



PUBLIC HEALTH

PROTECT • PROMOTE • PREVENT

2022 Annual Report

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Table of Contents

Foreword	3
1. Vital Statistics.....	4
2. Environmental Health.....	7
3. Women, Infants, and Children (WIC).....	10
4. Public Health Education & Nursing (PHEN)	11
5. Immunizations.....	14
6. Social Determinants of Health	15

Foreword

Knox County



Since the merger of the city and county health departments to establish Knox Public Health (KPH), our goal has been to alleviate any health burdens to those who need it most within the Knox County area. 2022 was no exception. Despite the many challenges imposed by the COVID-19 pandemic and its fallout, our teams carried out their work across over 500 square miles in the county. Throughout this report we highlight what we have achieved during the past year and the impact our work has had on our community’s health and lifestyle.

Knox Public Health’s mission is to be committed to the health of the community by promoting healthy lifestyles, preventing illness, and protecting the community. Our vision is to continue to be a leader in public health by addressing community issues through proactive and innovative solutions so that all residents may experience optimal health and a safe environment. We are especially committed to safeguarding the health of the people in our community who are at increased/higher risk of having poorer health outcomes driven by the social determinants of health.

In the following report you will find the main 2022 statistics and figures for our programs on Vital Statistics, Environmental Health, Women, Infant & Children (WIC), and Public Health Education and Nursing (PHEN), as well as Social Determinant of Health Data Summary. Some of the areas identified for improvements through education and prevention are immunization rates and vector borne illnesses.

“With rare exceptions, all of your most important achievements on this planet will come from working with others—or, in a word, partnership”— Paul Farmer.



A handwritten signature in blue ink, which appears to read 'Zach Green'. The signature is stylized and fluid.

Zach Green, Knox Public Health Commissioner

1. Vital Statistics

The collection of vital statistics is the means by which we track and document the health of the community. These basic statistics - the numbers of births and deaths and the circumstances of their occurrence - can shed light on immediate population health issues we see developing and allow us to respond to any worsening or new developments.

During 2022, 489 births were recorded in Knox County, in comparison to 546 births recorded in 2021. This is within the standard rate of births for our population size, 7.89 births per 1000 people in 2022. 7.89 is down 0.92 births from 8.81 births per 1000 people in 2021. As indicated in Figure one, the number of teen mother has been steadily decreasing since 2020, from 34 cases that year, to 28 cases for 2021, and 24 for 2022. Cases of single mothers dropped from 210 cases in 2021 to 196 in 2022. Similarly, the cases of smoking mothers went down by 10 women, from 74 in 2021 to 64 in 2022. Moreover, home births have increased significantly during the reporting period, going from 42 cases in 2021 to 58 in 2022. Finally, low birth weight continues to decrease since 2020 with 20 cases, to 15 cases in 2021 and a slight increase for 2022 with 16 cases.

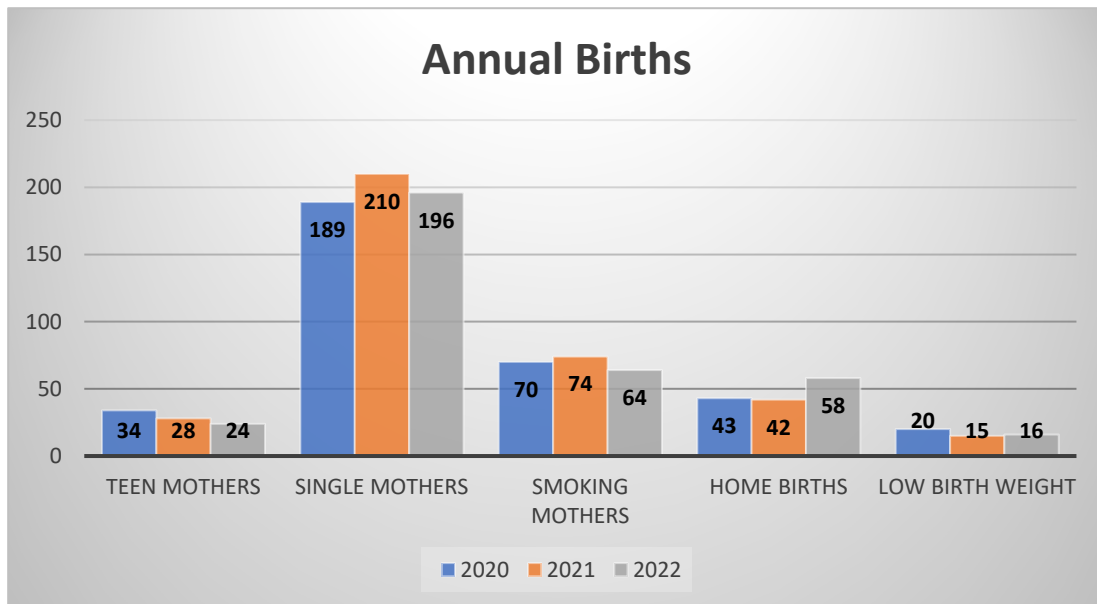


Figure1: Annual Births 2020 – 2022 Knox Public Health

As for top cases of mortality, Figure 2 shows that 629 deaths were recorded in 2022, down from 653 in 2021. This is a rate of 10.15 deaths per 1000 people in Knox County down from 10.53 deaths per 1000 people.

Understanding the medical afflictions that effect the population will help us better treat them and prevent future health problems. It allows us to analyze what might be leading to the causes of mortality that we are witnessing.

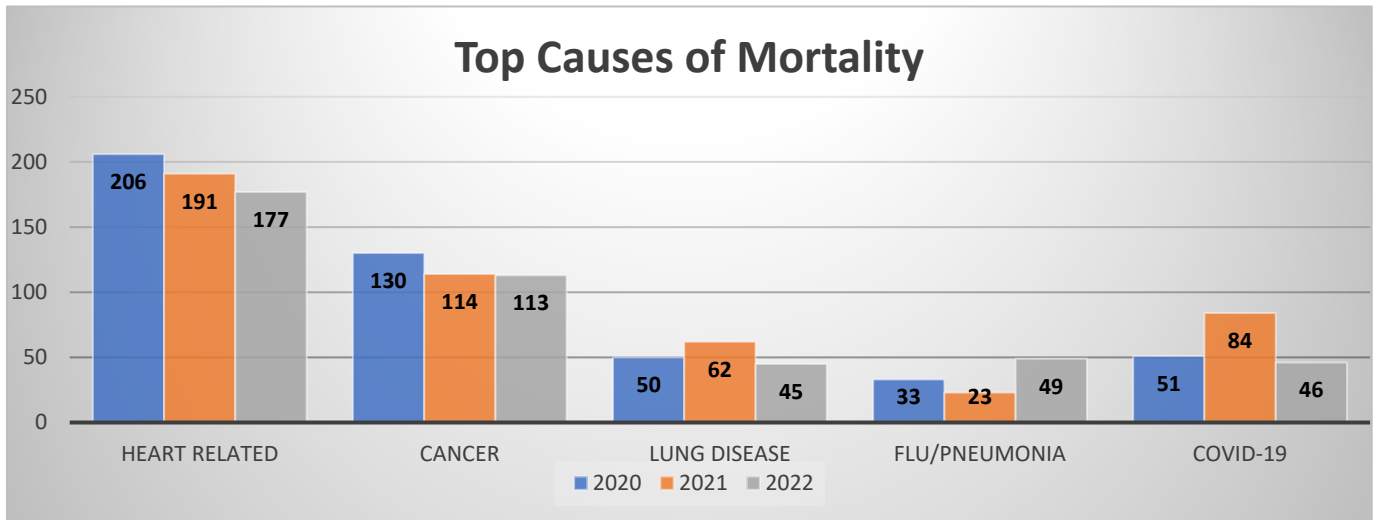


Figure 2: Top causes of mortality in Knox County 2020 – 2022 Knox Public Health

Mortality broken down by education and sex is as follows in Figure 3 and 4. There can be important outliers that distort this data but there are also important trends that are worth understand. Seeing that education in years leads to longer life expectancy is an important health indicator and demographic.

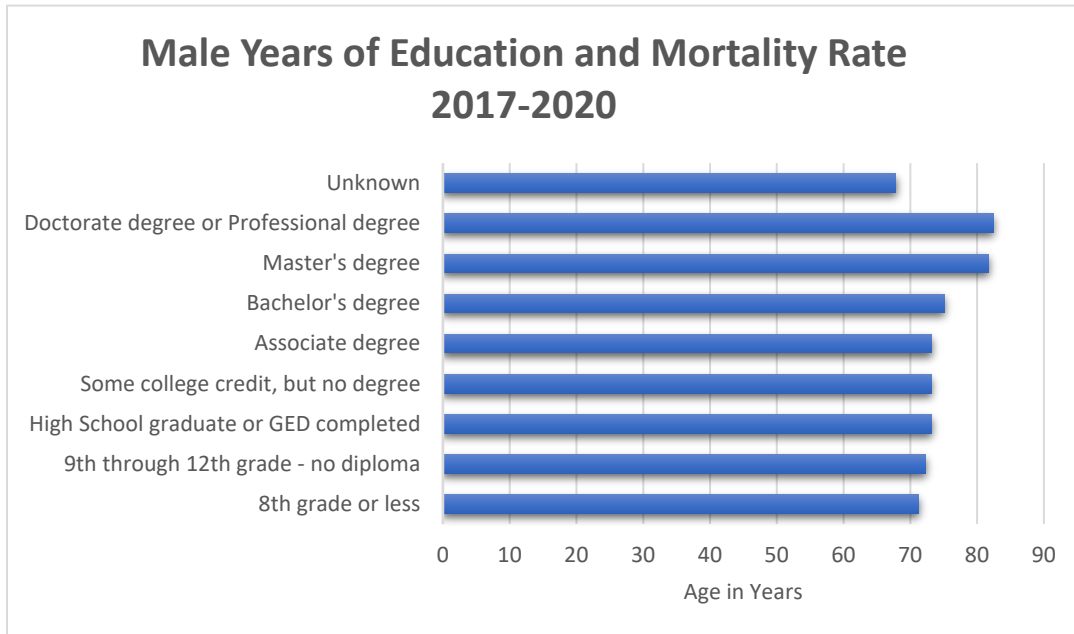


Figure 3: Mortality of males based on education from 2017 – 2020 in Knox County

Female Years of Education and Mortality Rate 2017-2020

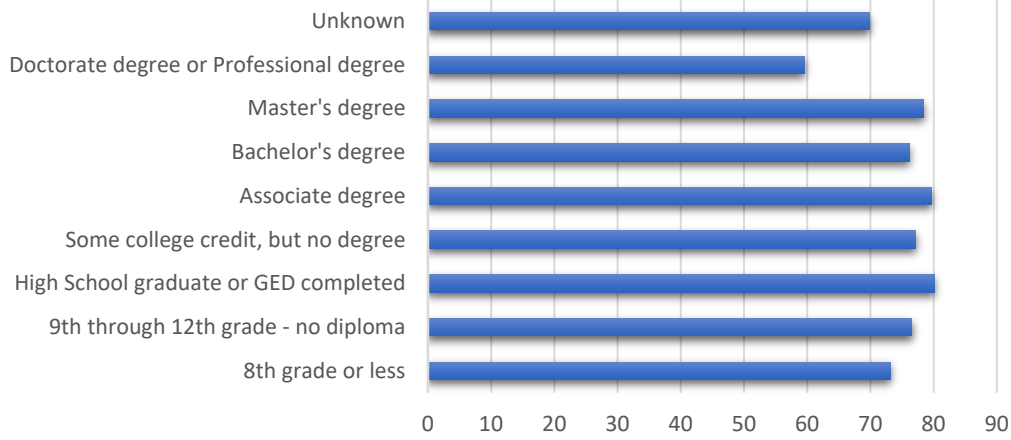


Figure 4: Mortality of females based on education from 2017 - 2020 in Knox County

2. Environmental Health

Knox Public Health’s Environmental Health division plans, directs, and coordinates programs to protect Knox County from environmental hazards. We promote a healthy environment to prevent premature death, avoidable illness and disability caused by non-infectious, non-occupational environmental and related factors. We are committed to protecting the health of the community from environmental hazards.

Clean air, stable climate, adequate water, sanitation and hygiene, safe use of chemicals, protection from radiation, healthy and safe workplaces, sound agricultural practices, health-supportive cities and built environments, and a preserved nature are all prerequisites for good health.

As stated in figures 5 and 6, the majority of food inspections were commercial with over 54% of the total 449 inspections for 2022. Food Licenses are clearances to operate in Knox County. Issuing licenses to operate and food inspections are both two important areas of environmental health. Keeping our community safe from foodborne diseases is as important as ever in a time after COVID-19 and the restarting of restaurant services. Restaurant inspections protect us from illnesses such as Norovirus, Salmonella, Clostridium perfringens, and Campylobacter. Part of the issuing of operational licenses for a food establishment is getting an initial inspection which serves as a clearance to start service.

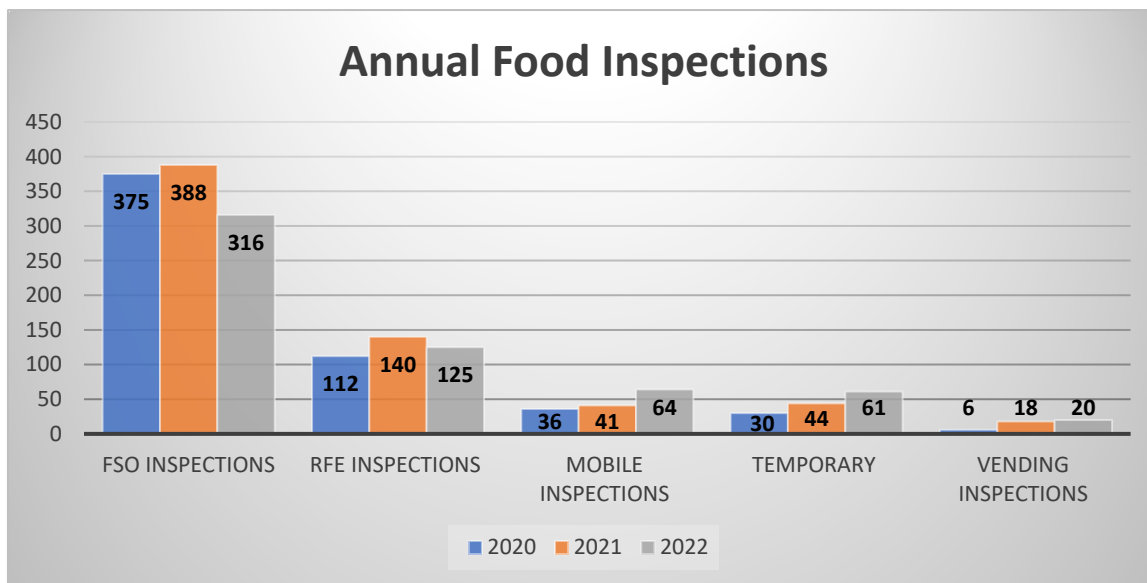


Figure 5: Annual food licenses distributed by Knox Public Health 2020 – 2022

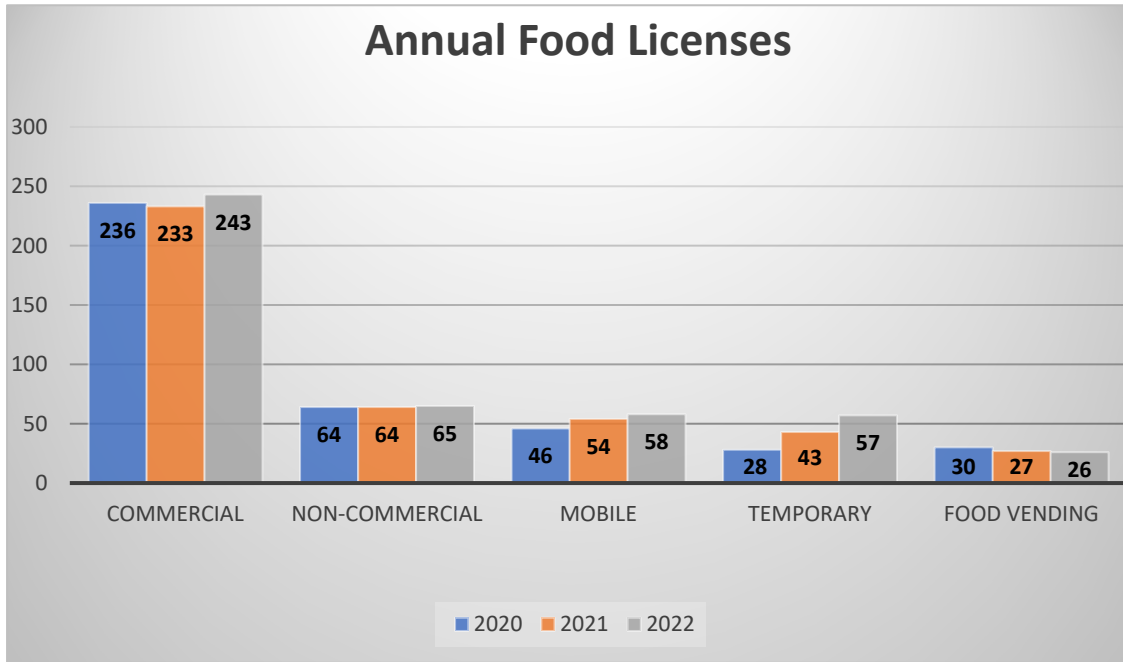


Figure 6: Annual food licenses issued by Knox Public Health 2020 – 2022

As for rabies control, Knox County Environmental Health investigated a total of 145 animal bites during 2022. 84 correspond to dog bite, while 30 were from cats, and other 31 were from other animals. The figures show a steady decrease throughout the previous three years.

Every year dog bites continue to lead in reported animal bites. Rabies is one of the most fatal diseases known with a mortality rate of 100%. Rabies is estimated to cause 59,000 human deaths annually in over 150 countries, with 95% of cases occurring in Africa and Asia. Due to widespread underreporting and uncertain estimates, it is likely that this number is a gross underestimate of the true burden of disease. 99% of rabies cases are dog-mediated and the burden of disease is disproportionately borne by rural poor populations, with approximately half of cases attributable to children under 15 (WHO).

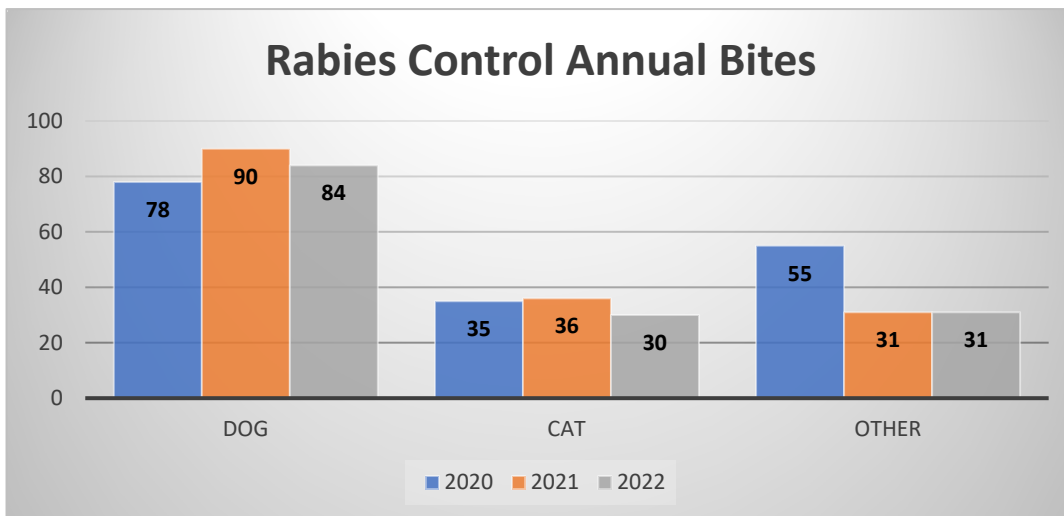


Figure 7: Annual animal bites 2020 – 2022 Knox Public Health

Public health nuisances are conditions that significantly increase the risk of a public health hazard occurring or which compromises any aspect of public health such as trash dumps, abandon buildings, etc. Preventing public health nuisances can influence health in many areas from infectious diseases such as west Nile virus or rabies to environmental hazards such as pollution or lead contamination.

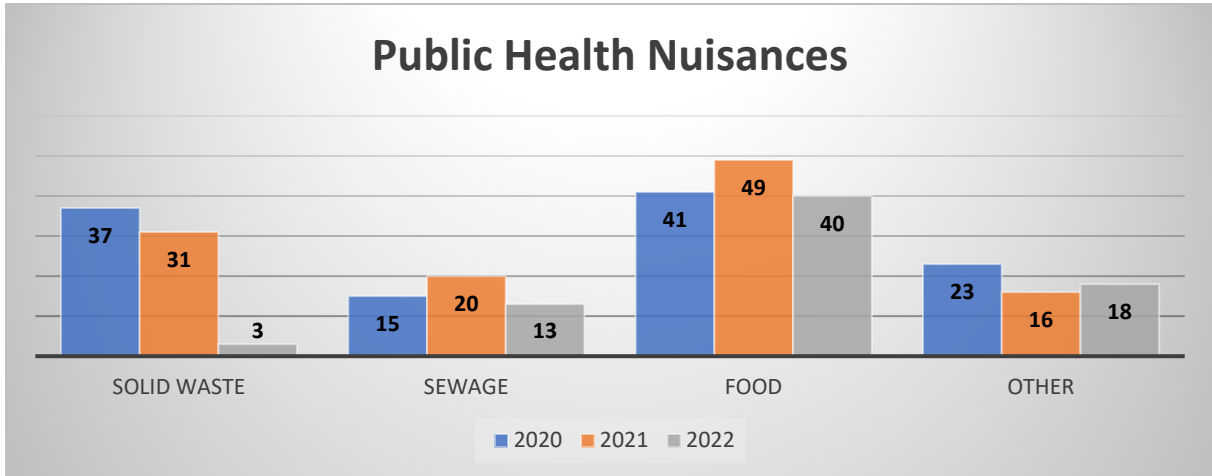


Figure 8: Public health nuisance investigations by Knox Public Health Environmental Health division 2020 – 2022

3. Women, Infants, and Children (WIC)



WIC safeguards the health of low-income women, infants, and children up to age 5 by providing supplemental foods, nutrition education, and healthcare referrals. Their mission is to be a partner with other services that are key to childhood and family well-being. The basic eligibility requirement is a family income below 185% of the federal poverty level. WIC is the focal point in working with families below the poverty line and often can be an initiator for other services offered in the community (USDA).

WIC saves lives and improves the health of nutritionally at-risk women, infants and children. Studies, reviews and reports demonstrate that the WIC Program is cost effective in protecting or improving the health/nutritional status of low-income women, infants and children.

- Reduces fetal deaths and infant mortality.
- Reduces low birthweight rates and increases the duration of pregnancy.
- Improves the growth of nutritionally at-risk infants and children.
- Decreases the incidence of iron deficiency anemia in children.
- Improves the dietary intake of pregnant and postpartum women and improves weight gain in pregnant women.
- Pregnant women participating in WIC receive prenatal care earlier.
- Children enrolled in WIC are more likely to have a regular source of medical care and have more up to date immunizations.
- Helps get children ready to start school: children who receive WIC benefits demonstrate improved intellectual development.
- Significantly improves children’s diets.
- WIC’s total caseload for 2022 was 729 compared to 2021 of 726.

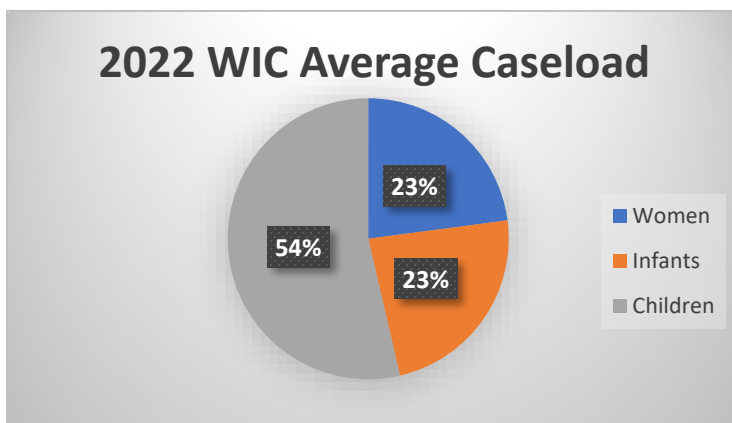


Figure 9: 2022 WIC average caseload by Knox Public Health

4. Public Health Education & Nursing (PHEN)

The development of the field of public health is one of the most crucial achievements in history because it helps to protect people against illnesses and other health problems by addressing disease prevention, promotion of healthy lifestyle behaviors and education on personal health care.

The creation of the PHEN division, late in 2021, addresses these issues through disease investigation and prevention, educational programs including puberty presentations at schools and safe sleep for infants, outreach efforts such as community clinics and group presentations, prevention efforts such as Narcan distribution, tobacco cessation and proper child car seat installations.

Narcan distributions can tell us about overdose prevalence in Knox County. Disruptions in the KPH program have made these stats unreliable for predictability or analysis, but it does attest to the work we do.

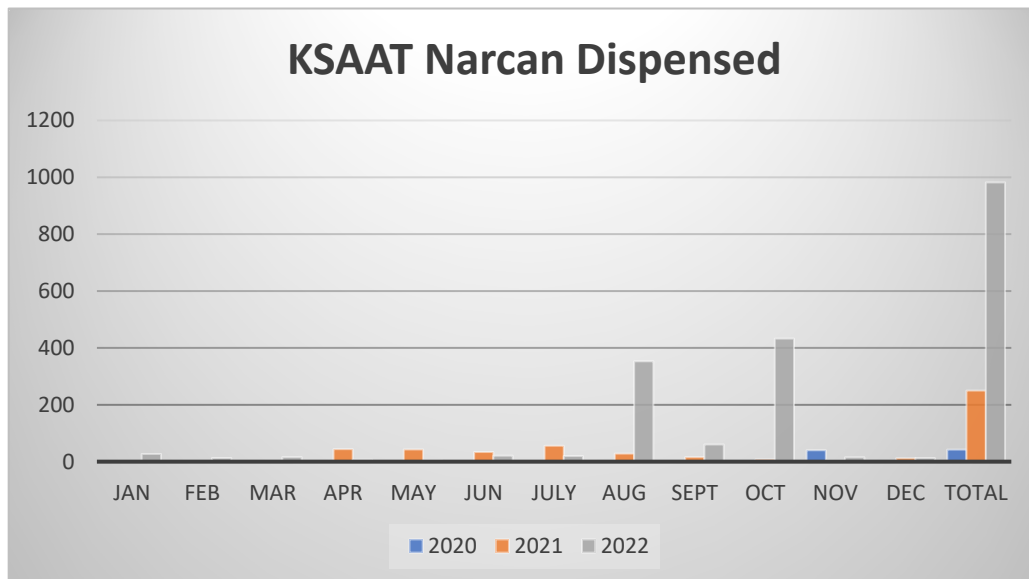


Figure 10: KSAAT Narcan Dispensed 2020 – 2022 Knox Public Health

Smoking is a significant and leading cause of many health ailments and premature illnesses. Our gradual increase in cessation enrollments (Figure 11) from 2020 – 2022 is a great indicator of our outreach.

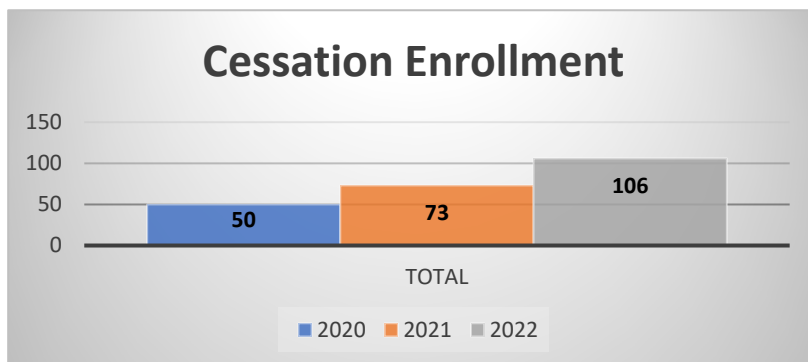


Figure 11: Cessation Enrollment 2020 – 2022 Knox Public Health

Communicable Diseases

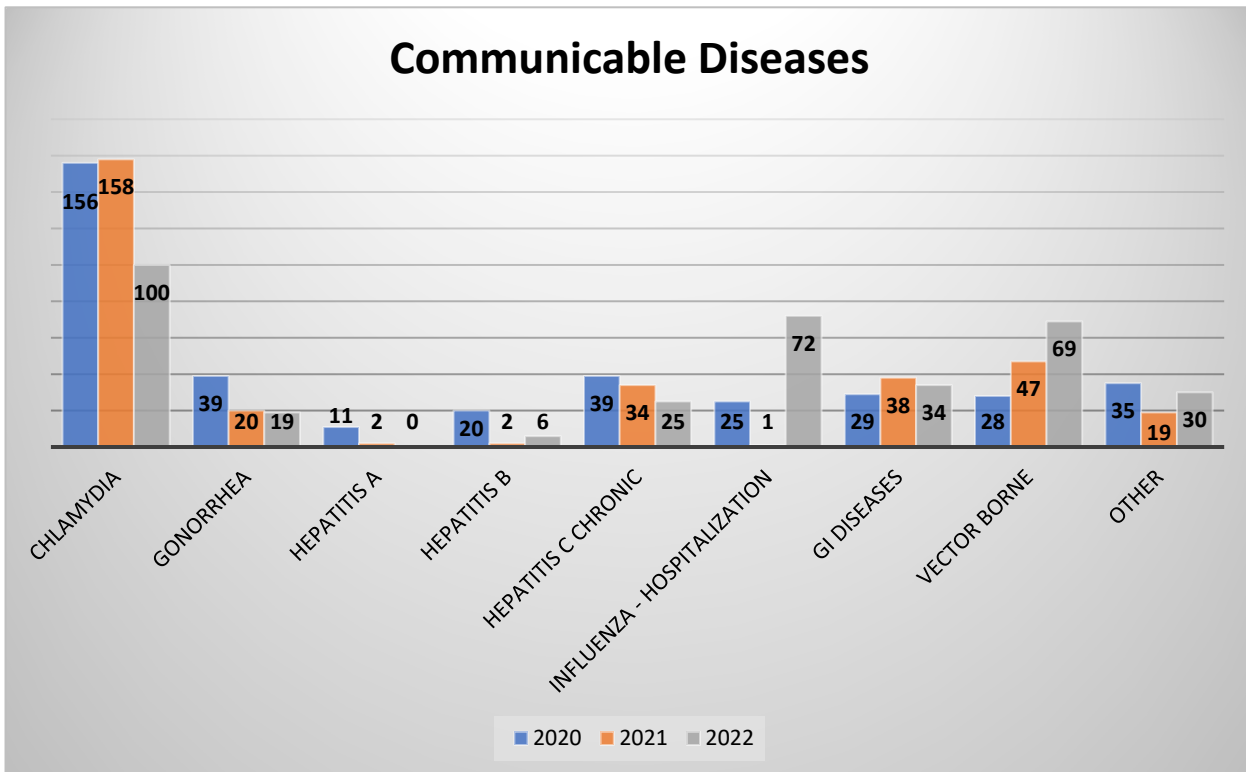


Figure 12: Communicable disease numbers 2020 – 2022 Knox Public Health

In 2022 there has been an early and unfortunate rise in influenza hospitalizations. The other area we see a worrying trend in is vector borne disease. These diseases include tick borne infections like Lyme disease rates which have tripled in recent years. Lyme disease can be a very debilitating disease with worrying side effects and difficult diagnosis.

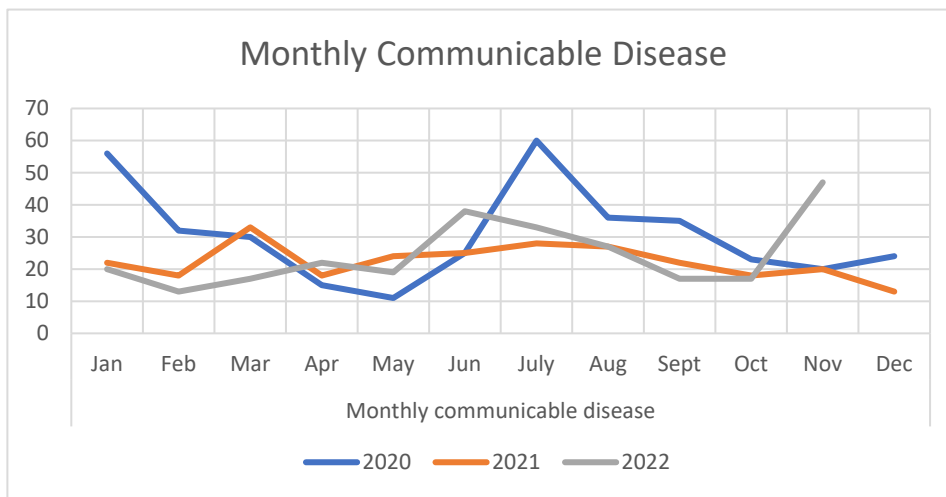


Figure 13: Monthly Communicable Disease 2020 – 2022 Knox Public Health

Figure 13 above does not include COVID-19 cases, you will find that data in Figure 14 below. Please note, the sustained spike in cases beginning in August

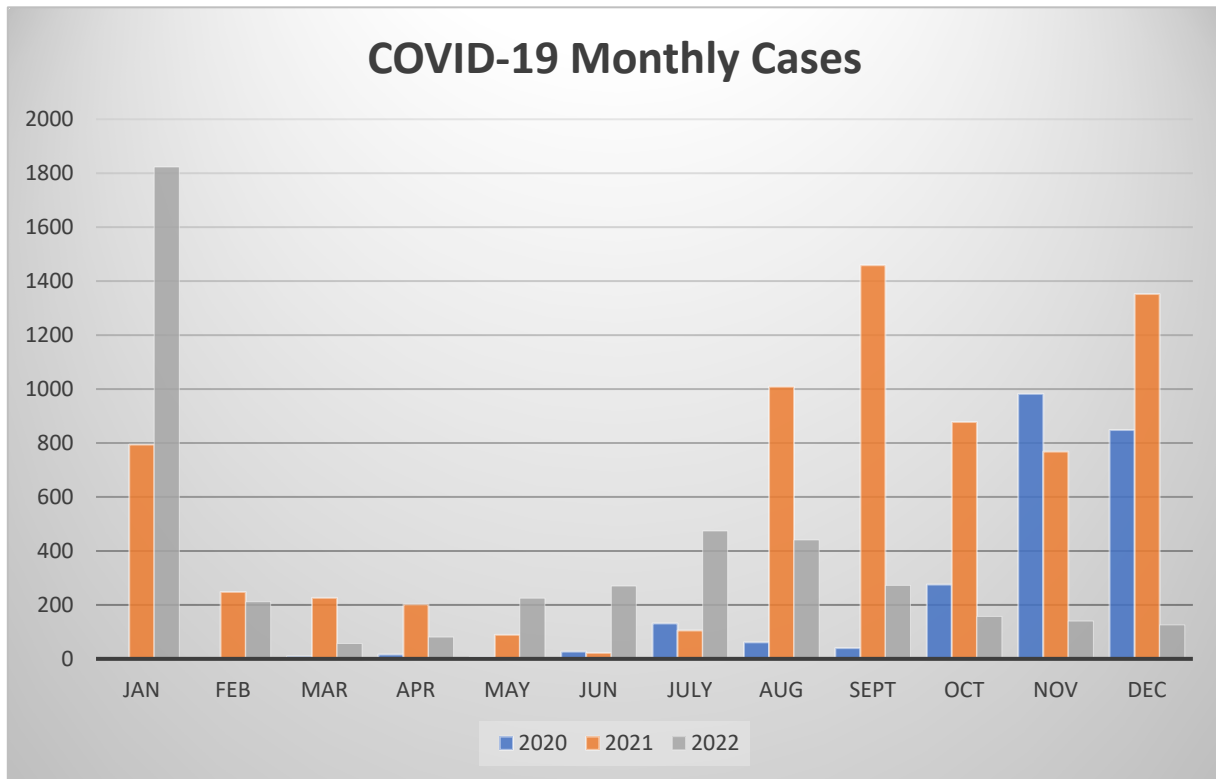


Figure 14: COVID-19 Monthly Cases 2020 – 2022 Knox Public Health

COVID-19 and other communicable diseases continue to be a public concern for Knox County as we continue to recommend vaccination. Many of the mandated policies, and requirements have been discontinued yet recommendations still continue in this area to protect the population and the most vulnerable in the county.

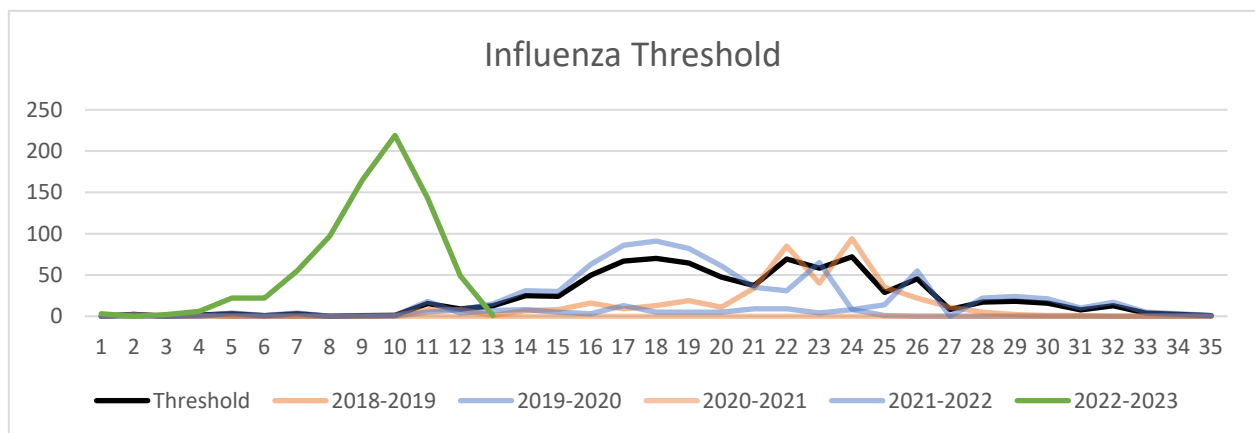


Figure 15: Influenza Threshold 2020 – 2022 Knox Public Health

Influenza tracking with a threshold value keeps us informed on developments within Knox County on cases. Since influenza isn't a reportable condition, these numbers are gathered through a self-reported survey on what providers tell us they see in their patients.

5. Immunizations

Immunizations are one of the greatest success stories of public health, yet many childhood vaccinations have declined in recent years to misinformation and conspiracy theories. As we saw in Franklin County with the Measles outbreak late in 2022, childhood immunizations are a vital necessity in our community. Outside of childhood immunizations, KPH also vaccinates in many areas relevant to our public's health.

Immunization	Total Monthly Immunizations			
	2020	2021	2022	
Flu	1249	1943	1768	
Tdap/dtap	798	982	759	
Hep B	339	362	275	
MMR	275	326	299	
Varicella	241	329	293	
Meningitis	383	462	457	
Meningitis B	99	253	367	
Polio	316	372	272	
Gardasil	164	312	295	
COVID-19	0	21808	3838	

Figure 16: Total Monthly Immunizations 2020 – 2022 Knox Public Health



6. Social Determinants of Health

2022 Social Determinants of Health Data Report

In January 2021, the Knox County Board of Health released a statement recognizing health inequities as a public health crisis. This statement was released in the wake of several events that shined a light on the vast inequalities we still see in America today. The statement includes that Knox Public Health "recognizes the impact of inequities in Ohio and specifically Knox County, and strives to work to dismantle the factors that contribute to these inequities". Those inequities can be broken down into Social Determinants of Health (SDOH). There are five: Economic Stability, Education, Access to Healthcare, Neighborhood & Built Environment, and Social & Community Context. The presence or lack of social determinants of health has long standing implications on how a person's life can play out including things like: early childhood development, being able to keep a job, quality social and health services, incarceration, net worth, and living conditions. By addressing SDOH, we are taking steps to achieve health equity in our community. Health equity is defined as "when everyone has the opportunity to attain their full health potential and no one is disadvantaged from achieving this potential because of their social position or other socially determined circumstance" (CDC). Things like poverty, unequitable access to care, poor education, stigma, and racism are all part of the social determinants web that are direct influences on the health of a community. It can be boiled down to this - communities thrive when all residents, regardless of race, gender, sexuality, age, or income are given the tools and resources they need to lead happy and healthy lives.

As a public health agency, it is our role to take down barriers that prevent residents from achieving their optimal health. As KPH has continued to evolve since the passing of the board's statement, our data reporting should follow suit. The following report works with KPH 2022 Annual Statistics report. Data is presented through the lens of Social Determinants of Health, following the Health People 2030 SDOH data framework. Internal data is presented as well as data outside the KPH's span of control. Including external data was done to give context to how KPH is working to address SDOH within our internal programming and with our community partners.

ECONOMIC STABILITY

Economic stability can be defined as having the resources essential to a healthy life. Factors affecting economic stability include affordable housing, a living wage; worker protections; paid sick leave, and child care; access to reliable transportation. People experiencing economic instability are more likely to experience health risk behaviors, chronic health conditions, and premature mortality. Economic stability in communities can be measured in employment data, poverty rates, benefit enrollment, and housing cost and development. All the factors discussed above are not a sole indicator of economic stability but together they create a larger picture of the economics of a community.

Economic Stability Data		
Internal Data		
	Data Value	Additional Information
Water Inspections (New Builds or Loan Approval)	126	
Sewage Permits (New Build or Loan Approvals)	130	
WIC Enrollment	729 active caseloads	
CHC Patients at or below 100% FPL	2,285	
External Data		
	Data Value	Additional Information
Employment Rate	60%	Refers to the percent of resident eligible to work who are employed
Rental Rate	28%	
Poverty Rate	12.7%	Census data, this has decreased since 2020
SNAP Enrollment	7.5%	Roughly 30% of SNAP enrollment are between 0-17 years old.
Severe House Cost Burden	9%	Percentage of households that spend 50% or more of their household income on housing. Data source: Robert Wood Johnson County Health Rankings

EDUCATION

Education is one of the most significant social determinants. Levels of education have been directly linked with important health outcomes such as self-rated health, infant mortality, and life expectancy. The data tells the story: Across all racial and ethnic groups, adults with lower educational attainment are more likely to report worse health outcomes. A recent report estimates that decreasing dropout rates could save nearly \$7.3 billion Medicaid dollars annually (Robert Wood Johnson Foundation). Education also translates into health literacy, better paying wages and jobs that provide insurance and benefits, and knowledge of resources and how to access them. For public health purposes, there is much we can do to assist those in our community with

lower educational attainment who may be at risk for poorer health outcomes by focusing providing prevention and intervention education on health topics across the board as well partnering with schools (school nurses, school-based education, etc.) to create environments to keep residents enrolled.

Education Data		
Internal Data		
	Data Value	Additional Information
Safe Communities Education	16 events	
Car Seat Education	67 seats	
Health Living & Nutrition Education	8 events	
Newborn Home Visiting	15 Newborns seen	
Cribs for Kids/Safe Sleep	75 cribs	
Health education based public communications	Data not collected year	
WIC Nutrition Education	1,029 sessions	25% were qualified high risk
Health Education in CHC	Data not collected this year	
External Data		
High school graduation rates	91.7%	
College/post graduate degree	22.7%	
Early education enrollment	98.4%	Estimates from total population under age 5
Adult education enrollment		

ACCESS TO CARE

Health care access is defined as the extent to which people have equitable, affordable and available access to needed healthcare services. This definition includes both physical accessibility (a bigger issue in rural areas), financial means, transportation options, insurance

options, ability to access specialty care, access to proper nutrition and medicine. It also includes the quality of care received after seeking care. The concept of creating equitable access is the foundation of the Community Health Center. The expansion of the center and services provided all speak to our community's need to create more access points for care across the county. Access in a community can be assessed using premature death rates, maternal and infant deaths, provider ratios, and insurance rates.

Access to Care		
Internal Data		
	Data Value	Additional Information
Non insured patients	130	Monthly average among patients
CHC Patients at or below 100% FPL	2,285	
Total CHC Patients	8,835	
New CHC Patients	2,150	
Positive communication with CHC provider reported	97% yes	Per CHC patient survey
STI Screening clinics	0	
Prenatal care	Data not collected this year	
Immunizations given	8,623	
Used KAT for CHC appointments	Data not collected this year	
Patients seen by PCN	91	
Senior Outreach	37	
Newborn Home Visits	15	
Children with Medical Handicaps	213	Monthly average caseload

Issues with travel to CHC appointments	10% of patients	Per CHC patient survey
Issue with CHC payments	10% of patients	Per CHC patient survey
External Data		
Noninsured Knox County residents	9%	Non-insured residents under age 65
Maternal death rate	0	Data from ODH Secured Warehouse sourced from death certificate filing
Infant death rate	2	Data from Vital Statistics
Premature cardiac death	73.2	
Provider ratio	2,830:1 - PCP 2,400:1 - Dentists 440:1 - Mental Health	
Households without broadband internet access	14.7%	Data Source: Robert Wood Johnson County Health Rankings
Limited access to health food	6%	Percentage of the population who are low-income and do not live close to a grocery store. Data source: Robert Wood Johnson County Health Rankings

NEIGHBORHOOD & BUILT ENVIRONMENT

Neighborhood and built environment refers to the conditions of the neighborhood someone is born and lives in. The neighborhoods people live in have a major impact on their health. Many people in the United States live in neighborhoods with high rates of violence, unsafe air or water, and other health and safety risks. Racial/ethnic minorities and people with low incomes are more likely to live in places with these risks. In addition, some people are exposed to things at work that can harm their health, like secondhand smoke or loud noises. In rural communities, the built environment can refer to rural isolation, food deserts, farming contaminants, and water quality. We can measure this social determinant in several ways, most of which focus on the work of our Environmental Health division. Additionally, looking into safety issues such as accidental death, child fatality, lead, and housing problems.

Neighborhood & Built Environment

Internal Data

	Data Value	Additional Information
Water testing	Data not collected this year	
Restaurant Inspections	441	
Pool/Lake Inspections	30	
Public Health Nuisance Investigations & Abatements	89	
Lead testing	0	
Radon testing	Data not collected this year	
Animal Bites	145	
Specimen sent to lab for rabies testing	35	
Solid Waste inspections	10	
Non Smoking policies passed	0	
Mold reports	Data not collected this year	
Insect reports	Data not collected this year	

External Data

Access to recreation (including parks and green space)	56%	Data source: Robert Wood Johnson County Health Ranking
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Severe Housing Problems	13%	Percentage of households with at least 1 of 4 housing problems: overcrowding, high housing costs, lack of kitchen facilities, or lack of plumbing facilities. Data Source: Robert Wood Johnson County Health Rankings
Violent crime	113	
COPD/Asthma hospitalizations	Data not received this year	
COPD/Asthma deaths	Data not received this year	
Accidental deaths	61	Aged adjusted rate per 100,000 (Robert Wood Johnson County Health Rankings)
Overdose deaths	18	
Fatal vehicle crashes	13	
Child fatality	2	
Limited access to health food	6%	Percentage of the population who are low-income and do not live close to a grocery store. Data source: Robert Wood Johnson County Health Rankings
Household Issues	Insects 22.2% Mold 9.3% Radon 5.4% Litter/trash 4.5% Lead paint 1.8%	Self-reported from Community Health Assessment

SOCIAL & COMMUNITY CONTEXT

Social and community context refers to the way in which people live; including, the relationships formed between neighbors, as well as the impact that voting and civic engagement has on community outcomes. This social determinant is the most difficult to quantify as it measures quality of life based on relationships, social support, and community engagement. Communities with higher levels of engagement and wide-spread sense of support for each other statistically have better health outcomes. We can utilize data on disabilities, abuse reports and community connection data such as voter registration and area support groups.

Social & Community Context		
Internal Data		
	Data Value	Additional Information
sSMART Recovery	52 sessions held per week with 5 clients on average	
WIC - Breastfeeding Support, nutrition support, peer support	729 active caseloads	
Newborn Home Visits	15	
Senior Outreach	37	
TAC Events	17	
External Data		
Voter Registration	Roughly 80%	Based on state data
Disability status	13% of residents	Data Source - Community Health Assessment
Receive adequate social and emotional support	64%	Self reported from Community Health Assessment
Domestic violence rate	239 reported instances	
Child abuse rate	572 reported instances	

7.