrome (NAS)

From 2000 to 2010, there was a 10-fold increase in NAS cases in Tennessee. East Tennessee has the highest NAS rates in the state.

In 2014, 36.6 percent of NAS cases in Knox County were attributed to illicit drug use, 27.7 percent were attributed to prescription drugs, and 35.7 percent are a combination of the two.

Source: NAS Summary Archive, Tennessee Department of Health, 2013-2014

Contributing Factors

1. Individual
2. Family
3. School

**Disparities High School Students**

34.4 percent of black, non-Hispanic high school students surveyed reported using marijuana in the past 30 days. In contrast, 20.7 percent of white, non-Hispanic students surveyed reported the same.

**Black, non-Hispanic 34.4%**

**White, non-Hispanic 20.7%**

Source: High School YRBS, 2013

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**TennCare** paid $78 million in claims for people with drug-related diagnoses in FY 2011 (an increase of 20 percent over FY 2010) with an average per-member, per-year payment of $8,122.

The costs associated with a TennCare member with drug abuse-related diagnosis is twice that of the average TennCare member.

Source: Actuarial Review of the TennCare Program, January 2012

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40.3 percent of high school students surveyed who reported grades of mostly D’s and F’s reported using marijuana in the past 30 days compared to...

**21.8 percent** of students who reported grades of mostly A’s.

**47.1 percent** of high school students surveyed who reported grades of mostly D’s and F’s reported drinking alcohol in the past 30 days compared to ...

**8.9 percent** of students who reported grades of mostly A’s.

Source: High School YRBS, 2013

---

**37.4 percent** of high school students surveyed who reported grades of mostly D’s and F’s reported taking prescription drugs not prescribed to them compared to ...


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**POSITIVES/RESOURCES**

- Metropolitan Drug Commission
- Law enforcement agencies
- Coalition for medication collection events
- Area treatment facilities

**No. 2**

- Tennessee ranks No. 2 per capita in the number of Schedule II controlled substances (medications with a high potential for abuse) prescribed in the United States, with the 8th highest drug overdose mortality rate (16.9 per 100,000 people).

Tobacco Use

Health Priorities and Areas of Concern

- Tobacco use, particularly in youth and pregnant women
- Increased use of e-cigarettes and vaping products

Prevalence High school students surveyed

- **18.2 percent** smoked cigarettes in the past 30 days.
- **9.9 percent** reported using smokeless tobacco in past 30 days.
- **17.6 percent** reported smoking cigars in past 30 days.
- **54.4 percent** of those who smoked reported cessation attempts year before survey.

Knox County Adults

- **21.2 percent** of adults reported smoking cigarettes some days or every day.
- **11.9 percent** of women reported smoking some time during pregnancy in 2013.

Adults reporting smoking some days or every day

- 2005: 24.4%
- 2006: 22.2%
- 2007: 18.9%
- 2008: 21.5%
- 2009: 20.4%
- 2010: 18.2%
- 2011: 17.8%
- 2012: 11.4%
- 2013: 9.9%
- 2014: 21.2%

High school students surveyed who reported smoking in the past 30 days

- 2005: 18.2%
- 2006: 20.4%
- 2007: 21.5%
- 2008: 20.4%
- 2009: 18.2%
- 2010: 18.2%
- 2011: 18.2%
- 2012: 18.2%
- 2013: 18.2%
- 2014: 21.2%

High school students who reported they use smokeless tobacco

- **17.4 percent** of male high school students surveyed reported using smokeless tobacco products in past 30 days.

Sources: BRFS, 2014; High School YRBS, 2013; 2013 vital records provided by the Office of Policy, Planning and Assessment, Tennessee Department of Health

Increasing e-cigarette use among middle and high school students tripled from 2013 to 2014. The 2015 Knox County YRBS will collect data about e-cigarette use. Previously, local data were not available.

Sources: National Youth Tobacco Survey Findings, 2014
Tobacco use increases the risk of cancer, heart disease, stroke and respiratory illnesses to name a few, but the list is exhaustive as tobacco use impacts every organ of the body. Half of all current smokers who continue smoking will die from a tobacco-related illness.

Diseases of the respiratory system are the No. 1 reason for hospitalization among children 1-9 years old. Secondhand smoke exposure has a significant impact on the occurrence of respiratory illness, especially among youth.

**Disparities**

- **Almost half of adults** with less than a high school education reported they were smokers while only 7.7 percent of college graduates reported they were smokers.

  Sources: BRFS, 2014

- **Percent of adults who reported they were smokers:**

  - Black: 29.3%
  - White: 20.9%

  Sources: BRFS, 2014

- **Adults who were unable to work reported they were smokers at more than twice the proportion** of employed adults.

  Sources: BRFS, 2014

**Moms who smoke** during pregnancy are at a greater risk for having a low birth weight and/or preterm delivery compared to moms who do not smoke during pregnancy.

**POSITIVES/RESOURCES:**

- Non-Smoker Protection Act
- Tobacco settlement funding for prevention efforts
- Tennessee Tobacco QuitLine
- Smoke-Free Knoxville Coalition

Sources: Maternal and Child Health Bureau Child Health USA, 2011