

The Cabinet for Health and Family Services and the  
Personnel Cabinet present:


A report to the Legislative Research Commission  
in fulfillment of Kentucky Revised Statute 211.752

# 2023

## DIABETES REPORT

TEAM   
**KENTUCKY**<sup>®</sup>

CABINET FOR HEALTH  
AND FAMILY SERVICES

TEAM   
**KENTUCKY**<sup>®</sup>

PERSONNEL CABINET

# 2023 Kentucky Diabetes Report

## LEGISLATION

KRS 211.752 requires that in odd numbered years, the Department for Public Health (DPH), the Department for Medicaid Services (DMS), the Office of Data Analytics (ODA) and the Personnel Cabinet – Department of Employee Insurance, Kentucky Employees’ Health Plan (KEHP), collaborate in developing a report addressing the impact of diabetes on the commonwealth and plans to address the epidemic.

## A COLLABORATION BETWEEN

- DEPARTMENT FOR MEDICAID SERVICES
- DEPARTMENT FOR PUBLIC HEALTH
- OFFICE OF DATA ANALYTICS
- DEPARTMENT OF EMPLOYEE INSURANCE

## ON BEHALF OF

- CABINET FOR HEALTH AND FAMILY SERVICES
- PERSONNEL CABINET

## FOR MORE INFORMATION

To access or download copies of this report, visit <https://chfs.ky.gov/agencies/dph/dpqi/cdpb/Pages/diabetes.aspx>.

To request print copies of this report, please call the Kentucky Diabetes Prevention and Control Program at (502) 564-7996.

For more information about the legislation requiring the Diabetes Report, visit <https://legislature.ky.gov>.

## SUGGESTED CITATION

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# A Message from the Health and Family Services Cabinet and the Personnel Cabinet

The 2011 Kentucky General Assembly codified KRS 211.752 to require the Cabinet for Health and Family Services (Department for Medicaid Services, Department for Public Health, Office of Data Analytics) and the Personnel Cabinet (Kentucky Employees' Health Plan) to compile an account of the status of diabetes in Kentucky, what is being done to address it, and goals/plans for moving this work forward. In this 2023 Kentucky Diabetes Report, we have further streamlined the format and included links to more detailed information and an infographic. This updated format makes the report more readable and user-friendly but still provides robust data and information about diabetes in Kentucky.

Diabetes is a complex, chronic disease that affects the body in numerous ways. It can cause heart disease, stroke, blindness, kidney damage, lower extremity amputations, gum disease/tooth loss, as well as pregnancy related effects on the mother and baby. It can also exacerbate the effects of COVID-19 resulting in increased death rates from this virus. We continue to analyze data related to the impact of COVID-19 on those with diabetes in Kentucky. Addressing diabetes requires the collaboration of many public and private partners, and Kentucky has a long history of such efforts in the area of diabetes prevention and control. Despite these efforts, and some successes, there is much more work to be done.

***PREVENTING NEW CASES, SCREENING TO FIND CASES EARLY, OFFERING EVIDENCE-BASED SERVICES TO THOSE WITH AND AT RISK FOR DIABETES, ASSURING A SKILLED MULTIDISCIPLINARY WORKFORCE TO ADDRESS DIABETES, AND IMPROVING THE QUALITY AND MEANINGFUL USE OF DATA TO TRACK OUTCOMES ARE ALL GOALS RECOMMENDED BY THIS REPORT.***

Preventing new cases, screening to find cases early, offering evidence-based services to those with and at risk for diabetes, assuring a skilled multidisciplinary workforce to address diabetes and improving the quality and meaningful use of data to track outcomes are all goals recommended by this report. Kentucky partners – healthcare providers, hospital systems, public and private health plans, persons with diabetes and their families, public health agencies, technology resources, communities and more - must continue to work together to develop and implement innovative evidence-based approaches and strengthen evidence-based strategies to offer Kentuckians a life free of diabetes or the opportunity to live a healthy and full life with diabetes.

Let this sixth statewide collaborative report foster new energy among collaborators/champions and engage more stakeholders in efforts to improve the health of the commonwealth.

Sincerely,



Eric Friedlander, Secretary  
Cabinet for Health and Family Services

Sincerely,



Mary Elizabeth Bailey, Secretary  
Personnel Cabinet

# Executive Summary

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## BACKGROUND

The 2023 Diabetes Report is a requirement of KRS 211.752 (see Attachment 1). It requires that in odd numbered years, the Department for Public Health (DPH), the Department for Medicaid Services (DMS), the Office of Data Analytics (ODA) and the Personnel Cabinet – Department of Employee Insurance, Kentucky Employees’ Health Plan (KEHP), collaborate in developing a report addressing the impact on the commonwealth and plans to address the epidemic. Although not specifically named in the legislation, the committee chose to include the Office of Health Equity (OHE), housed in DPH, in this process to ensure attention to the social determinants of health that impact hard to reach and vulnerable populations.

This sixth report was developed by a committee with representatives from each of the entities named above. A list of these committee members is included on Page 2. Changes and additions to this edition of the report include an increased emphasis on health equity and social determinants of health (SDOH); as well as continued improvements in the presentation of the data and information to make it more readily useable.

While the information in this report discusses activities and plans specific to state government agencies, it is anticipated that policy makers, communities, professional organizations and anyone interested in the health of Kentuckians will use this information to improve diabetes outcomes in the commonwealth. Included in appendices is more information on data summarized in the report, the impact of COVID-19 to date and strategies for diabetes self-management education and support.

## GOALS AND ACTIONS FOR ADDRESSING DIABETES

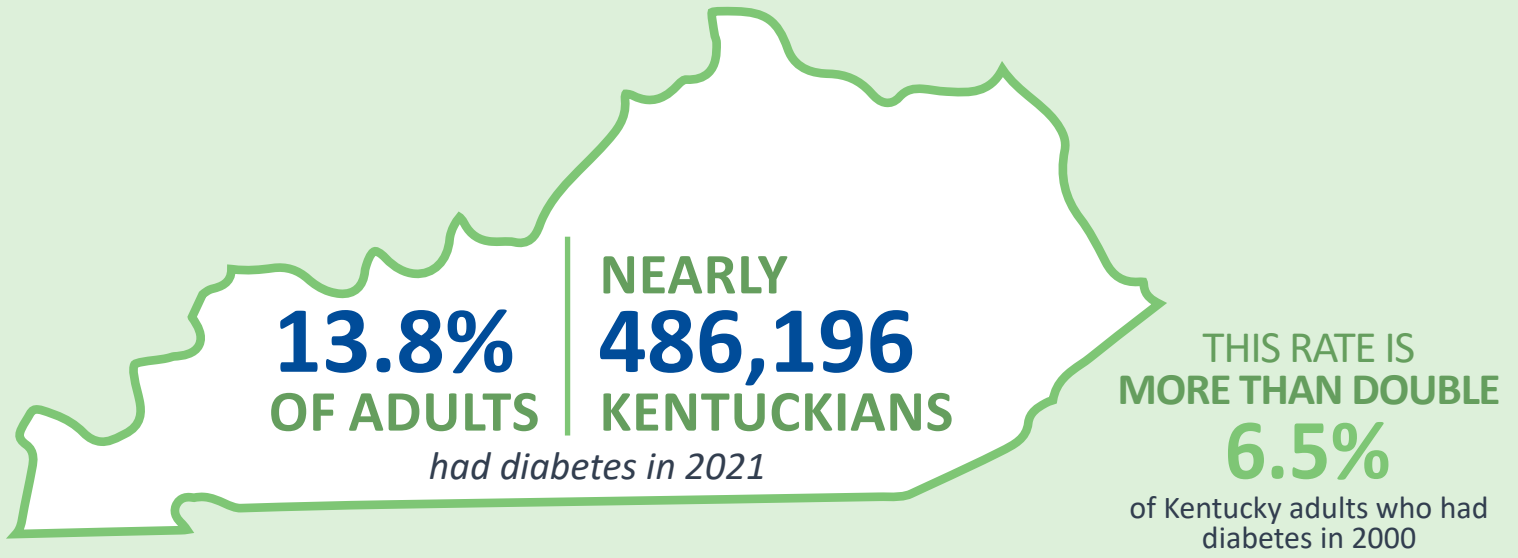
The committee has identified specific goals with related actions to strengthen diabetes prevention, minimize diabetes complications and improve our ability to have reliable data to track and understand the scope of this epidemic. Goals and actions are consistent with current standards of care and scientific evidence, national and state guidelines and initiatives, chronic disease state planning efforts and federal grant guidance from the Centers for Disease Control and Prevention (CDC). Goals include:

1. **Prevent new cases** of type 2 diabetes by promoting access to and participation in evidence-based lifestyle change programs such as the National Diabetes Prevention Program (DPP). (\$300,000)
2. **Increase appropriate screening** for prediabetes, diabetes and gestational diabetes by promoting evidence-based screening guidelines. (\$200,000)
3. **Ensure that people** with diabetes have access to evidence-based services, including Diabetes Self-Management Education and Support (DSMES), and case and disease management, which improve knowledge, skills and behaviors necessary to manage their disease and improve outcomes. (\$250,000)
4. **Fund a sustainable** diabetes prevention and control public health infrastructure and workforce at the state and local level. (\$2,600,000)
5. **Improve capacity for**, and use of, diabetes and chronic disease surveillance systems and Health Information Technology (HIT) systems needed to determine the impact of diabetes on the commonwealth and improve the quality of prevention and management efforts. (\$250,000)

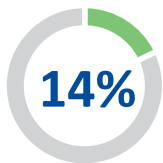
In addition, the commonwealth must also take actions to impact certain social determinants of health and equity. Social determinants of health are factors that not only negatively affect the ability of certain population groups to access healthcare, but also seriously limit their ability to live a healthy lifestyle and make lifestyle changes. These include education level, income and the ability to earn a living wage, lack of social support, chronic stress, racial discrimination, transportation access, adequate housing, access to affordable and nutritious food and access to safe spaces for physical activity. Affecting these social determinants of health will require efforts by a wide variety of community, business, and political leaders across the commonwealth.

# Scope of Diabetes in Kentucky

## DIABETES IS COMMON IN KENTUCKY.

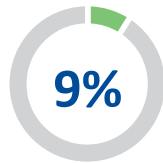


ANOTHER **12%** HAVE PREDIABETES AND ARE AT RISK FOR DEVELOPING DIABETES.



### MEDICAID

adult\* members had a diagnosis of diabetes in 2021



### KEHP

adult\* members had a diagnosis of diabetes in 2021



**2,823** children under the age of 19 covered by Medicaid

**306** children 17 years and younger covered by Kentucky Employees' Health Plan

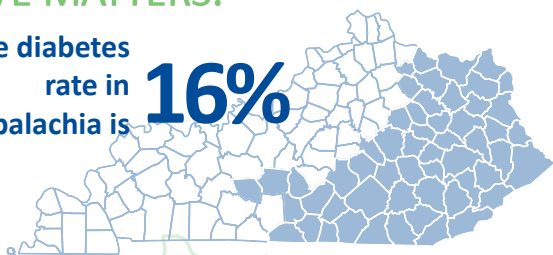
## HAVE A DIABETES DIAGNOSIS

*This difference in prevalence suggests a health disparity due to income.*

*\* Adults are defined as individuals over the age of 19 for Medicaid and individuals 18 years and older for Kentucky Employees' Health Plan (KEHP)*

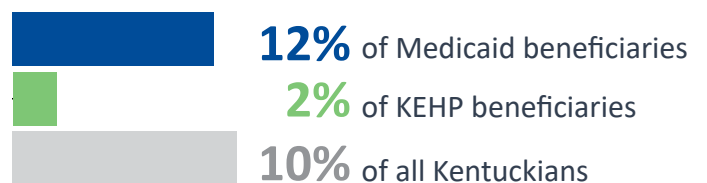
## WHERE YOU LIVE MATTERS.

The diabetes rate in Appalachia is **16%**



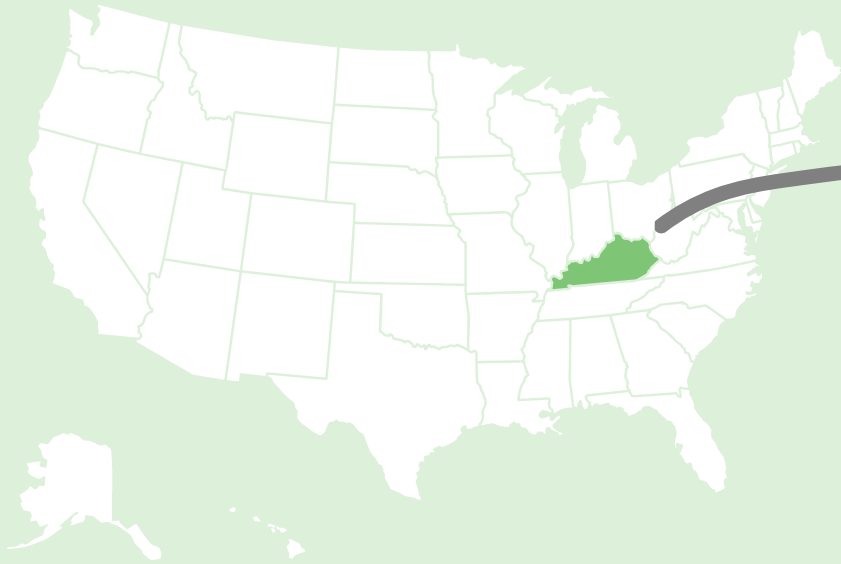
*compared to 13% in non-Appalachia Kentucky.*

## DIABETES IS COMMON DURING PREGNANCY.



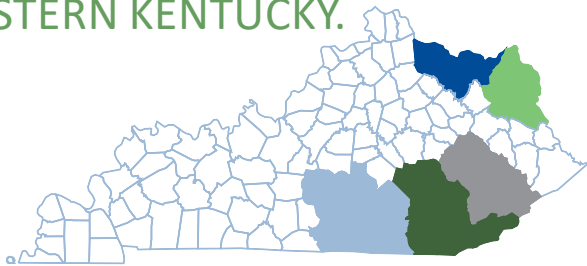
*who gave birth in 2021.*

# DIABETES IS SERIOUS.

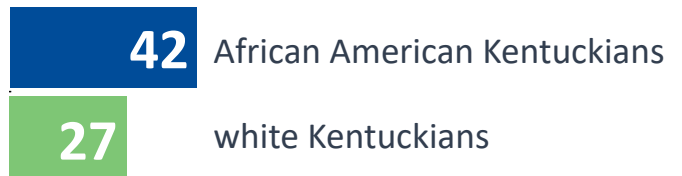


KENTUCKY HAS THE  
**13<sup>TH</sup> HIGHEST**  
MORTALITY RATE  
FROM DIABETES IN  
THE U.S.

THE 5 AREA DEVELOPMENT  
DISTRICTS WITH THE HIGHEST  
MORTALITY RATES ARE IN  
EASTERN KENTUCKY.

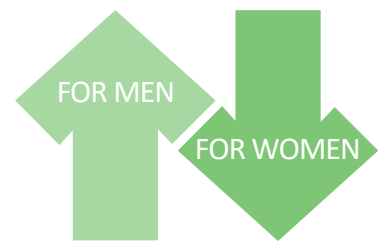


DEATH RATES ARE SUBSTANTIALLY  
HIGHER FOR AFRICAN AMERICANS.



*per 100,000 population*

SINCE 2001,  
DIABETES  
MORTALITY  
RATES HAVE



## 11,925 Kentuckians

visited the emergency department a total of **15,208 times** for diabetes in 2021.

**10,588** KENTUCKIANS HAD AT LEAST ONE HOSPITAL STAY FOR DIABETES IN 2021.



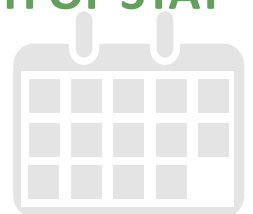
Diabetes was the  
primary diagnosis for

**13,410**  
HOSPITALIZATIONS

in 2021.

AVERAGE LENGTH OF STAY

## 5 DAYS





# DIABETES IS COSTLY.

Second most costly common chronic disease

## KENTUCKY MEDICAID

**\$173 MILLION**

for all diabetes non-prescription claims in 2021



One of the top costly chronic conditions for active and early retirees

## KEHP

**\$156 MILLION**

for combined medical and prescription drug costs in 2021

## DIABETES COST KENTUCKY

**\$5.16 BILLION**  

IN TOTAL MEDICAL EXPENDITURES AND LOST WORK AND WAGES IN 2017.

*(according to the American Diabetes Association)*

Emergency department visits resulted in billed charges of approximately

**\$99.9 MILLION**

EACH INPATIENT STAY HAD AN

**AVERAGE CHARGE**

OF

**\$42,162**

*resulting in*



**TOTAL CHARGES**

OF NEARLY

**\$570 MILLION**



# DIABETES IS MANAGEABLE AND CAN BE PREVENTABLE (TYPE 2).

Structured lifestyle change programs such as the National Diabetes Prevention Program have been proven to help prevent or delay type 2 diabetes through:



Nutrition



Physical Activity



Weight Loss

Individuals with prediabetes can cut their risk of type 2 diabetes

**SCISSORS** --- **IN HALF**

by losing weight through healthy eating and being more active.

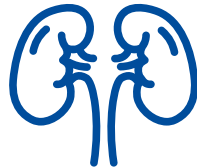
Managing type 2 diabetes effectively reduces risk for serious health complications such as:



Loss of toes, feet, or legs



Heart Disease



Kidney Failure



Stroke



Blindness

Accredited/Recognized Diabetes Self-Management Education and Support (DSMES) programs can improve A1C levels.



The number of patients with an A1C < 9 increased 46% after completing a DSMES program provided by the DPH Healthy Living With Diabetes (HLWD) program.

Quality care from healthcare teams can include:

- Aggressive treatment to manage blood sugar, blood pressure, and cholesterol
- Smoking cessation promotion
- Referral to DSMES programs

# Addressing Diabetes in Kentucky

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## APPLYING EVIDENCE-BASED GUIDELINES TO IMPROVE DIABETES OUTCOMES

One key to the prevention of type 2 diabetes and diabetes complications is for individuals and healthcare practitioners to follow evidence-based guidelines. Guidelines include screening and diagnosing diabetes as early as possible, providing good medical care and supporting lifestyle change.

Actions designed to support the availability and sustainability of CDC-recognized DPP and accredited or recognized DSMES programs, healthcare provider referral of patients to these programs and program enrollment are primary recommendations of this report.

## CURRENT DIABETES PREVENTION AND CONTROL EFFORTS

DPH, DMS, KEHP and external partners support a wide range of activities designed to improve diabetes prevention and control in their respective populations – as well as in the state as a whole.

Examples include:

- Providing access to care for prevention, early detection and treatment of diabetes.
- Providing health risk assessments to health plan members to identify those at risk for diabetes.
- Offering wellness programs to health plan members to increase physical activity levels and improve dietary choices.
- Providing Disease Management (DM) and Case Management (CM) programs for health plan members with complications of diabetes and/or multiple chronic conditions.
- Providing evidence-based lifestyle change programs like the DPP to support prevention of type 2 diabetes to the public and to health plan members.
- Offering training to healthcare providers to provide DSMES education programs.
- Educating healthcare providers about opportunities to refer patients with diabetes to DSMES programs.
- Providing statewide leadership in the development of a network of sites providing DPP.
- Facilitating diabetes professional education and quality improvement activities for healthcare

providers.

- Supporting development of referral mechanisms to connect people with or at risk for diabetes to appropriate care.
- Convening state partners to coordinate diabetes prevention and control activities and carry out evidence-based activities.
- Collecting, analyzing and disseminating of data to track diabetes prevalence, mortality and outcomes and improve the quality of care.

Successes related to these efforts include growth in access to accredited or recognized DSMES programs via telehealth. In addition, KEHP initiated a “Value-Based Benefit,” which provides medication and supplies for people with diabetes at reduced cost, with no deductible, which has increased medication adherence, decreased hospitalizations and emergency department visits and kept overall costs stable.

# Measuring Progress

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The partners involved in this report have agreed to establish comparable benchmarks to measure progress in diabetes management in the state. Collectively, this data provides a picture of clinical care and management, access to self-management education and support and lifestyle change programs across the commonwealth.

- Medicaid requires the Medicaid managed care organizations (MCO) to report Healthcare Effectiveness Data and Information Set (HEDIS) diabetes measures.
- KEHP reports HEDIS measures on diabetes.
- DPH reports measures on self-reported diabetes clinical benchmarks from the Kentucky Behavioral Risk Factor Survey (KyBRFS).
- ODA reports diabetes specific Prevention Quality Indicators (PQI) as defined and instituted by the Agency for Healthcare Research and Quality (AHRQ).
- DPH and CDC reports data on access to, and use of, DPP and DSMES programs.

As the burden of diabetes in Kentucky continues to grow, we must increase our efforts to make changes in our communities, healthcare systems, and personal behaviors to influence the growing epidemic. Now is the time for the commonwealth to act on the information in this report and move forward with making changes to improve diabetes prevention and control for Kentuckians. Ultimately, this will improve the quality of life and promote better health outcomes for all Kentuckians.

**This ends the Executive Summary. The summaries of the scope of diabetes, addressing diabetes, and measuring progress in the preceding pages are expanded upon throughout the remainder of this report.**

# Goals and Actions to Improve Diabetes Prevention and Outcomes

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The committee has developed a plan based on five goals with objectives and actions for prevention of new cases of type 2 diabetes and improving outcomes for those already diagnosed with diabetes. Each area includes at least one outcome measure. The planned actions are based on accepted standards of practice and scientific evidence for improving diabetes prevention and control outcomes for those with diabetes. The plan is also aligned with national and state health improvement efforts such as Healthy People 2030 and federal grant guidance from the CDC.

Please note that these goals are NOT listed in order of priority; rather, they are listed in the logical sequence of prevention, diagnosis and improved clinical and self-management, along with recommendations for infrastructure, training and health information technology capabilities necessary to address the diabetes epidemic.

1. **Prevent new cases** of type 2 diabetes by promoting access to and participation in evidence-based lifestyle change programs such as the National Diabetes Prevention Program (DPP).
2. **Increase appropriate screening** for prediabetes, diabetes and gestational diabetes by promoting evidence-based screening guidelines.
3. **Ensure that people** with diabetes have access to evidence-based services and education, including DSMES and case and disease management, which improve knowledge, skills and behaviors necessary to manage their disease and improve outcomes.
4. **Fund a sustainable** diabetes prevention and control public health infrastructure and workforce at the state and local level.
5. **Improve capabilities for**, and use of, diabetes and chronic disease surveillance systems and Health Information Technology (HIT) systems needed to determine the impact of diabetes on the commonwealth and improve the quality of

## GOALS AND ACTION ITEMS

The goals and actions listed in the tables on the following pages reflect plans for the next two years – between the release of this report and the next report due in January 2025. The objectives have been made as measurable as possible. In addition, consistent with the legislation, “recommendations” for the legislature have also been included.

**GOAL 1: PREVENT NEW CASES OF TYPE 2 DIABETES BY PROMOTING ACCESS TO AND PARTICIPATION IN EVIDENCE-BASED LIFESTYLE CHANGE PROGRAMS SUCH AS THE NATIONAL DIABETES PREVENTION PROGRAM (DPP).**

Objective	Actions
<p><b>A. Provide support and technical assistance to DPP organizations in Kentucky.</b></p>	<ol style="list-style-type: none"> <li>1. DPH will provide financial and technical support to train DPP lifestyle coaches</li> <li>2. DPH will provide technical assistance and support to lifestyle coaches and organizations (webinars, steering committee meetings, regular e-mail updates)</li> <li>3. DPH will track data regarding DPP programs (number, location, etc.) in Kentucky and report this information at least quarterly via websites</li> </ol>
<p><b>B. Increase awareness of prediabetes and DPP effectiveness among the public and among healthcare professionals.</b></p>	<ol style="list-style-type: none"> <li>1. DPH, KEHP, DMS and others will collaborate to implement communication and marketing strategies for DPP</li> <li>2. DPH will continue to work with Appalshop and other partners in Eastern Kentucky to develop and implement messaging regarding prediabetes and the National DPP specific to the Appalachian population</li> <li>3. DPH will continue work with the CDC, American Medical Association (AMA) and Kentucky Medical Association (KMA) to promote national campaigns, efforts and tools (e.g., “Prevent Diabetes Stat”) targeting providers</li> <li>4. DPH will maintain online listings of DPP programs/organizations on its <a href="#">website</a>.</li> </ol>
<p><b>C. Increase DPP participation in Kentucky’s national DPP programs.</b></p>	<ol style="list-style-type: none"> <li>1. DMS will evaluate managed care organization (MCO) DPP pilots to assist in formalizing a DMS DPP</li> <li>2. KEHP will continue to identify members at risk for prediabetes and provide outreach to them regarding the availability of DPP</li> <li>3. KEHP will track outreach/recruitment efforts and participation</li> <li>4. KEHP will continue to offer wellness points for DPP participation</li> <li>5. DPH will work with the University of Kentucky Cooperative Extension to increase DPP coaches and participation</li> </ol>
<p><b>D. Improve DPP referral mechanisms from healthcare providers.</b></p>	<ol style="list-style-type: none"> <li>1. DPH will work with state and national partners to integrate an electronic bi-directional referral system for DPP</li> <li>2. DPH and partners will design and implement a Prediabetes Learning Collaborative with select primary care practices</li> </ol>
<p><b>E. Improve reimbursement/ sustainability of DPP programs.</b></p>	<ol style="list-style-type: none"> <li>1. DMS and DPH will continue to collaborate to define a pathway for reimbursement of DPP by Medicaid</li> <li>2. DPH will participate in, or facilitate, workgroups for employers, Medicare and private insurers to improve coverage for DPP</li> <li>3. DMS will work with at least one MCO to pilot a DPP program</li> <li>4. KEHP will continue to cover DPP for its eligible members</li> </ol>

**GOAL 2: INCREASE APPROPRIATE SCREENING FOR PREDIABETES, DIABETES AND GESTATIONAL DIABETES BY PROMOTING EVIDENCE-BASED SCREENING GUIDELINES.**

Objective	Actions
<b>A. Increase KEHP member participation in biometric screening (includes blood glucose) to 35%.</b>	<ol style="list-style-type: none"> <li>1. KEHP will continue to provide/promote biometric screenings (including blood glucose) for all health planholders</li> </ol>
<b>B. Explore a method to calculate baseline diabetes screening rates from claims data.</b>	<ol style="list-style-type: none"> <li>1. DPH, DMS, ODA and KEHP will collaborate to study the use of claims data to report screening rates for prediabetes and diabetes</li> </ol>
<b>C. Explore a method to calculate baseline gestational diabetes screening rates from claims data.</b>	<ol style="list-style-type: none"> <li>1. DPH, DMS, ODA and KEHP will collaborate to study the use of claims data to report screening rates for gestational diabetes</li> </ol>
<b>D. Promote and provide information on evidence-based screening and guidelines.</b>	<ol style="list-style-type: none"> <li>1. DPH will work with healthcare providers participating in the Prediabetes Learning Collaborative to increase evidence-based screening</li> <li>2. DMS will work with MCOs to promote screening for gestational diabetes with inclusion in care management programs</li> <li>3. KEHP will continue to work with their medical third-party administrator so that Anthem’s Personal Nurse Consultants (PNCs) can continue to promote screening for gestational diabetes and prediabetes</li> <li>4. DPH will promote the CDC/AMA “Prevent Diabetes Stat” resource to assist providers with approaches to screening, billing, and referral for prediabetes</li> <li>5. Promote utilization of diagnosis code for prediabetes</li> <li>6. Promote the updated USPSTF guidelines for diabetes screening</li> </ol>

**GOAL 3: ENSURE THAT PEOPLE WITH DIABETES HAVE ACCESS TO EVIDENCE-BASED SERVICES, INCLUDING DSMES AND CASE AND DISEASE MANAGEMENT, WHICH IMPROVE KNOWLEDGE, SKILLS AND BEHAVIORS NECESSARY TO MANAGE THEIR DISEASE AND IMPROVE OUTCOMES.**

Objective	Actions
<p><b>A. Improve access to accredited/recognized DSMES services in Kentucky.</b></p>	<ol style="list-style-type: none"> <li>1. DPH will provide training and technical support to local health departments (LHDs) who express interest in providing the nationally accredited/recognized DSMES program and who have the capacity to deliver the services offered by Healthy Living With Diabetes (HLWD)</li> <li>2. DPH will produce, identify and provide tools and materials for delivery of DSMES services</li> <li>3. DPH will provide technical assistance to non-health department DSMES providers/programs</li> <li>4. DPH and partners will work to increase the number of providers serving disparate populations</li> </ol>
<p><b>B. Increase participation in accredited/recognized DSMES programs.</b></p>	<ol style="list-style-type: none"> <li>1. KEHP will offer wellness points for DSMES participation</li> <li>2. KDPCP will continue to provide telehealth and other modalities for delivering DSMES services via HLWD across the commonwealth including disparate population</li> <li>3. DPH will encourage LHD to utilize the <a href="#">kynect resource platform</a> to share resources and services for diabetes</li> <li>4. KEHP’s wellness vendor will provide DSMES information at biometric screening events</li> <li>5. DPH will work with providers to make referrals</li> <li>6. KEHP’s medical third party administrator will work with disease/case managers to make referrals to DSMES</li> <li>7. KDPCP will work with state and national partners to promote DSMES programs as a core measure within the Diabetes Learning Collaborative.</li> </ol>
<p><b>C. Improve referral mechanisms for DSMES.</b></p>	<ol style="list-style-type: none"> <li>1. DPH will work with LHDs to ensure readiness for participation in electronic bidirectional referral mechanisms related to DSMES.</li> <li>2. DMS will provide DSMES information to the MCO quality programs</li> <li>3. DPH will provide information and tools to providers regarding the “four critical times” to refer for DSMES</li> <li>4. DPH will work with state and national partners to integrate an electronic bi-directional referral system for DSMES into a Diabetes Learning Collaborative.</li> </ol>
<p><b>D. Increase the number of KEHP and DMS members who participate in diabetes disease management by 10%.</b></p>	<ol style="list-style-type: none"> <li>1. KEHP, Anthem (current third-party plan administrator) and DMS will continue to offer diabetes disease management services and DSMES referrals</li> <li>2. DMS will evaluate MCO Diabetes CM/DM program outcomes</li> </ol>
<p><b>E. Support DSMES program sustainability.</b></p>	<ol style="list-style-type: none"> <li>1. DMS and KEHP will continue to provide coverage for DSMES</li> <li>2. DMS and DPH will work to better define the current reimbursement mechanism across MCOs</li> </ol>



**GOAL 4: FUND A SUSTAINABLE DIABETES PREVENTION AND CONTROL PUBLIC HEALTH INFRASTRUCTURE AND WORKFORCE AT THE STATE AND LOCAL LEVEL.**

Objective	Actions
<p><b>A. Administer the delivery of population-based diabetes prevention and control services.</b></p>	<ol style="list-style-type: none"> <li>1. DPH will provide funds, guidance, technical assistance and support to LHDs for diabetes prevention and control efforts</li> <li>2. DPH will provide oversight, monitoring and reporting regarding state and local public health activities and funds</li> <li>3. DPH will administer and implement the CDC cooperative agreements to improve diabetes outcomes</li> </ol>
<p><b>B. Collect, analyze and distribute diabetes-related data to stakeholders at least annually.</b></p>	<ol style="list-style-type: none"> <li>1. DPH will collect and/or analyze diabetes-related data from key data sources</li> <li>2. DPH will disseminate data to partners via fact sheets, infographics, documents, presentations and publications</li> <li>3. DPH will work with LHDs to claim sites on the <a href="#">kynect resource platform</a> to post diabetes services and receive referrals</li> </ol>
<p><b>C. Inform, educate and empower people about diabetes-related health issues utilizing two evidence-based interventions.</b></p>	<ol style="list-style-type: none"> <li>1. DPH will provide public awareness curricula, materials and resources across multiple venues</li> <li>2. DPH will provide/facilitate/promote evidence-based behavior change education, specifically: <ul style="list-style-type: none"> <li>• DSMES (see Goal #3)</li> <li>• DPP (see Goal #1)</li> </ul> </li> <li>3. DPH will support innovative efforts such as telehealth for DSMES and DPP delivery</li> </ol>
<p><b>D. Mobilize at least 25 new and existing state and local community partnerships to identify and address diabetes-related health issues.</b></p>	<ol style="list-style-type: none"> <li>1. DPH will provide guidance and support for community coalitions with a focus on diabetes prevention and control (currently 45 coalitions). Current guidance emphasizes the improved access and participation in DSMES and national DPP programs</li> <li>2. DPH will facilitate/participate in the state coalition – Kentucky Diabetes Network (KDN) and organizations interested in diabetes prevention, control and quality improvement (Kentucky Regional Extension Center, the Heart Disease and Stroke Prevention Task Force, employer groups, obesity prevention and physical activity partners, etc.)</li> </ol>
<p><b>E. Develop policies and plans that support individual and community diabetes-related health efforts.</b></p>	<ol style="list-style-type: none"> <li>1. DPH will partner with KDN, local coalitions, purchasers, payers, large employers, health systems and other partners to develop and implement diabetes-related plans and policies particularly in the area of reimbursement for DPP and diabetes quality improvement at the practice level</li> </ol>
<p><b>F. Link people to needed diabetes-related services through at least one resource.</b></p>	<ol style="list-style-type: none"> <li>1. DPH will encourage people with diabetes, communities, LHD, stakeholders, diabetes educators, providers and more to utilize the <a href="#">kynect resource platform</a> to share resources and services for persons with diabetes</li> </ol>

**G. Assure a competent public health diabetes workforce utilizing at least three mechanisms.**

1. DPH will provide continuing education opportunities for public health and state diabetes educators to assist with maintenance of diabetes educator licensure and certification (LDE, CDCES)
2. DPH will facilitate or provide educational opportunities for healthcare professionals, allied health professionals, community health workers and others in providing diabetes education and management services
3. DPH will distribute regular strategic communications (newsletter, e-mail updates, etc.)

**H. Evaluate reach and effectiveness of interventions.**

1. DPH will monitor clinical and behavioral outcomes related to their accredited or recognized DSMES program, “Healthy Living with Diabetes”
2. DPH will contract with professional evaluators for outcome evaluation
3. DPH will continue to strengthen its monitoring of the reach and outcome of interventions with external evaluator
4. DPH will work with health system partners to improve the health of their patient population with diabetes

**GOAL 5: IMPROVE CAPACITY FOR, AND USE OF, DIABETES AND CHRONIC DISEASE SURVEILLANCE SYSTEMS AND HEALTH INFORMATION TECHNOLOGY (HIT) SYSTEMS NEEDED TO DETERMINE THE IMPACT OF DIABETES ON THE COMMONWEALTH AND IMPROVE THE QUALITY OF PREVENTION AND MANAGEMENT EFFORTS.**

Objectives	Actions
<p><b>A. Improve understanding of diabetes health disparities based on social determinants of health (SDOH) including race, ethnicity, income, education and geographic differences.</b></p>	<ol style="list-style-type: none"> <li>1. When new funding is approved, increase the sample size of the Kentucky Behavioral Risk Survey (KyBRFS)</li> <li>2. All agencies will stratify data by demographics that give a comprehensive view of the burden of diabetes among vulnerable populations</li> <li>3. Encourage applicants to indicate their race and ethnicity on the Medicaid application and expand the options available</li> </ol>
<p><b>B. Optimize the use of claims data (now including identifiers) to describe the diabetes epidemic.</b></p>	<ol style="list-style-type: none"> <li>1. ODA will analyze administrative claims/hospital data to assess the scope of readmissions for diabetes complications</li> <li>2. ODA will analyze administrative claims/emergency department data to assess the scope of readmissions for diabetes as primary cause</li> <li>3. KEHP will analyze medical and pharmacy claims data to determine diabetes medication adherence and impact on pharmacy and medical claims related to diabetes and co-morbidities</li> </ol>
<p><b>C. Collect benchmark data as identified in this report.</b></p>	<ol style="list-style-type: none"> <li>1. Calculate diabetes Prevention Quality Indicator (PQI) measures as defined by National Committee for Quality Assurance (NCQA) on an annual basis</li> <li>2. Medicaid MCOs will report diabetes related HEDIS measures and diabetes program outcomes to DMS at least annually including improvement in measurement</li> <li>3. KEHP’s data aggregator will report diabetes HEDIS measures to KEHP on an annual basis</li> <li>4. DPH will collect and report “HEDIS-Like” data from the KyBRFS annually</li> <li>5. DPH, KEHP and DMS will report DSMES participation at least annually</li> <li>6. DPH and KEHP will report DPP participation at least annually to KDPCP</li> <li>7. KEHP and Medicaid MCOs will develop processes to track use of the prediabetes diagnosis code</li> </ol>

**RECOMMENDATIONS FOR THE LEGISLATURE**

To support the achievement of these goals, the committee recommends:

1. Providing \$300,000 in state funding to expand the sample size for the Kentucky Behavioral Risk Factor Survey (KyBRFS) to allow for more complete understanding of the burden of diabetes in Kentucky’s vulnerable and high-risk populations.
2. Providing an additional \$3,000,000 in funding for state and local public health diabetes prevention and control efforts.
3. Providing \$300,000 in funding for the Office of Health Equity to address barriers, inequities and other identified SDOH that impact hard-to-reach and vulnerable populations.

# The Scope of Diabetes in Kentucky

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## DATA MAKES DISPARITIES VISIBLE

While all Kentuckians are at risk of developing diabetes at some time in their life, the disease affects some groups at a higher rate than others. Accurate, timely data are vital to understanding which segments of the population are most affected by diabetes. Better data allows communities to develop targeted interventions to address their specific needs.

Collecting and sharing standardized and meaningful data are the first step in identifying health disparities and in understanding, tracking, reducing and subsequently eliminating them in our work toward achieving health equity.

This section provides data on the scope of diabetes in the commonwealth and within the populations covered by the Kentucky Employees' Health Plan (KEHP) and the Medicaid

program.

The information shared here is structured as a series of one-to-two-page fact sheets addressing different topics such as diabetes prevalence, mortality rates, the impact of gestational diabetes, hospitalizations due to diabetes complications and cardiovascular complications of diabetes.

These data sheets serve multiple purposes. They address requirements defined in the KRS guiding this report, measure and describe the scope of the diabetes epidemic in Kentucky and are used to monitor trends and identify populations disproportionately impacted by diabetes.

Please note that the appendix provides more detailed data breakdowns by race on some topics including hospitalizations, emergency department visits and gestational diabetes.

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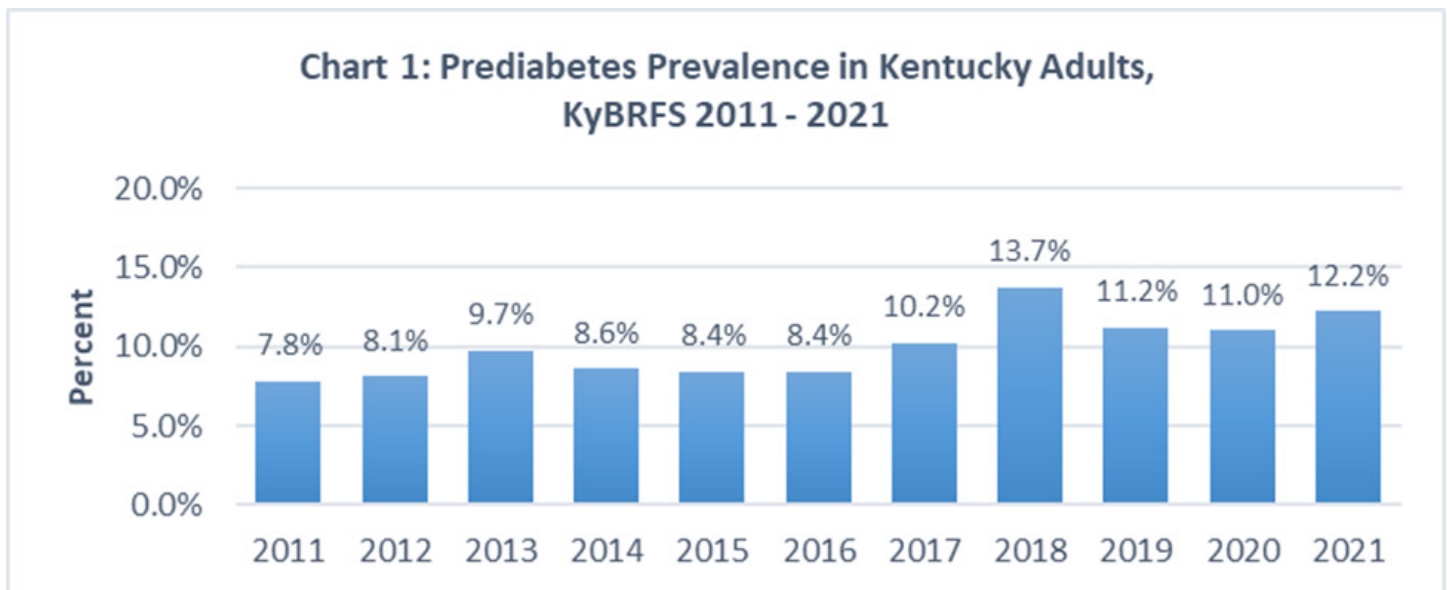
***ACCURATE, TIMELY DATA ARE VITAL TO UNDERSTANDING WHICH SEGMENTS OF THE POPULATION ARE MOST AFFECTED BY DIABETES. BETTER DATA ALLOWS COMMUNITIES TO DEVELOP TARGETED INTERVENTIONS TO ADDRESS THEIR SPECIFIC NEEDS.***

## WHAT IS THE PREVALENCE OF PREDIABETES IN KENTUCKY?

- One in 10 Kentucky adults have been told that they have prediabetes (345,083).
- Men and women have similar rates of prediabetes.
- African Americans have a higher prevalence of prediabetes than whites.
- Prediabetes prevalence increases with age.

Table 1: Kentucky Adults 2021 Prediabetes Prevalence (Source: KyBRFS)		
Characteristic	Prediabetes Prevalence	Estimated Number with Prediabetes
<b>Adults age 18 and older</b>		
All Adults	12.2%	345,083
<b>Gender</b>		
Men	12.1%	164,767
Women	12.3%	180,316
<b>Race</b>		
African American	15.2%	32,319
White	12.1%	291,088
<b>Age</b>		
18-44	7.9%	107,485
45-54	14.7%	63,450
55-64	16.3%	71,641
65+	16.9%	102,502

Prediabetes tracking began in 2011, when the rate was 7.8%. As of 2021, it has increased to 12.2%.

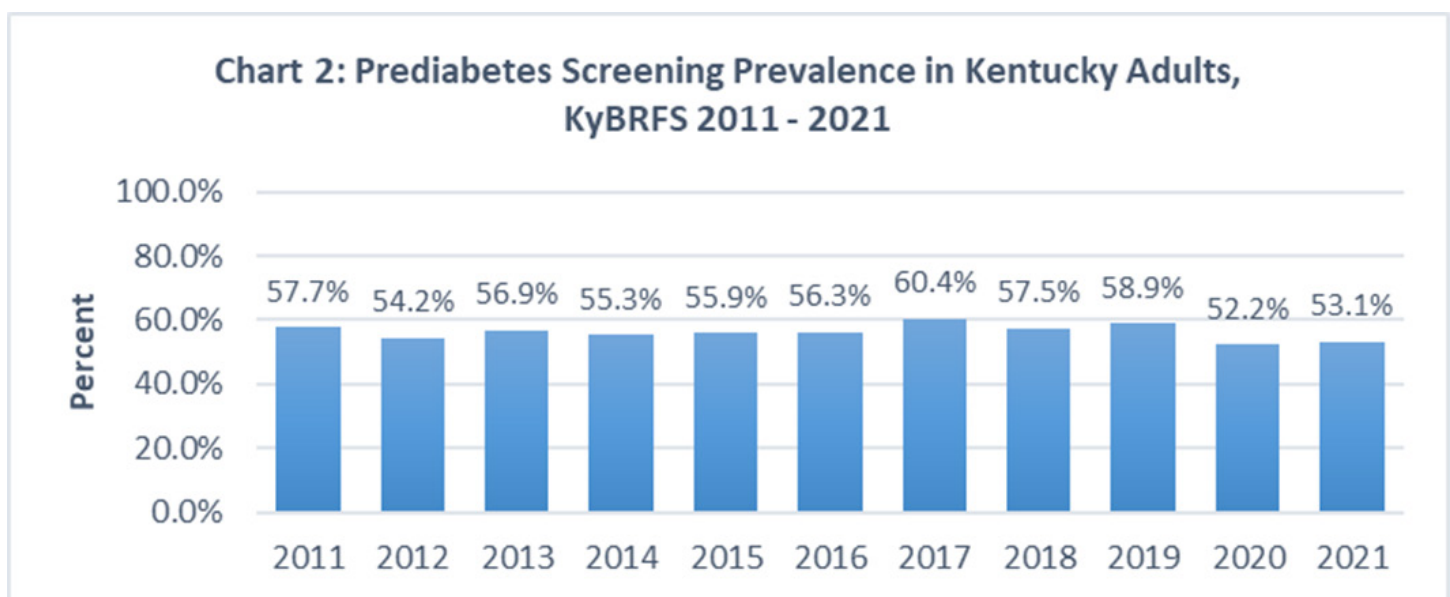


## WHAT PROPORTION OF THE ADULT POPULATION WAS SCREENED FOR DIABETES AND PREDIABETES?

- In the past three years, 53.1% of adults were screened for diabetes/prediabetes.
- Women are more likely to be screened than men.
- Whites are more likely to be screened than African Americans.
- Consistent with screening guidelines, those age 45 and older have higher screening rates than those 18 to 44.

Table 2: Kentucky Adults 2021 Diabetes/Prediabetes Screening (Source: KyBRFS)		
Characteristic	% Screened in past 3 years	Estimated Number Screened
<b>Adults age 18 and older</b>		
All Adults	53.1%	1,464,229
<b>Gender</b>		
Men	48.7%	646,220
Women	57.2%	818,277
<b>Race</b>		
African American	49.5%	101,362
White	53.9%	1,265,243
<b>Age</b>		
18-44	41.6%	553,778
45-54	61.0%	255,771
55-64	64.4%	272,225
65+	65.5%	383,005

Screening rates for diabetes/prediabetes remained essentially flat between 2011 (57.7%) and 2019 (59.9%), but showed a slight decrease in 2021 (53.1%).



## WHAT IS THE PREVALENCE OF DIABETES AMONG KENTUCKY ADULTS?

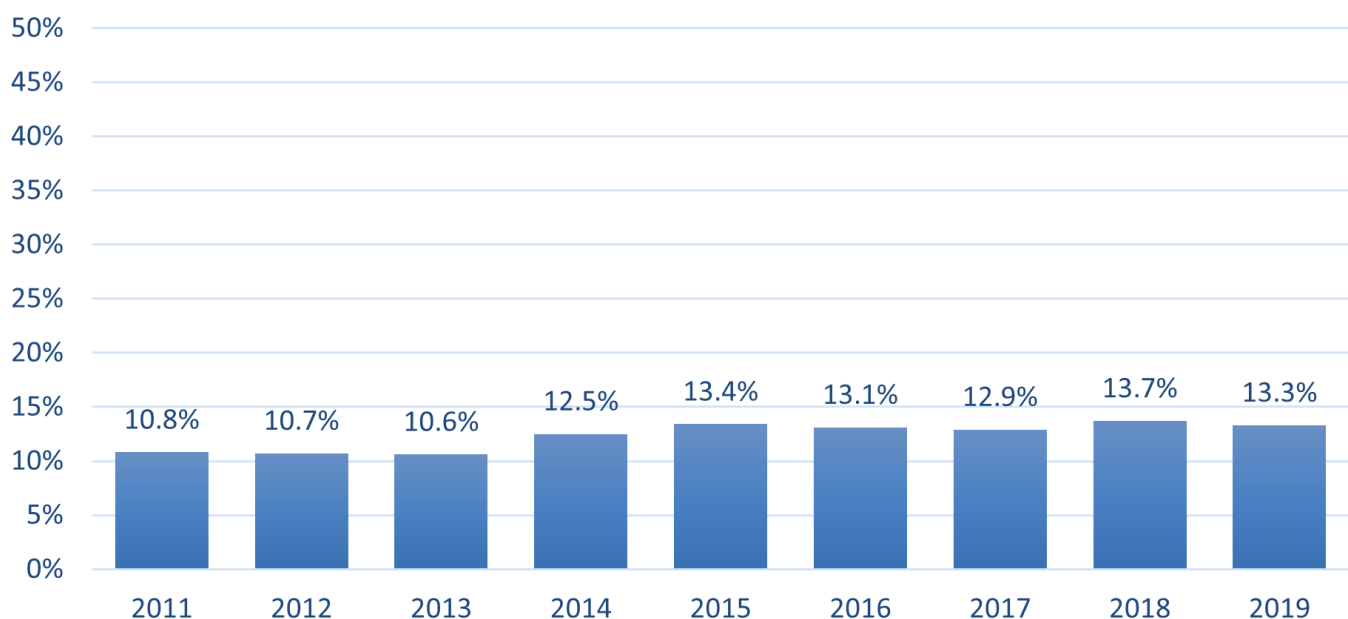
- Kentucky ranks fifth highest in the nation for adult diabetes prevalence.
- More than 486,000 Kentucky adults have been diagnosed with diabetes.
- The prevalence of diabetes in Appalachia is 16.1% and compared to 13.5% in non-Appalachia.
- Diabetes prevalence increases with age (see Table 3).

**Table 3: Kentucky Adults 2021 Diabetes Prevalence**  
(Source: KyBRFS)

Characteristic	Diabetes Prevalence	Estimated Number with Diabetes
<b>Adults age 18 and older</b>		
All Adults	13.8%	486,196
<b>Gender</b>		
Men	14.4%	246,497
Women	13.3%	239,699
<b>Race</b>		
African American	18.5%	50,113
White	13.5%	396,303
<b>Geography</b>		
Appalachia	16.1%	147,518
Non-Appalachia	13.0%	338,678
<b>Age</b>		
18-44	4.9%	76,140
45-54	17.3%	95,063
55-64	22.1%	130,692
65+	22.7%	184,302

In 2011, the adult diabetes prevalence rate in Kentucky was 10.8%, but by 2019 the rate had increased to 13.3%.

**Chart 3: Trend in Diabetes Prevalence in Kentucky Adults, KyBRFS 2011 - 2019**





## WHAT IS THE PREVALENCE OF DIABETES AMONG THE KEHP POPULATION?

- Diabetes prevalence was 9.5% of the adult KEHP population in 2021, up slightly from 8.9% in 2019.
- Diabetes prevalence is higher among men (10.3%) than for women (8.9%).
- The prevalence of diabetes increases with age. Diabetes is present in 1 in 9 KEHP members between ages 45-54, 1 in 6 members ages 55-64 and nearly 1 in 5 of those 65 years and older.

Table 4: KEHP Adults 2021 Diabetes Prevalence		
Characteristic	Diabetes Prevalence	Number with Diabetes
<b>Adults age 18 and older</b>		
All Adults	9.5%	21,246
<b>Gender</b>		
Men	10.3%	9,298
Women	8.9%	11,948
<b>Age</b>		
18-44	3.2%	3,375
45-54	11.2%	6,126
55-64	16.2%	10,526
65+ Not Eligible for Medicare*	18.5%	1,237

\* This category combines two groups: those who work for an active agency who are 65 years and older and elect coverage with KEHP; or retirees 65 years and older who are not Medicare eligible and are therefore permitted to elect KEHP coverage

- Diabetes prevalence is very low among youth covered by KEHP.
- Rates are highest among older youth, age 15-17 at only 0.7%, but this group accounts for 39% (119 out of 306) of youth with diabetes.

Table 5: KEHP Youth – 2019 Diabetes Prevalence		
Characteristic	Diabetes Prevalence	Number with Diabetes
<b>Youth 17 and Under</b>		
All youth	0.46%	306
Boys	0.43%	145
Girls	0.49%	161

Diabetes prevalence among KEHP members is highest in Appalachian districts, compared to other parts of the state.

Table 6: 2021 Diabetes Prevalence Among Adult KEHP Members by Area Development District (ADD) of Residence				
Area Development District	PREVALENCE RATE		NUMBER WITH DIABETES	
	Female	Male	Female	Male
BARREN RIVER	7.9%	9.4%	731	578
BIG SANDY	10.0%	11.7%	433	367
BLUEGRASS	8.6%	9.8%	2,444	1,838
BUFFALO TRACE	9.6%	11.2%	192	157
CUMBERLAND VALLEY	10.3%	10.2%	745	516
FIVCO	10.6%	13.2%	409	373
GATEWAY	9.0%	11.3%	269	240
GREEN RIVER	8.6%	9.6%	569	412
KENTUCKY RIVER	8.9%	10.6%	2,132	1,629
KIPDA	12.1%	12.6%	456	343
LAKE CUMBERLAND	8.8%	9.6%	616	491
LINCOLN TRAIL	7.5%	9.0%	591	477
NORTHERN KY	7.8%	8.9%	819	627
PENNYRILE	9.3%	11.2%	624	500
PURCHASE	8.2%	9.9%	500	409
<i>Out of State</i>	<i>8.7%</i>	<i>10.1%</i>	<i>390</i>	<i>304</i>

## WHAT IS THE PREVALENCE OF DIABETES AMONG MEDICAID BENEFICIARIES?

- There were 160,645 adult Medicaid beneficiaries with diabetes in calendar year 2021, representing 13.6% of the total adult Medicaid population.
- Diabetes prevalence is higher among women (14.3%) than for men (12.8%).
- The prevalence of diabetes increases with age. Diabetes is present in 1 in 18 members between the ages of 19-44, 1 in 5 members between ages 45-54, over 1 in 4 members ages 55-64 and more than 1 in 4 of those 65 years and older.
- Diabetes prevalence is highest among white race beneficiaries at 13.9%.
- Beneficiaries in Appalachian and non-metro counties have higher rates of diabetes than those in non-Appalachian or metro counties.

Table 7: Medicaid Adults– 2021 Diabetes Prevalence		
Characteristic	Diabetes Prevalence	Number with Diabetes
<b>Adults age 19 and older</b>		
All Adults	13.6%	160,645
<b>Gender</b>		
Men	12.8%	66,493
Women	14.3%	94,152
<b>Age</b>		
19-44	5.6%	37,442
45-54	19.4%	37,935
55-64	26.1%	49,045
65+	27.8%	36,223
<b>Race/Ethnicity</b>		
White	13.9%	109,529
African American	13.3%	15,394
Hispanic	10.4%	2,452
All Other Races and Unknown	13.2%	33,270
<b>Geography</b>		
Appalachia	15.7%	72,115
Non-Appalachia	12.3%	88,530
Metro	12.1%	67,173
Non-Metro Urban	14.8%	70,796
Non-Metro Rural	15.7%	22,676
Unknown-Out of State	0.0%	0
Source: Medicaid Claims Data		

See Attachment 2 for a county level map of diabetes prevalence among adult Medicaid beneficiaries.

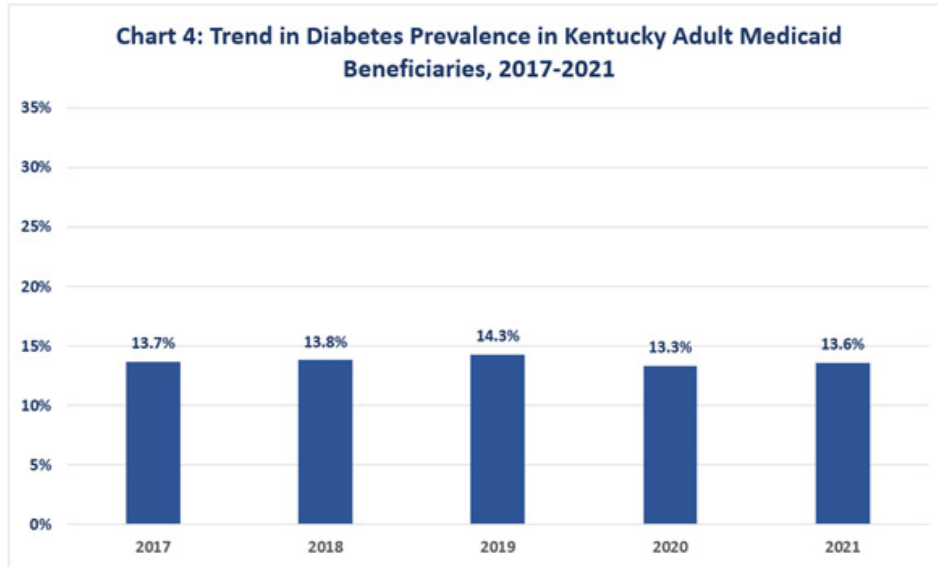
- In calendar year 2021, there were 2,823 youth Medicaid beneficiaries with diabetes, representing 0.44% of the total youth Medicaid population.
- Diabetes prevalence is slightly higher among girls (0.49%) than for boys (0.39%).
- The prevalence of diabetes increases slightly with age, with the highest rate of 1.21% seen in the 15 to 18 year old age group.
- Diabetes prevalence is highest among white race beneficiaries at 0.45%.
- Beneficiaries in Appalachian and non-metro counties have slightly higher rates of diabetes than those in non-Appalachian or metro counties.

Table 8: Medicaid Youth – 2021 Diabetes Prevalence		
Characteristic	Diabetes Prevalence	Number with Diabetes
<b>Youth age 18 and under</b>		
All Youth	0.44%	2,823
<b>Gender</b>		
Girls	0.49%	1,543
Boys	0.39%	1,280
<b>Age</b>		
<5	0.05%	84
5-9	0.17%	300
10-14	0.52%	891
15-18	1.21%	1,548
<b>Race/Ethnicity</b>		
White	0.45%	1,821
African American	0.43%	352
Hispanic	0.31%	124
All Other races and Unknown	0.44%	526
<b>Geography</b>		
Appalachia	0.54%	1,118
Non-Appalachia	0.39%	1,705
Metro	0.40%	1,361
Non-Metro Urban	0.48%	1,129
Non-Metro Rural	0.49%	333
Source: Medicaid Claims Data		

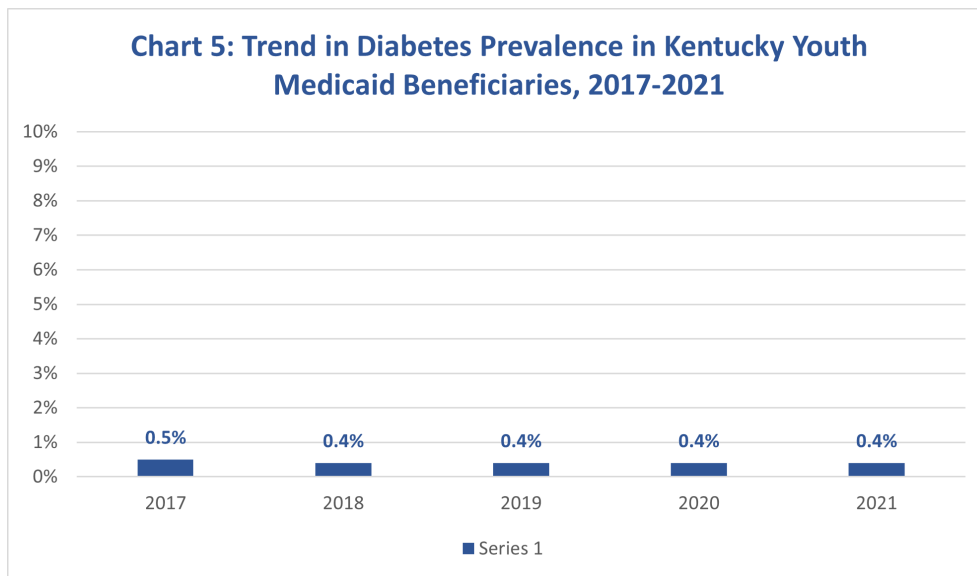
See Attachment 3 for a county level map of diabetes among youth Medicaid beneficiaries.

## WHAT IS THE TREND IN DIABETES PREVALENCE FOR MEDICAID BENEFICIARIES?

- Diabetes prevalence has increased slightly each year between 2017 and 2021.
- By 2021, the diabetes prevalence rate, among all adult Medicaid beneficiaries was 13.6%.
- The total number of adult beneficiaries with diabetes increased 1.2 fold from 139,176 in 2017 to 160,645 in 2021, but the percent of beneficiaries with diabetes remained similar.



- The diabetes prevalence in Kentucky Medicaid youth has remained stable since 2017.



## WHAT IS THE PREVALENCE OF GESTATIONAL DIABETES MELLITUS FOR MOTHERS WITH LIVE BIRTHS IN KENTUCKY?

- Gestational diabetes was present in 4,797 (10.2%) of Kentucky live births in 2021, and an additional 124 (0.3%) of mothers had been diagnosed with diabetes pre-pregnancy.
- Gestational diabetes rates are noticeably higher than average in Northern Kentucky District (14.1%), Big Sandy District (14.0%), and Kentucky River District (13.8%).
- The Purchaser District had the highest rate of live births with no maternal diabetes (91.6%).

**Table 9: Maternal Diabetes Status of Kentucky Mothers with Live Births in 2021**

(Source: Health Facilities and Service Data, Office of Data Analytics)

Patient Area Development District*	Pre-Existing Maternal Diabetes		Gestational Diabetes		No Maternal Diabetes		Total By District
	Count	%	Count	%	Count	%	Count
BARREN RIVER	10	0.3%	346	9.9%	3,123	89.8%	3,479
BIG SANDY	5	0.4%	180	14.0%	1,098	85.6%	1,283
BLUEGRASS	21	0.3%	838	10.2%	7,375	89.6%	8,234
BUFFALO TRACE	2	0.4%	55	10.3%	475	89.3%	532
CUMBERLAND VALLEY	11	0.4%	247	9.5%	2,350	90.1%	2,608
FIVCO	2	0.2%	101	10.7%	838	89.1%	941
GATEWAY	2	0.2%	78	8.9%	799	90.9%	879
GREEN RIVER	5	0.2%	199	9.6%	1,866	90.1%	2,070
KENTUCKY RIVER	0	0.0%	134	13.8%	835	86.2%	969
KIPDA	32	0.3%	958	8.7%	9,981	91.0%	10,971
LAKE CUMBERLAND	4	0.2%	189	9.1%	1,883	90.7%	2,076
LINCOLN TRAIL	3	0.1%	346	11.1%	2,766	88.8%	3,115
NORTHERN KENTUCKY	7	0.2%	587	14.1%	3,555	85.7%	4,149
PENNYRILE	7	0.4%	173	9.3%	1,674	90.3%	1,854
PURCHASE	7	0.4%	153	8.0%	1,755	91.6%	1,915
OUT OF STATE	6	0.3%	213	11.5%	1,628	88.1%	1,847
<b>TOTAL</b>	<b>124</b>	<b>0.3%</b>	<b>4,797</b>	<b>10.2%</b>	<b>42,001</b>	<b>89.5%</b>	<b>46,922</b>

\* Resident birth data are compiled according to the mother's place of residence in the specified geographic area.

Note (s): Maternal Diabetes Status: Gestational Diabetes ICD-10 Codes O244x; Pre-Existing Maternal Diabetes ICD-10 Codes O240x-O243x

## HOW DOES DIABETES AFFECT THE TYPE OF DELIVERY FOR KENTUCKY MOTHERS?

- Gestational diabetes was present in 4,797 (10.2%) of Kentucky live births in 2021
- Among mothers with pre-existing maternal diabetes 40.3% had vaginal deliveries and 59.7% had C-section deliveries.
- Among mothers with gestational diabetes 54.0% had vaginal deliveries and 46.0% had C-section deliveries.
- Among mothers with no maternal diabetes 64.9% had vaginal deliveries and 35.1% had C-section deliveries.

**Table 10: Maternal Diabetes Status and Type of Delivery, All Kentucky Hospital Deliveries and Live Births 2021**

(Source: Health Facilities and Services Data, Office of Data Analytics)

Type of Delivery	Pre-existing Maternal Diabetes	Gestational Diabetes	No Maternal Diabetes	Total Deliveries
<b>All Deliveries</b>	<b>124</b>	<b>4,797</b>	<b>42,001</b>	<b>46,922</b>
<b>(% of all deliveries)</b>	<b>0.3%</b>	<b>10.2%</b>	<b>89.5%</b>	<b>100%</b>
Vaginal Deliveries	50	2,588	27,792	30,430
(% of deliveries by diabetes type)	40.3%	54.0%	66.2%	64.9%
C-Section Deliveries	74	2,209	14,209	16,492
(% of deliveries by diabetes type)	59.7%	46.0%	33.8%	35.1%

Note(s): Maternal Diabetes Status: Gestational Diabetes ICD-10 Codes O244x; Pre-Existing Diabetes ICD-10 Codes O240x-O243x



## HOW DOES DIABETES AFFECT THE TYPE OF DELIVERY FOR KENTUCKY MEDICAID MOTHERS?

- Gestational diabetes was present in 12% of Medicaid beneficiaries who gave birth in 2021.
- 53% of births to mothers with gestational diabetes covered by Medicaid were vaginal deliveries and 47% were C-Section deliveries.
- 38% of births to Medicaid mothers with pre-existing (type 1 or type 2) diabetes were vaginal deliveries and 62% were C-Section deliveries.
- 68% of births to Medicaid mothers with no diabetes diagnosis were vaginal deliveries and 32% were C-Section deliveries.

**Table 11: Diabetes and Type of Delivery, Medicaid Mothers, Kentucky: 2021**

Type of Delivery	Pre-existing Diabetes	Gestational Diabetes	No Diabetes Diagnosis Indicated	Total Deliveries
<b>Number of Deliveries</b>	<b>732</b>	<b>3,136</b>	<b>22,772</b>	<b>26,640</b>
<b>(% of all deliveries by diabetes type)</b>	<b>3%</b>	<b>12%</b>	<b>85%</b>	<b>100%</b>
Vaginal	279	1,670	15,399	17,348
(% of deliveries by diabetes type)	38%	53%	68%	65%
C-Section	453	1,466	7,373	9,292
(% of deliveries by diabetes type)	62%	47%	32%	35%

Data Source: Medicaid Data, Department for Medicaid Services. Medicaid Beneficiaries who have a claim using the live birth DRG codes. Gestational diabetes is determined based on look back period of 39 weeks from live birth and pre-existing diabetes is determined based on look back period of 2 years from live birth.

## HOW DOES DIABETES AFFECT THE TYPE OF DELIVERY FOR KEHP MOTHERS?

- Gestational diabetes was present in 2% of women covered by KEHP who gave birth in 2021.
- 76% of births to mothers with gestational diabetes covered by KEHP were vaginal deliveries and 24% were C-Section deliveries.
- All births to mothers covered by KEHP with pre-existing (type 1 or type 2) diabetes were vaginal deliveries.
- 90% of births to mothers covered by KEHP with no diabetes diagnosis were vaginal deliveries and 10% were C-Section deliveries.

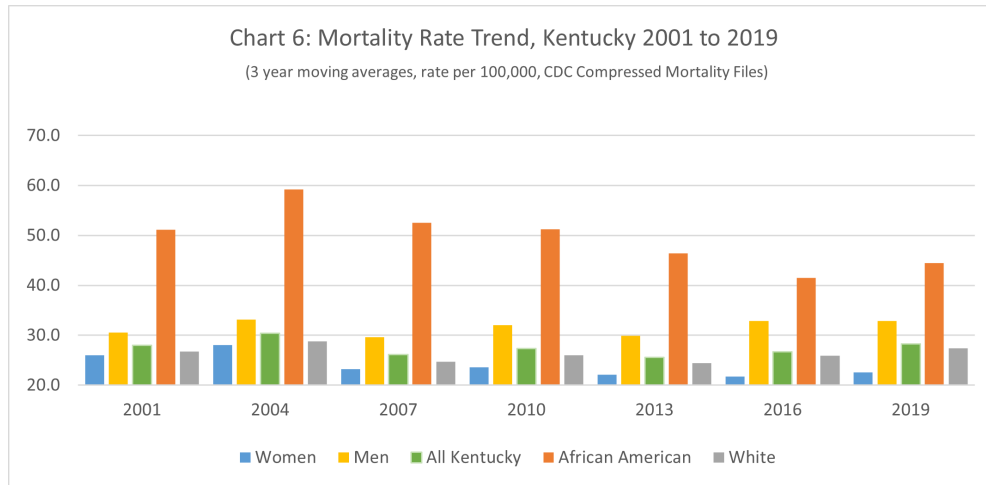
**Table 12: KEHP Number and Percentage of Vaginal and C-Section Deliveries by Type of Diabetes Diagnosis of Mother, Kentucky: 2021**

	Pre-pregnancy Diabetes	Gestational Diabetes	No Diabetes Diagnosis Indicated	Total Deliveries
<b>Number of Deliveries</b>	<b>4</b>	<b>25</b>	<b>1,581</b>	<b>1,610</b>
<b>(% of all deliveries by diabetes type)</b>	<b>0.2%</b>	<b>1.6%</b>	<b>98%</b>	<b>100%</b>
Vaginal Deliveries	4	19	1,418	1,441
(% of deliveries by diabetes type)	100%	76%	90%	90%
C-Section Deliveries	0	6	163	169
(% of deliveries by diabetes type)	0%	24%	10%	10%

Data Source: KEHP claims data for births in 2021

## WHAT IS THE DEATH RATE DUE TO DIABETES IN KENTUCKY?

- In 2020, Kentucky had the thirteenth highest rate of death due to diabetes in the nation. This is a change in ranking from 4<sup>th</sup> in the nation in 2019. -Note – this is due to shifts nationwide in the number of deaths coded as diabetes with the impact of COVID19 -
- Since 2001, diabetes mortality rates have increased slightly for men but decreased somewhat for women. Rates for African American Kentuckians are substantially higher than for white Kentuckians, but show a general decrease over time.



- Diabetes is the seventh leading cause of death by disease in Kentucky and in the nation.
- Death due to diabetes ranks seventh for white women and sixth for white men.
- Death due to diabetes ranks sixth for African American women and fourth for African American men.

**Table 13: 2020 Ranking\* of Diabetes among Leading Causes of Death Shown by Race and Gender**  
(Source: National Center for Health Statistics, Compressed Mortality File)

	Ranked Cause of Death in Kentucky	Number of Deaths	Kentucky Age Adjusted Rate Per 100,000	National Age Adjusted Rate Per 100,000
<b>Total</b>	<b>7<sup>th</sup></b>	<b>1,549</b>	<b>27.7</b>	<b>24.8</b>
Men	6 <sup>th</sup>	850	34.1	31.2
Women	7 <sup>th</sup>	699	22.6	19.5
White (All)	7 <sup>th</sup>	1,392	27.0	22.4
White Men	6 <sup>th</sup>	766	33.4	28.6
White Women	7 <sup>th</sup>	626	22.0	17.1
African American (All)	5 <sup>th</sup>	151	42.4	45.3
African American Men	4 <sup>th</sup>	80	50.9	55.4
African American Women	6 <sup>th</sup>	71	35.2	37.8

\*Ranking excludes accident as a cause of death

## GEOGRAPHIC VARIATION IN DIABETES MORTALITY

- There is significant geographic variation in diabetes death rates across Kentucky.
- For 2020, the five Area Development Districts (ADDs) with the highest diabetes death rates were in eastern Kentucky.

**Table 14: 2019 Kentucky Deaths Due to Diabetes by Area Development District (ADD)**  
(Source: Kentucky Department for Public Health, Vital Statistics)

ADD	Number of Deaths	Age Adjusted Rate/100,000	Ranked Cause of Death
BARREN RIVER	133	35.4	7 <sup>th</sup>
BIG SANDY	51	28.9	8 <sup>th</sup>
BLUEGRASS	212	21.4	7 <sup>th</sup>
BUFFALO TRACE	35	45.5	6 <sup>th</sup>
CUMBERLAND VALLEY	124	41.2	5 <sup>th</sup>
FIVCO	69	36.1	7 <sup>th</sup>
GATEWAY	21	19.7	9 <sup>th</sup>
GREEN RIVER	85	30.3	6 <sup>th</sup>
KENTUCKY RIVER	61	47.1	6 <sup>th</sup>
KIPDA	255	20.8	7 <sup>th</sup>
LAKE CUMBERLAND	109	39.1	6 <sup>th</sup>
LINCOLN TRAIL	111	32.6	6 <sup>th</sup>
NORTHERN KY	134	23.8	7 <sup>th</sup>
PENNYRILE	84	31.6	6 <sup>th</sup>
PURCHASE	64	22.8	8 <sup>th</sup>
<b>TOTAL</b>	<b>1,549</b>	<b>28.5</b>	<b>7<sup>th</sup></b>

## HOW MANY HOSPITALIZATIONS OCCUR DUE TO DIABETES?

- Diabetes was the primary diagnosis for 14,212 hospitalizations with an average length of stay (ALOS) of 6.6 days, average charge of \$46,185 and total billed charges of \$605,902,080.
- The most frequent complication was “Other Specified Manifestations,” a new category under the change to ICD10 codes initiated in 2015. This includes hypoglycemia, arthropathy, skin condition and oral complications. This category accounted for 48.0% (6,042) of all cases with an ALOS of 2.3 days, average charge of \$38,556 and total billed charges of \$263,026,335.
- Diabetic ketoacidosis (DKA) is a life-threatening complication in which ketones (fatty acids) build up in the blood due to a lack of insulin. In 2021, DKA accounted for 28.5% (2,855) of all diabetes-primary cause hospitalizations, with an ALOS of 3.3 days, an average charge of \$29,236 and total billed charges of \$118,522,343.
- Among cases with noted manifestations, renal manifestations had the longest ALOS of 12.5 days, an average charge of \$114,758 and total billed charges of \$13,656,238 for all stays. Kidney disease leading to kidney failure requiring dialysis and transplant is a common complication of diabetes.

**Table 15: Kentucky Inpatient Hospital Discharges 2021**

*Specific Diabetes Complication as Principal Diagnosis*

(Source: Health Facilities and Services Data, Office of Health Data and Analytics)

Primary Diagnosis (ICD-10 E10.x-E13.x; ICD-9 250.x, 648.8x, 648.0x)	Total Discharges	Total Individuals	Percent of Discharges	ALOS	Avg. Charge	Total Charges
Hyperosmolarity	310	305	2.2%	3.9	\$31,626	\$9,804,115
Ketoacidosis (DKA)	4,054	2,855	28.5%	3.3	\$29,236	\$118,522,343
Other Specified Manifestations	6,822	6,042	48.0%	5.4	\$38,556	\$263,026,335
Unspecified Complications	447	447	3.1%	2.3	\$16,272	\$7,273,746
With Neurological Manifestations	568	429	4.0%	4.8	\$37,697	\$21,412,060
With Ophthalmic Manifestations	3	3	0.0%	4.0	\$32,922	\$98,765
With Peripheral Circulatory Disorders	1,860	1,593	13.1%	9.0	\$92,182	\$171,458,392
With Renal Manifestations	119	111	0.8%	12.5	\$114,758	\$13,656,238
Without Mention of Complication	29	18	0.2%	13.9	\$22,417	\$650,087
<b>TOTAL</b>	<b>14,212</b>	<b>11,803</b>	<b>100.0%</b>	<b>6.6</b>	<b>\$46,185</b>	<b>\$605,902,080</b>

## DIABETES HOSPITALIZATIONS BY AREA DEVELOPMENT DISTRICT (ADD)

- Hospitalizations shown below includes only those with diabetes listed as the primary diagnosis. Cases are classified by the ADD in which the resident resides, not the ADD where the hospital is located.
- Diabetes primary diagnosis hospitalizations produced total charges of approximately \$570 million in 2021.
- The highest average charges are for residents of the Big Sandy and Lake Cumberland ADDs, areas known to have the highest rates of diabetes in the state.

**Table 16: Kentucky Inpatient Discharges for Diabetes as Primary Diagnosis, 2021**  
(Source: Health Facilities and Services Data, Office of Data & Analytics)

Patient ADD	Discharges	Individuals	Avg. Charge	Total Charge	ALOS
BARREN RIVER	940	772	\$40,952	\$38,494,460	5.3
BIG SANDY	527	417	\$55,929	\$29,474,797	5.0
BLUEGRASS	2,376	1,863	\$49,122	\$116,713,587	6.0
BUFFALO TRACE	154	111	\$45,201	\$6,960,942	5.5
CUMBERLAND VALLEY	906	698	\$42,410	\$38,423,679	5.8
FIVCO	496	412	\$41,464	\$20,566,058	4.5
GATEWAY	263	226	\$42,727	\$11,237,267	5.1
GREEN RIVER	517	401	\$27,447	\$14,190,150	4.1
KENTUCKY RIVER	619	477	\$47,775	\$29,572,864	5.2
KIPDA	2,813	2,225	\$40,209	\$113,108,166	4.8
LAKE CUMBERLAND	633	495	\$53,374	\$33,785,667	6.1
LINCOLN TRAIL	868	683	\$36,950	\$32,072,988	4.7
NORTHERN KENTUCKY	1,261	982	\$38,159	\$48,118,936	5.3
PENNYRILE	490	408	\$32,205	\$15,780,469	4.8
PURCHASE	547	418	\$38,502	\$21,060,712	4.2
<b>TOTAL</b>	<b>13,410</b>	<b>10,588</b>	<b>\$42,162</b>	<b>\$569,560,741</b>	<b>5.1</b>

## HOW MANY EMERGENCY DEPARTMENT VISITS ARE DUE TO DIABETES?

- Emergency department (ED) data shown below includes only those visits not resulting in a full hospitalization. 24-hour observation stays are included in ED data. Cases are classified by the ADD in which the resident resides, not the ADD where the hospital is located.
- ED visits for diabetes produced billed charges of nearly \$100 million in 2021.
- The highest average charges for ED visits due to diabetes are residents of the Big Sandy and Kentucky River ADDs, areas known to have some of the highest rates of diabetes in the state.

**Table 17: Emergency Department Encounters with Diabetes coded as the Primary Reason for the Admission, 2021**

(Source: Health Facilities and Service Data, Office of Data Analytics)

Patient ADD	Discharges	Individuals	Average Charges	Total Charges
BARREN RIVER	1,146	920	\$6,837	\$7,834,941
BIG SANDY	619	530	\$11,370	\$7,037,949
BLUEGRASS	2,691	2,024	\$6,268	\$16,866,249
BUFFALO TRACE	166	117	\$5,892	\$978,104
CUMBERLAND VALLEY	1,145	908	\$7,054	\$8,076,608
FIVCO	493	405	\$5,028	\$2,478,647
GATEWAY	388	307	\$5,942	\$2,305,605
GREEN RIVER	789	605	\$5,747	\$4,534,693
KENTUCKY RIVER	556	437	\$9,244	\$5,139,612
KIPDA	2,978	2,339	\$7,289	\$21,705,713
LAKE CUMBERLAND	941	705	\$5,634	\$5,301,441
LINCOLN TRAIL	930	749	\$5,315	\$4,942,610
NORTHERN KENTUCKY	1,073	855	\$4,007	\$4,299,798
PENNYRILE	774	608	\$6,737	\$5,214,322
PURCHASE	519	416	\$6,137	\$3,185,159
<b>TOTAL</b>	<b>15,208</b>	<b>11,925</b>	<b>\$6,567</b>	<b>\$99,901,452</b>

## WHAT OTHER COMMON CHRONIC CONDITIONS AND RISK FACTORS FOR COMPLICATIONS ARE SEEN AMONG PEOPLE WITH DIABETES?

- People with diabetes experience significantly higher rates of other common chronic diseases, which can complicate self-management and medical care.
- Nearly 54% of people with diabetes have arthritis, which can limit their ability to be physically active and make it more difficult to use injectable medications or open pill bottles.
- Asthma affects about 17% of those with diabetes. Corticosteroids used to control asthma and chronic obstructive pulmonary disease (COPD) can make blood glucose control more difficult.
- Nineteen percent of Individuals with diabetes have coronary heart disease, compared to just 4% of individuals without diabetes.
- Hypertension is a risk factor in almost 78% of those with diabetes. Hypertension with or without uncontrolled blood glucose can lead to blindness, kidney disease, heart disease, peripheral artery disease and lower extremity amputations.
- Diabetes is associated with dental disease and tooth loss. Around 30% of those aged 65 and older with diabetes have had all their natural teeth extracted due to dental disease, compared to 23% of those without diabetes.
- Cigarette smoking is essentially the same for those with diabetes (24.4%) as those without diabetes (23.5%).
- More than half of those with diabetes are obese, compared to 33% of those without diabetes.
- Half of those with diabetes are physically inactive compared to 30% of those without diabetes.

**Table 18: Chronic Diseases and Risk Factors for Complications – People with Diabetes and Those Without Diabetes**  
(Source: 2021 KyBRFS)

Chronic Condition	With Diabetes	Without Diabetes
Arthritis	53%	28%
Asthma	18%	11%
Coronary heart disease	17%	5%
COPD	20%	10%
Depression	38%	25%
Hypertension	77%	34%
High cholesterol	64%	33%
All natural teeth extracted (65 or older only)	28%	21%
Current smokers	20%	20%
Obesity	66%	36%
No leisure time physical activity	44%	28%



## WHAT ARE THE HOSPITALIZATION CHARGES ASSOCIATED WITH COMMON COMPLICATIONS OF DIABETES?

- The most common complication of uncontrolled diabetes is cardiovascular disease. The combination of diabetes with high blood pressure and/or high cholesterol is tied to increased rates of cardiovascular diseases such as heart attacks and stroke.
- Hospitalizations due to cardiovascular and cerebrovascular diseases resulted in total charges of almost \$2 billion in Kentucky in 2021.
- More than half of all hospitalizations for a primary diagnosis of hypertensive disease (65%) include a secondary diagnosis of diabetes.

**Table 19: Cardiovascular Diseases Hospitalizations for those With and Without Diabetes, 2021**  
(Source: Health Facilities and Service Data, Office of Data Analytics)

Primary Diagnosis	With Diabetes			Without Diabetes			% of Discharges with Diabetes
	Discharges	Individuals	Total Charges	Discharges	Individuals	Total Charges	
Cerebrovascular Disease	7,642	5,946	\$563,272,941	8,300	6,760	\$688,900,803	48%
Congestive Heart Failure	1,018	896	\$49,795,139	986	870	\$47,951,681	51%
Hypertensive Disease	12,561	9,295	\$654,973,777	6,765	5,510	\$335,810,149	65%
Ischemic Heart Disease	8,075	7,148	\$863,729,881	7,629	7,051	\$750,877,707	51%
<b>TOTAL</b>	<b>29,296</b>	<b>23,285</b>	<b>\$2,131,771,738</b>	<b>23,680</b>	<b>20,191</b>	<b>\$1,823,540,340</b>	<b>55%</b>

## HOW DO CHARGES FOR DIABETES HOSPITALIZATIONS COMPARE TO THE CHARGES FOR HOSPITALIZATION DUE TO OTHER COMMON CHRONIC DISEASES?

- Diabetes and other chronic diseases often result in costly hospitalizations. The conditions listed below are among the most common in Kentucky.
- Coronary artery disease has the highest average charge for hospitalizations in Table 20 at \$107,495. Diabetes has the fourth highest average charge at \$42,633.

**Table 20: Kentucky 2021 Inpatient Discharges for Common Chronic Diseases**  
(Source: Health Facilities and Service Data, Office of Data Analytics)

Primary Diagnosis	Discharges	Individuals	Average Charges (Charges are higher than the final cost negotiated with insurers)	Total Charges (Charges are higher than the final cost negotiated with insurers)
Asthma (Adult)	572	522	\$25,261	\$14,449,240
Asthma (Childhood)	578	540	\$17,034	\$9,845,727
Heart Failure	2,004	1,766	\$48,776	\$97,746,820
COPD	7,034	5,683	\$33,022	\$232,277,133
<b>Diabetes</b>	<b>14,212</b>	<b>11,235</b>	<b>\$42,633</b>	<b>\$605,902,080</b>
Coronary Artery Disease	14,307	12,957	\$107,495	\$1,537,927,132
Hypertension	19,326	14,805	\$51,267	\$990,783,926

## WHAT IS THE COST OF DIABETES AND OTHER COMMON CHRONIC DISEASES IN THE MEDICAID PROGRAM?

- For adult Medicaid beneficiaries, diabetes was the second highest total cost chronic disease hospitalization as seen in Table 21.
- In the per patient average cost, diabetes ranked fifth.

**Table 21: 2021 Cost of Diabetes and Other Common Chronic Diseases for Adult Medicaid Beneficiaries**

Chronic Condition	# of Beneficiaries	Total Cost	Average Cost Per Patient
Asthma	26,670	\$11,579,455	\$434
Cerebrovascular Disease	20,540	\$190,913,217	\$9,295
Congestive Heart Failure	18,515	\$54,499,555	\$2,944
COPD	69,189	\$125,421,229	\$1,813
Coronary Artery Disease	35,477	\$98,367,880	\$2,773
<b>Diabetes</b>	<b>111,521</b>	<b>\$173,124,306</b>	<b>\$1,552</b>
Hypertensive Disease	185,545	\$142,350,791	\$767

Source: Medicaid Data, Department for Medicaid Services

Beneficiaries often have multiple diagnosis codes on the same claim, costs are assigned to the disease indicated in the first position on each claim. There is no “total” line because individual beneficiaries are counted more than once in this table if they have any of the conditions listed. Prescription costs are not included in this table.

- For youth Medicaid beneficiaries, diabetes was the second highest total cost chronic disease included in Table 22.
- In per patient average cost, diabetes ranks second highest.

**Table 22: 2021 Cost of Diabetes and Other Common Chronic Diseases for Youth Medicaid Beneficiaries**

Chronic Condition	# of Beneficiaries	Total Cost	Average Cost per Patient
Asthma	18,965	\$8,202,119	\$432
Cerebrovascular Disease	519	\$1,374,563	\$2,648
Congestive Heart Failure	111	\$969,636	\$8,735
Chronic Bronchitis	4,329	\$671,374	\$155
Coronary Artery Disease	86	\$35,933	\$418
<b>Diabetes</b>	<b>2,329</b>	<b>\$7,220,988</b>	<b>\$3,100</b>
Hypertensive Disease	2,092	\$2,374,792	\$1,135

Source: Medicaid Data, Department for Medicaid Services

Beneficiaries often have multiple diagnosis codes on the same claim, costs are assigned to the disease indicated in the first position on each claim. There is no “total” line because individual beneficiaries are counted more than once in this table if they have any of the conditions listed. Prescription costs are not included in this table. Congestive Heart failure and Coronary Artery Disease are not included in this table due to low prevalence among children.

## WHAT IS THE COST OF DIABETES AND OTHER COMMON CHRONIC DISEASES FOR KEHP?

- Among adults covered by KEHP, the highest total cost condition is chronic back pain followed by essential hypertension, diabetes, osteoarthritis and cancer.
- The highest per patient cost condition is congestive heart failure followed by coronary artery disease, COPD, cancer, osteoarthritis, and diabetes.

**Table 23: KEHP Comparison of Diabetes and Other Chronic Conditions in Adults for 2021**

Condition	Patients	Net Pay Med	Net Pay Rx	Net Pay Med and Rx	Net Pay per Patient
Asthma	4,326	\$4,555,459	\$11,655,186	\$16,210,646	\$3,747
Cancer	16,720	\$139,842,097	\$30,544,238	\$170,386,335	\$10,191
Chronic Back	39,667	\$71,126,695	\$3,375,995	\$74,502,690	\$1,878
COPD	843	\$24,409,509	\$1,716,724	\$26,126,233	\$30,992
Congestive Heart Failure	1,576	\$12,614,540	\$3,113,019	\$15,727,559	\$9,979
Coronary Artery Disease	4,592	\$57,414,797	\$5,136,145	\$62,550,942	\$13,622
<b>Diabetes</b>	<b>21,295</b>	<b>\$54,776,372</b>	<b>\$100,981,066</b>	<b>\$155,757,438</b>	<b>\$7,314</b>
Hypertension, Essential	35,216	\$53,909,091	\$14,651,084	\$68,560,174	\$1,947
Osteoarthritis	14,471	\$74,788,943	\$6,448,853	\$81,237,796	\$5,614
Overweight/Obesity	4,877	\$17,050,239	\$4,722,010	\$21,772,248	\$4,464

## WHAT IS THE COST OF DIABETES AND OTHER COMMON CHRONIC DISEASES AMONG YOUTH COVERED BY KEHP?

- For youth covered by KEHP, the highest total cost conditions are chronic back pain, asthma, diabetes, followed by cancer.
- The highest per patient cost condition is congestive heart failure, cancer, diabetes, followed by COPD.

**Table 24: KEHP Comparison of Diabetes and Other Chronic Conditions in Children for 2019**

Condition	Patients	Net Pay Med	Net Pay Rx	Net Pay Med and Rx	Net Pay per Patient
Asthma	1,477	\$1,344,171	\$1,472,377	\$2,816,548	\$1,907
Cancer	209	\$6,960,391	\$499,526	\$7,459,917	\$35,693
Chronic Back	3,310	\$4,829,352	\$45,349	\$4,874,701	\$1,473
COPD	6	\$2,274,329	\$1,014	\$2,275,343	\$379,224
Congestive Heart Failure	5	\$1,074	\$3,117	\$4,191	\$838
Coronary Artery Disease	2	\$261		\$261	\$130
<b>Diabetes</b>	<b>308</b>	<b>\$1,532,028</b>	<b>\$1,767,961</b>	<b>\$3,299,989</b>	<b>\$10,714</b>
Hypertension, Essential	86	\$1,974,505	\$7,394	\$1,981,899	\$23,045
Osteoarthritis	63	\$227,048	\$852	\$227,900	\$3,617
Overweight/Obesity	181	\$87,102	\$7,590	\$94,692	\$523

# Addressing Diabetes in Kentucky

## APPLYING THE EVIDENCE BASE TO IMPROVING DIABETES OUTCOMES IN KENTUCKY

There is a solid evidence base around both the prevention of type 2 diabetes and the management of existing diabetes. It is important that these proven interventions are considered when planning and implementing interventions to address diabetes in Kentucky.

The work described in this section focuses on promoting or implementing these evidence-based strategies, specifically the:

- National Diabetes Prevention Program (DPP);
- Diabetes Self-Management Education and Support (DSMES); and
- Case and disease management

## PREVENTION OF DIABETES

Preventing diabetes is a critical element of addressing the diabetes epidemic in Kentucky and the nation. A research study by the Diabetes Prevention Program Research Group showed that those at high-risk for diabetes, including those with prediabetes, can reduce their risk of developing diabetes by 58% (71% in those over 60 years or older) with structured lifestyle change programs, such as the DPP. These results were realized by weight loss of 5-7 percent achieved by healthy eating and 150 minutes of physical activity per week.

Research has also found that even after 10 years, people who completed a diabetes prevention lifestyle change program were one-third less likely to develop type 2 diabetes. To learn more about DPP, visit the [CDC website here](#).

## MANAGEMENT OF DIABETES

Complications from diabetes are debilitating and have huge costs – both human and financial. These complications include blindness, kidney damage, lower extremity amputations, heart disease, stroke and gum disease. There is strong science that shows that good control of the ABCs (A1C, Blood Pressure, and Cholesterol) can dramatically improve outcomes in people with both type 1 and type 2 diabetes.

Application of clinical care recommendations, also known as “Preventive Care Practices,” is essential to achieving diabetes control and improving outcomes. These recommendations/practices are updated annually and disseminated by the American Diabetes Association (ADA). The recommendations include screening, diagnostic and therapeutic actions that are known or believed to favorably affect health outcomes of patients with diabetes. They include things such as:

- Measuring blood pressure at every visit;
- Checking feet for sores and providing a thorough foot exam at least once a year;
- Conducting laboratory testing such as A1C at least twice per year, as well as kidney function tests, and cholesterol tests;
- Immunizing against flu, pneumococcal disease and hepatitis B per guidelines;
- Referring for preventive exams such as:
  - a dental checkup twice a year
  - a dilated eye exam once a year; and
- Referring for DSMES services

While critical, clinical care alone is not enough to manage a complex chronic disease like diabetes. A host of other risk reduction strategies, behavior changes, self-management and support are necessary to achieve diabetes control and avoid short and long-term complications of the disease. One of the most important is DSMES.

“DSMES services facilitate the knowledge, decision-making, and skills mastery necessary for optimal diabetes self-care and incorporate the needs, goals, and life experiences of the person with diabetes. The overall objectives of DSMES are to support informed decision-making, self-care behaviors, problem-solving, and active collaboration with the health care team to improve health status, and well-being in a cost-effective manner.” The 2022 National Standards for Diabetes Self-Management Education and Support identify the need to provide person-centered DSMES services that recognize cultural differences and social determinants of health.

Knowing that most diabetes-management decisions fall upon the person with diabetes and their caregivers, it is

important to assure access to quality DSMES services that support ongoing self-management and decision-making. In a 2020 consensus report, DSMES in adults with type 2 diabetes (Powers, Bardsley, Cypress, et. al), four critical times to provide DSMES services were updated and reaffirmed. These include: 1) at diagnosis, 2) annually and/or when not meeting treatment targets, 3) when complicating factors develop and 4) when transitions in life and care occur.

Despite the abundance of evidence supporting the benefits of DSMES, it continues to be very underutilized, with less than 5% of Medicare beneficiaries and 6.8% of privately

insured persons with diabetes having utilized the service. The American Diabetes Association and Association of Diabetes Care and Education Specialists advocate for health equity to ensure that all persons with diabetes have access to this critical service which has been shown to improve clinical outcomes and quality of life while reducing hospitalizations and health care costs. Engagement in DSMES services improves A1C by at least 0.6%, according to a consensus report by several national organizations, including ADA, ADCES, Academy of Nutrition and Dietetics and more. This is as much as many medicines, but without any side effects.

## CURRENT DIABETES PREVENTION AND CONTROL EFFORTS

DPH, ODA, DMS and the Personnel Cabinet-KEHP support a number of interventions related to diabetes for their respective populations. The tables below show a summary of these efforts by agency. For consistency with the evidence-base in diabetes prevention and control, as well as brevity, activities are listed related to the following categories: Prevention of Type 2 Diabetes/DPP, DSMES, Case/Disease Management and Other.

### Kentucky Employees' Health Plan (KEHP)

*The KEHP is a self-funded health plan providing health insurance benefits to employees and retirees under the age of 65. This includes state employees, local school boards and various cities and county governmental agencies. KEHP provides health insurance coverage to approximately 265,000 employees, retirees and their eligible dependents. KEHP's primary vendors include Anthem Blue Cross Blue Shield as the medical third party administrator, WebMD as the wellness vendor and CVS/Caremark as the pharmacy benefits manager.*

- |  |   |
|--|---|
| <b>Prevention of Type 2 Diabetes/DPP</b> | <ul style="list-style-type: none"> <li>• Continue to offer DPP as a covered benefit at 100%.</li> <li>• Continue management and expansion of DPP.</li> <li>• Lark (digital DPP/care management platform provider) will continue to actively identify members who are at risk for diabetes.</li> <li>• Continue to offer wellness points through wellness vendor WebMD for completion of DPP.</li> </ul> |
|--|---|

- |              |  |
|--------------|--|
| <b>DSMES</b> | <ul style="list-style-type: none"> <li>• Continue to cover DSMES as a covered benefit under the health plan.</li> <li>• Anthem continues to identify members who have a diabetes diagnosis and refer them to DSMES services in their community.</li> </ul> |
|--------------|--|

- |                                |   |
|--------------------------------|---|
| <b>Case/Disease Management</b> | <ul style="list-style-type: none"> <li>• Continue to partner with Anthem as the medical third party administrator. Anthem uses the Integrated Health Model (IHM) for case management, integrated behavioral health strategies and utilization management. KEHP members have access to this IHM and it includes a multi-disciplinary team of professionals managing members in a holistic approach vs. a single disease state. This allows Anthem to provide guided support to members to find the right care at the right time.</li> <li>• Anthem makes outbound calls to the most at risk members and treating physicians to collaboratively address healthcare coordination.</li> <li>• Anthem provides KEHP with IHM reporting to demonstrate the success of the program.</li> </ul> |
|--------------------------------|---|

## Other

- WebMD, the wellness vendor, provides points or incentives to members who track their physical activity such as walking, climbing steps, mowing the lawn, etc. with a fitness-tracking device. Points are awarded for on-target sleeping habits, parking farther away, going to a park, etc. for creating lifestyle changes.
- KEHP's LivingWell Promise activities require members to either take the health assessment with WebMD or to obtain a biometric screening.



## INNOVATION HIGHLIGHT: KEHP DIABETES VALUE BENEFIT

In 2016, KEHP introduced a Diabetes Value Benefit (DVB) that was available in all four health insurance plans offered by KEHP. The DVB allows members with a diabetes diagnosis to receive maintenance diabetic prescriptions and supplies, such as diabetic strips, free or at a reduced copay or coinsurance with no deductible. The goal of the DVB was to encourage members to control their diabetes through regular doctor visits and proper medication adherence. A review of the healthcare data on KEHP's patients with diabetes shows that members are in fact adhering to their medications and lowering usage of other prescription drugs, emergency department visits,

healthcare provider visits and acute admissions.

In March of 2021, Lark became the new DPP provider for KEHP, replacing Solera. Any member who was mid-program was able to finish their 12 months with Solera. Lark is completely digital, smart phone and tablet based and follows all of the same guidelines for DPP from the CDC. Members have access to their program 24/7 which has been a big benefit to our members. Members are able to receive a fitness tracker and a scale with Lark as they continue to engage in the program.

**Table 25: KEHP Diabetes Value Benefit – Optimally Adherent Members with Diabetes**

Optimally Adherent Members with Diabetes Diagnosis			
Year	Total Members*	Optimally Adherent Members	Percent Optimal Adherence
2017	18,569	12,508	67.0%
2018	18,807	12,886	68.5%
2019	19,138	13,493	70.5%
2020	19,651	14,188	72.2%
2021	24,732	14,278	71.0%

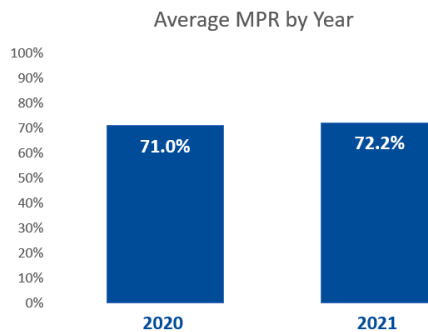
\*Total Members only represents those who were eligible for at least 85% of the reporting period.  
 \*\*Estimated \$2,953 medical savings per optimal utilizer were derived from CVS/Caremark Enterprise Analytics Pharmacy Economical Model, 2014

**Table 26: KEHP Diabetes Value Benefit – Prescription Utilization**

The LIVING WELL LIMITED HDHP and STANDARD PPO are not a part of this data. This is because LIVING WELL LIMITED only has 2019 data with no 2018 data to compare it to and STANDARD PPO only has 2018 data with no 2019 data to compare it to.

Utilization Change from 2020 to 2021		
Population with Diabetes	Rx to treat diabetes	Rx for other conditions
LivingWell CDHP	-0.9%	-4.5%
LivingWell Basic CDHP	-4.1%	-4.3%
LivingWell PPO	-4.3%	0.8%
LW LIMITED HIGH DEDUCTIBLE	-30.8%	33.4%

**Figure 1: KEHP Diabetes Value Benefit – Medication Possession Ratio and Adherence**



Note: CVS reports that a peer group has a MPR of 68.6%, with an optimal adherence as 80% or higher.

**INNOVATION HIGHLIGHT: KEHP - CONNECTING MEMBERS TO THE DPP**

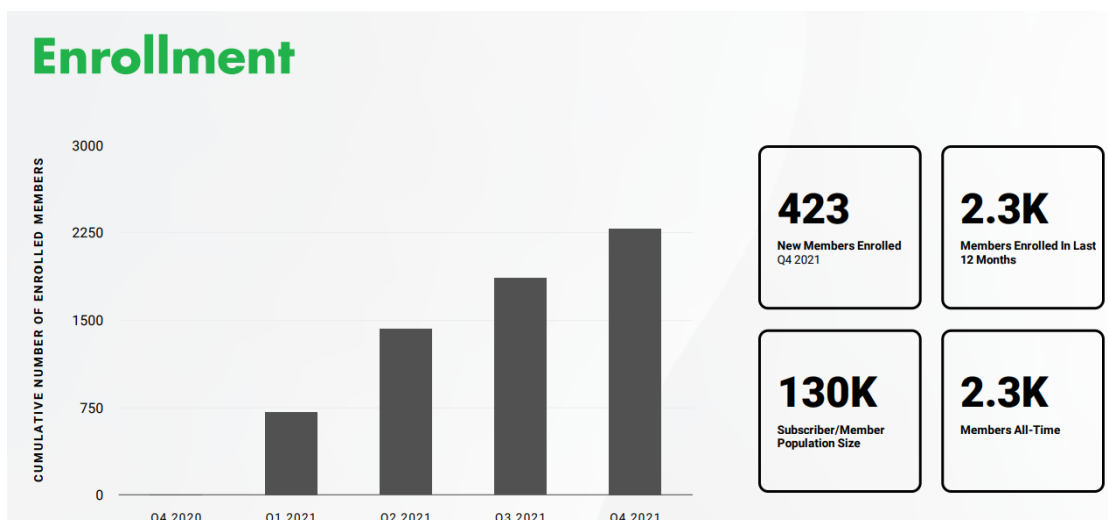
In 2013, KEHP began a new program of recruiting and referring eligible members to a Diabetes Prevention Program, and in 2014, offered the benefit at no cost to all members who met program qualifications. Beginning in 2015, KEHP partnered with Anthem to administer, manage and expand enrollment in the DPP. Anthem provides system-driven logic for class referrals based on member demographics. Anthem continued to combine the use of its analytics and data-mining capabilities to identify at risk members for the DPP within the KEHP population. Then, in fall 2018, KEHP partnered with Solera to expand the DPP program throughout Kentucky. Solera identified at-risk individuals through a risk assessment tool.

The DPP benefit is available at no cost to KEHP members

who have prediabetes or are considered at a high risk of developing diabetes consistent with the CDC’s established eligibility guidelines for participation in a DPP.

In March of 2021, Lark became a new vendor for the Diabetes Prevention Program for KEHP, replacing Solera. Any member who was mid-program was able to finish their 12 months with Solera. During that year, there were 2,473 additional enrollments into the DPP program. Lark is completely digital, smart phone- and tablet-based, and follows all of the same guidelines for DPP from the CDC. Participants have access to their program 24/7 which has been a big benefit to members. Additionally, members are able to receive a fitness tracker and a scale with Lark as they continue to engage in the program.

**Figure 2: KEHP 4<sup>th</sup> Quarter DPP Results**



## Medicaid/MCOs

The Department for Medicaid Services works with managed care organizations (MCOs) to provide care for 90% of its members. DMS was contracted with six MCOs in 2021: Anthem Medicaid, Aetna Better Health, Humana Healthy Horizons, Passport Health Plan by Molina, UnitedHealthcare and WellCare. Each is required to conduct a Health Risk Assessment (HRA) for new members and identify health needs, provide robust case management (CM) and/or disease management (DM) services, and track and report data including HEDIS measures.

### Prevention of Type 2 Diabetes/DPP

- One MCO has developed a pilot DPP program and other MCOs are evaluating developing a pilot DPP program.

### DSMES

- All MCOs cover DSMES services.

### Case/Disease Management

- MCOs provide CM/DM programs for low to high-risk members with diabetes.
- Some MCOs offer member incentives to visit their Primary Care Provider.
- MCOs offer providers value-based incentives for increasing A1C screening and testing.
- MCOs administer HRA for early identification of diabetes for referral to care management programs.

### Other

- MCOs conduct member outreach to increase their awareness of diabetes through newsletters, community collaboration, phone, email and/or mailing campaigns to remind members to make appointments.
- MCOs conduct outreach to non-adherent Medicaid members to encourage diabetes screenings (dilated retinal exams, A1C testing and nephropathy screenings).
- MCOs offer members educational material about good nutrition.

## CURRENT KENTUCKY DEPARTMENT FOR MEDICAID SERVICES ACTIVITIES AND PROPOSED STRATEGIES

Kentucky continues to face major public health challenges in dealing with chronic diseases. In both the prevalence and treatment of diseases, Kentucky ranks near the bottom when compared to national benchmarks and other states.

The proposed Kentucky Department for Medicaid Services Quality Strategy builds upon the chronic diseases targeted in the 2019 Quality Strategy. The focus has been sharpened with a focus on type 2 diabetes for Kentucky's relative performance in promoting evidence-based treatment of this condition.

There are multiple ongoing activities and programs addressing chronic diseases in the commonwealth. They are priorities for the Kentucky Department for Public Health (DPH), Managed Care Organizations (MCOs), and the federal government. The External Quality Review Organization (EQRO) for Kentucky Medicaid conducted a 2020 focus study on diabetes access to primary care and self-management education and support. The study included an assessment of individual MCO performance, along with recommendations to implement the Quality

Assurance and Performance Improvement (QAPI) work plan, which includes enhanced case management, primary care provider (PCP) education on evidence-based care, integration of behavioral health with diabetes-related interventions and improved understanding of coding practices.

Performance Improvement Projects (PIPs) are a primary vehicle for assessing and improving the processes and outcomes of healthcare provided by an MCO. A PIP titled "Improving Diabetes Management" with a Baseline to Final Re-Measurement Period of January 1, 2020 to December 31, 2022 has been started to improve diabetes control among adult KY Medicaid Managed Care enrollees by achieving the following objectives:

1. Increase the A1C testing rate;
2. Reduce the percent of enrollees with poorly controlled diabetes by increasing:
  - The Diabetes Self-Management Education and Support (DSMES) enrollee engagement rate

among enrollees newly diagnosed with Type 2 Diabetes Mellitus (T2DM).

- The proportion of enrollees with poorly controlled diabetes with an endocrinologist or diabetes specialist visit
  - Enhancement of case management and care coordination for enrollee outreach, diabetes education about nutrition and exercise and engagement and referral to DSMES
3. Reduce the prevalence of type 1 diabetic ketoacidosis among children by achieving the following objective:
- Educate pediatric primary care providers (PCPs) and parents about warning signs of Type 1 Diabetes Mellitus (T1DM)

Additionally, DMS will continue to work with MCOs to develop innovative value-based model(s) aimed at transitioning from a reimbursement model that rewards providers based on volume to a model that aligns payment incentives with quality, performance and outcomes. Further, DMS will pursue additional managed care system reforms aimed at improving the efficiency and responsiveness of the current managed care delivery system.

## Department for Public Health – Kentucky Diabetes Prevention and Control Program (KDPCP) and Office of Health Equity (OHE)

The DPH houses the KDPCP as well as the OHE. KDPCP is a population-based public health initiative working to reduce the sickness, disability and death associated with diabetes and its complications and to prevent new cases of type 2 diabetes. The work is implemented through a network of state and local partners that expand the reach of diabetes prevention and control efforts across the state. The OHE supports prevention and education efforts in reducing mortality and morbidity that exist among Kentuckians and specify populations at greatest risk.

### Prevention of Type 2 Diabetes/DPP

- Promote awareness of prediabetes and DPP to the general public.
- Create unique media messages targeted at high-risk populations in Eastern Kentucky.
- Provide continuing education about prediabetes and DPP to healthcare professionals.
- Support training and continuing education credit costs for DPP lifestyle coaches.
- Provide technical assistance to statewide DPP providers via one-on-one meetings and bi-monthly meetings for DPP coaches and program coordinators.
- Share locations of DPP and DSMES services across the state to allow for referrals.
- DPH will encourage DPP providers to utilize the [kynect resource platform](#) to share resources and services for diabetes.
- Maintain [preventdiabetesky.org](#) resources and marketing.
- KDPCP utilizes a systems-based approach to foster partnership between primary care providers and National Diabetes Prevention Program lifestyle coaches, with the common aim of improving health outcomes for people with prediabetes, or at increased risk for developing Type 2 diabetes.
- Implement a robust diabetes care quality improvement project with select primary care practices and other partners.
- Create/maintain active partnerships to increase bidirectional referrals for DPP and DSMES.
- Provide DPP providers access to Data Analysis of Participants System (DAPS).
- Maintain a strong and active partnership with the KEHP.

### DSMES

- Promote awareness of diabetes and benefits of DSMES to the public and professionals.
- Provide continuing education about evidence-based diabetes self-management education and support (DSMES), including the four critical times to refer for DSMES.
- Provide training, curricula and materials for select LHDs and other DSMES providers.
- Annually update a DSMES curriculum that follows principles of health equity and universal design.
- KDPCP will support training and services that address cultural competency, SDOH and health inequities that impact health and health outcomes.
- Provide information on DSMES programs and share calendar links on KDPCP website.
- Oversee an accredited/recognized DSMES program (Healthy Living with Diabetes) and provide DSMES services through LHDs via multiple modalities of delivery, including telehealth increasing access and reducing barriers.
- Maintain a strong and active partnership with KEHP to support increased DSMES referrals by nurse coaches.
- DPH will encourage DSMES providers to utilize the [kynect resource platform](#) to share resources and services for diabetes.
- Promote, distribute and maintain *Diabetes 101, A Self-Guided Approach to Understanding Diabetes*, an interactive e-Learning application.

### Case/Disease Management

- Share educational materials (eg., diabetes basics, nutrition basics and prediabetes basics) with MCOs and KEHP for use with their members.
- Keep updated and share via the website locations of DPP and DSMES services across the state.

Other	<ul style="list-style-type: none"> <li>• Monitor KyBRFS and other data to assess the impact of diabetes, plan appropriate interventions and evaluate program efforts.</li> <li>• Create/maintain active partnerships to identify diabetes-related issues and solutions at the state and local level including a robust state level coalition, the Kentucky Diabetes Network (KDN) and 30 local coalitions.</li> <li>• OHE supports prevention and education efforts in reducing diabetes mortality and morbidity that exist among Kentuckians and specific populations at greatest risk.</li> <li>• OHE ensures that state diabetes prevalence data are captured, analyzed and disseminated to minority and vulnerable communities.</li> <li>• OHE uses multiple methods for dissemination including but not limited to; the biennial minority health status report, infographics and other culturally appropriate materials.</li> <li>• OHE educates minority and vulnerable communities on risk factors of disease/prevention efforts and disease management programs.</li> <li>• OHE acts as a resource to DPH/KDPCP in addressing barriers, inequities, and other identified SDOH that impact hard to reach and vulnerable populations.</li> <li>• DPH will develop and implement diabetes-related continuing education and training opportunities for Community Health Workers (CHWs) in Kentucky.</li> <li>• DPH diabetes program will integrate a CHW into the Healthy Living With Diabetes Program team to address barriers and SDOH: and collaborate with the Kentucky Office of Community Health Workers (KOCHW) as they work to integrate CHWs into community -based organizations.</li> <li>• Coordinate messaging on healthy brains and dementia prevention with diabetes prevention messaging where appropriate.</li> </ul>
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**INNOVATION HIGHLIGHTS:**

Along with many partners across the state, KDPCP has worked to improve access to, and utilization of, evidence-based interventions for diabetes prevention and control, specifically the National Diabetes Prevention Program (DPP) and diabetes self-management education and support (DSMES). In addition, two health systems’ quality improvement interventions have been implemented: a NDPP bi-directional referral project and two Kentucky Diabetes Learning Collaboratives. All resulted in several achievements as described below – some despite the emergence of the COVID-19 pandemic in early 2020.

Achievements around DSMES include:

- DPH/KDPCP’s Healthy Living with Diabetes Program (HLWD) continues to be nationally accredited by the Association of Diabetes Care and Education Specialist Diabetes Education Accreditation Program (DEAP) and recognized by the American Diabetes Association Education Recognition Program (ERP).
- The novel umbrella program delivers quality diabetes education across the commonwealth through a partnership with 17 local health departments who are accredited/recognized sites of HLWD. A full map of Kentucky’s counties with HLWD sites and DSMES service utilization is

shown in Figure 3.

- Ensuring access to DSMES services to all Kentuckians with diabetes by delivering DSMES through different modalities aimed at providing person-centered care and decreasing health disparities.

Delivery Mode	Count	Percentage
Telehealth	371	60%
In Person	160	25%
Telephonic	79	13%
Null Value	9	1%

- At the onset of the pandemic KDPCP worked quickly to ensure that Kentuckians would still have access to DSMES services. In March 2020 four HLWD teams piloted a telehealth project to deliver DSMES across the commonwealth. This has now expanded to all 17 HLWD branches offering DSMES by telehealth.
- Between January 2020 and October 2022, 619 Kentuckians participated in DSMES delivered by HLWD.



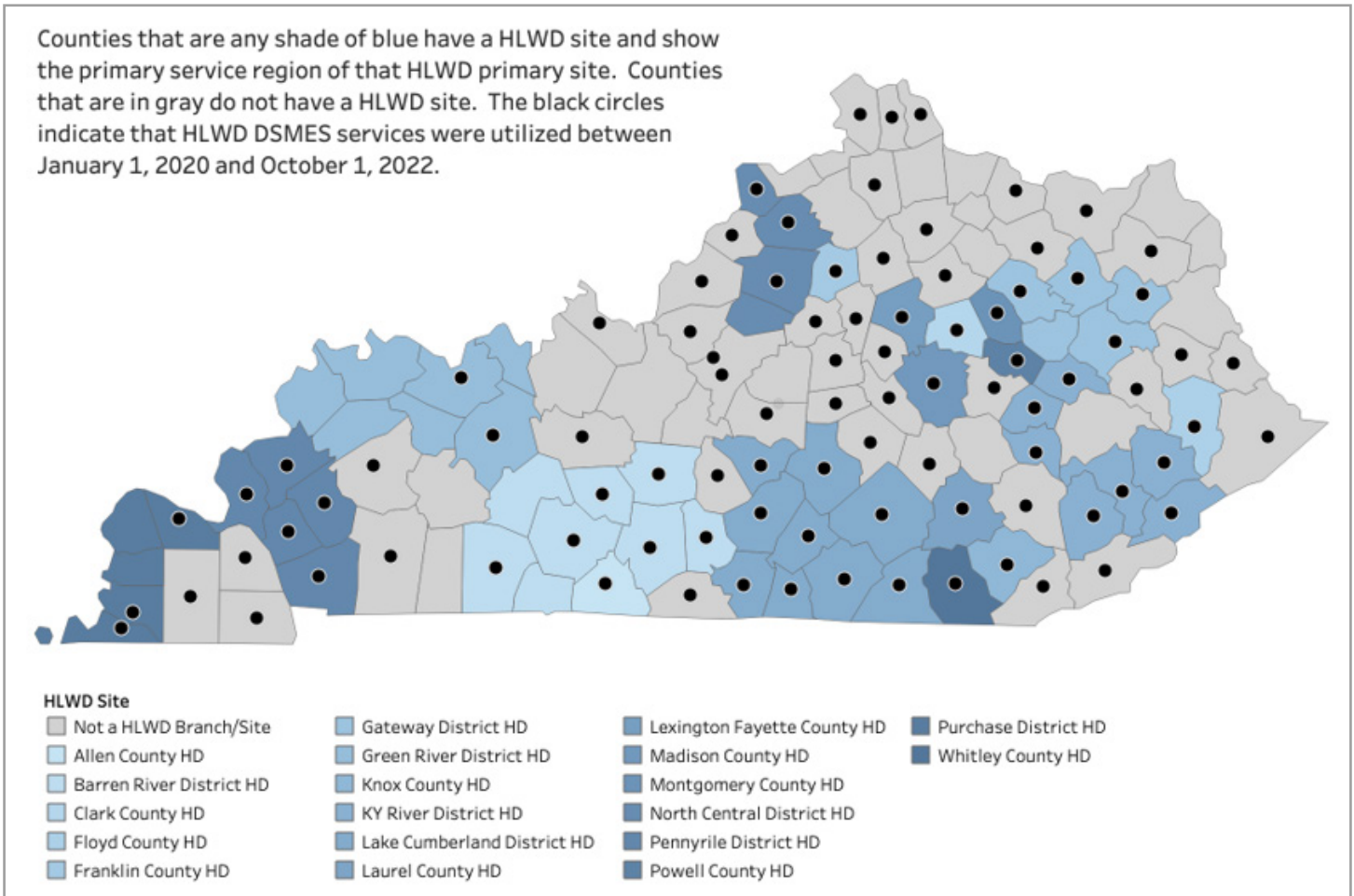
- Total HLWD participants from January 2022 to October 2022 was 276. This number represents an increase in utilization of DSMES services.
- The average A1C for persons participating in HLWD DSMES services between January 2020 and October

2022 was:

Pre DSMES	Post DSMES
7.9	7.2

*Clinical lab values provided to HLWD by HCP*

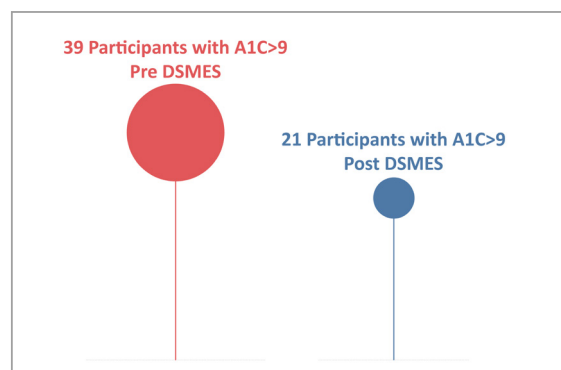
**Figure 3: Kentucky Counties With Healthy Living with Diabetes (HLWD) Sites and DSMES Service Utilization**



Clinical trials show that when a person with diabetes has an A1C above 9 percent they are at an increased risk of complications and may require more care and treatment. A Healthy People 2030 diabetes objective is to reduce the

proportion of adults with diabetes who have an A1C value above 9 percent. Figure 4 shows the number of HLWD DSMES participants with an A1C greater than 9 percent both pre-DSMES and Post-DSMES.

**Figure 4: HLWD: A1C>9% Pre- and Post-DSMES Participation, January 2020 - September 2022**



Health systems' quality improvement efforts include two projects, the Kentucky Prediabetes Learning Collaborative, which is a successor of the Referral Pilot for the National Diabetes Prevention Program and the Kentucky Diabetes Learning Collaborative. Achievements, format and future plans of each are included below.

## KENTUCKY DIABETES LEARNING COLLABORATIVE

A robust clinical quality improvement initiative, implemented and supported by the Kentucky Department for Public Health's Diabetes Prevention and Control Program and funded by a multi-year grant from the Centers for Disease Control and Prevention (CDC), has shown favorable results in diabetes care and outcomes. This improvement effort, the Kentucky Diabetes Learning Collaborative (DLC), was executed in partnership with the Kentucky Regional Extension Center, an extension of UK Healthcare, and enters into its third iteration in 2023.

The DLC provides the opportunity and structure for primary healthcare organizations to learn from experts in the field, share best practices, and undertake small tests of change to reach self-identified improvement objectives within their organizations over the course of approximately one year. The Collaborative's focus was to enhance the use of clinical systems and care practices to improve health outcomes in patients with diabetes. Targeted clinical system changes included: clinical decision support in the electronic health record (EHR) for DSMES referral, the establishment of bi-directional referral processes with DSMES providers and evidence-based care practices. Clinical participants tracked core measures, including referrals for DSMES, A1C values greater than 9, blood pressure values less than 140/90 and other secondary clinical measures including: foot exams, eye exams, and flu immunization for patients with diabetes, as well as tracking attendance in DSMES. The structure for the Learning Collaborative was based on the Institute for Healthcare Improvement (IHI) Breakthrough Series. At the heart of this approach are three models. A Learning Model makes participating practices part of a network of experts and fellow learners. The Chronic Care Model (CCM), developed by Ed Wagner MD, MPH, and former Director of the MacColl Institute for Healthcare Innovation, outlines key elements of optimal chronic care and the Improvement Model enables teams to rapidly test and implement changes to improve care. The shift will be made to the Expanded Chronic Care Model in 2023, to reflect new science and address the need to incorporate community partnerships into the healthcare space.

Content for the learning sessions and recruitment was incorporated to align with current practice efforts to support achievement of Medicaid's Promoting Interoperability objectives, enhance participation in Medicare's Quality Payment Program and support designation in Patient Centered Medical Home recognition.

Participating organizations in Diabetes Learning Collaborative 2 included: Bluegrass Internal Medicine, Grace Health, Harrison Memorial Hospital Primary Care, Kentucky Mountain Health Alliance, INC (DBA: Little Flower), Monroe County Medical Center, Owensboro Health and Shawnee Christian Healthcare. These practices represent 18 locations, 67 providers, 48,000 total patients and 5,228 adult patients with diabetes. Supporting public health partners at the local level included Green River District Health Department (HD), Laurel County HD, Lake Cumberland District HD, Ky River District HD, Allen County HD, Gateway District HD, Purchase District HD, Pennyrite District HD, Franklin County HD, Barren River District HD, Floyd County HD, Clark County HD, Lexington-Fayette County HD and Knox County HD. The Kentucky Regional Extension Center played a key role to help manage and facilitate the DLC and a 10 member committee of Kentucky experts in the area of diabetes and quality improvement served as advisors for the initiative.

The initial Kentucky DLC cohort started in October 2019 and ended in December 2020; the second DLC cohort began in May 2021 and ended their core work in June 2022. Each cohort was similarly structured, with a population of focus of 100-300 patients with diabetes. This was determined at the practice-level and could vary from adult patients with diabetes at one clinic location, for one provider or across the entire health system. The collaborative's overall goal was a 5% improvement in core and secondary measures for the practice's population of focus. DLC2 had an additional extension of 6 months, to enhance the focus on sustainability and spread once exiting core collaborative work. Data reported for DLC1 showed overall success in six of the seven measures, with improvements in all seven measures in DLC2.

## KENTUCKY PREDIABETES LEARNING COLLABORATIVE

A primary grant objective is to support efforts working with Kentucky healthcare systems and community-based providers of CDC-recognized lifestyle change programs and/or accredited or recognized Diabetes Prevention programs (DPP) to improve enrollment and retention



of participants in programs, reduce risks of developing diabetes and improve clinical outcomes. Specifically, this project was created because of successes in both the previous DLC work, as well as the Referral Pilot for the National Diabetes Prevention Program, which focused on bi-directional e-referral between healthcare systems and CDC-recognized lifestyle change programs for adults with prediabetes.

That pilot began in 2019. From 2019 to 2022, KDPH collaborated with the KY Regional Extension Center (KYREC), the Kentucky Health Information Exchange (KHIE), Family Practice Associates of Lexington, Healthfirst Bluegrass, the Lexington Fayette County Health Department (LFCHD) and the YMCA of Central Kentucky. In 2021, the project added one new practice, Versailles Family Medicine, and several new NDPP providers: Barnstable Brown Diabetes Center, Scott County Extension Center, Allen County Health Department and Barren River District Health Department. The specific CDC-recognized lifestyle change program for this pilot is the DPP.

Since the DPP providers do not have an electronic health record to receive an e-referral, this project utilizes KHIE CareAlign portal. CareAlign is the KHIE Direct Secure Messaging (DSM) portal that is used for bi-directional exchange of information between clinical Electronic Health Records (EHRs) and organizations who do not have an EHR. The clinical practices identify patients with prediabetes and send an electronic referral with a Summary of Care Record that includes pertinent information from their certified EHR via CareAlign to the community-based organizations who provide the National DPP. The DPP providers then contact the patient to enroll them in the program and send feedback on progress back to the referring practice via CareAlign. If the practice EHR cannot accept the CareAlign message with PDF attachment back from the DPP provider, KHIE provides the practice with a free, secure CareAlign account.

During the first year of the pilot program, the project had a 19% increase in identifying and adding the diagnosis of prediabetes to a patient chart. Other successes include transitioning to virtual cohorts during the COVID-19 pandemic, identification of missed opportunities to diagnose a patient with prediabetes that fit guidelines, standing orders to correct those missed diagnoses, diabetes and prediabetes awareness messaging, guideline driven screenings and changes to workflow to incorporate DPP referrals into primary care clinic processes.

A six-month pilot program launched in July 2022, combining

the successes of the previous DLC and the National Diabetes Prevention Pilot into a new collaborative, the Prediabetes Learning Collaborative (PLC). The PLC utilized the same framework as the DLC, with the Institute for Healthcare Improvement's Breakthrough Series College Model and the Expanded Chronic Care Model. Health care organizations come together to learn from one another and from experts in the field and then undertake small tests of change to reach self-identified objectives within their own organizations. The focus of the collaborative is assisting health care organizations in making "breakthrough" increases in the adoption and use of clinical systems and care practices to improve health outcomes in people with prediabetes. Targeted clinical system changes include: identifying patients with pre-diabetes, utilizing appropriate screening methods, targeting outreach, increasing the number of electronic referrals sent for providing DPP, and increasing attendance in DPP. Education is provided by CBO collaborative partners through the DPP. Bi-directional referral and communication processes will be established and maintained throughout the length of the collaborative. The PLC will transition to a full year long collaborative in January 2023, and we look forward to sharing the continuing successes.

## ACHIEVEMENTS RELATED TO THE NATIONAL DIABETES PREVENTION PROGRAM (DPP)

KDPCP, along with many partners across the state, have worked to improve access to the National DPP across the commonwealth. This effort has resulted in a number of achievements, including:

- All counties have access to DPP via one or more delivery modes (in-person, online, distance learning or combination).
- Increasing the number of CDC-Recognized DPP organizations in Kentucky from two in 2012 to 35 in November 2022:
  - 42% of these are local health departments
  - 13 organizations have full recognition
  - 6 organizations have full plus recognition
  - Kentucky has five Medicare DPP suppliers
  - 25 offer in-person, 2 online, 6 distance learning, and 7 combination delivery modes
- Cumulative enrollment in Kentucky increased from 297 persons at baseline to 18,725 in October 2022

- Kentucky ranks 12th in the nation for number participants (CDC, October 2022)
- Provided technical assistance to programs interested in distance delivery of DPP services

While we have been able to maintain access to the DPP across Kentucky- despite the Covid-19 pandemic, sustainability and future growth are in jeopardy. Reasons include the intensity and length of the program, inadequate reimbursement opportunities and organizational capacity. Removing cost and time commitment barriers for program participants and DPP providers must be addressed. Use of technology to deliver the program has helped in some cases but does not address technology access in rural areas.

### OTHER SUCCESSES

- Appalshop has created a hub of media interviews, stories about and resources for prediabetes, diabetes and the DPP in the Appalachian region. Media exposures to these stories from October 2020 to September 2022 totaled nearly 745,000. Visit their website and story bank at [www.preventdiabetesky.org](http://www.preventdiabetesky.org).
- The Kentucky Diabetes Network celebrated its 24<sup>th</sup>

year as the diabetes statewide coalition.

- KDPCP partnered with University of Kentucky and stakeholders (Nortons Children’ Endocrinology (University of Louisville), Barnstable Brown (University of Kentucky), Cincinnati Children’s, Vanderbilt, Kentucky Department of Education, (KDE) to implement strategies related to diabetes in schools (e.g., training for licensed and unlicensed personnel, insulin administration and monitoring of blood glucose).
- Four modules have been reviewed and updated based on post completion evaluations, and three modules have been added:
  - **Module 1:** Welcome and State of Diabetes
  - **Module 2:** Monitoring and Management, Diet and Exercise
  - **Module 3:** Medications and Emergencies
  - **Module 4:** Case Studies: LCSW to review aspects of case studies
  - **Newly Added Modules:** Type 2 in Youth, Healthy Coping, and Diabetes Technology
  - The goal is to make these available at no cost and to increase ease of access for licensed and unlicensed school personnel.

### Office of Data Analytics (ODA)

ODA does not provide health programs as do the other agencies include in this report. ODA provides data, reports and analyses to other entities such as DMS, DPH, and policymakers. The revised structure increases the capacity to support departments across the Cabinet for Health and Family Services (CHFS).

- Analyzes statewide administrative claims data specific to inpatient and outpatient hospitals and ambulatory care facilities.
- Identifies opportunities for preparing and distributing relevant information to public and governmental entities about health, healthcare and public policy.
- Houses administrative claims data collected by the Kentucky Hospital Association (KHA) on behalf of CHFS in the form of billing records from hospitals and ambulatory facilities. This data includes elements such as procedure codes, diagnosis codes, facility charges and patient demographic information. Furthermore, claims data are related to inpatient hospital discharges, emergency department utilization (including observation stays), outpatient surgery, mammograms and other outpatient procedures such as MRI, CAT scan or procedures identified by specific CPT© codes.
- Ensures data are available on the CHFS web site, including information on charges for healthcare services, as well as descriptive information relevant to quality and outcome measures.

# Measuring Progress

## HEALTHCARE EFFECTIVENESS DATA AND INFORMATION SET (HEDIS) AND HOSPITAL DISCHARGE PREVENTION QUALITY INDICATORS (PQI)

The legislation which guides the content of this report requires the Department for Medicaid Services, Department for Public Health, Office of Data Analytics and the Kentucky Employees' Health Plan develop joint benchmarks on diabetes. However, each entity serves different groups of consumers and has very different types of data available. To meet this call for common benchmarking, the group has chosen related measures which, when tracked over time, can demonstrate Kentucky's progress in responding to the diabetes epidemic.

## HEDIS AND HEDIS-LIKE MEASURES

As discussed earlier in the report, there is widespread agreement among healthcare and public health professionals as to how diabetes should be managed to improve outcomes for those with diabetes. There are clear standards of care which must be addressed, and many of these standards are benchmarked and measured via the Healthcare Effectiveness Data and Information Set (HEDIS). HEDIS is a tool used by more than 90 percent of America's health plans to measure performance on important dimensions of care and service. National benchmarks for these measures have been established for Medicaid, Medicare and private insurers. The diabetes specific HEDIS measures are as follows:

The percentage of adults 18-75 years of age with diabetes (type 1 or 2) who had each of the following:

- A1C testing
- A1C poor control (>9.0%)
- A1C control (<8.0%)
- A1C control (<7.0%) for a selected population
- Medical attention for nephropathy
- Retinal eye exam
- BP Control (<140/90 mm Hg)

Diabetes is one condition which DMS requires MCOs to

target for improvement as part of the External Quality Review (EQR) process. Similarly, the KEHP makes use of what are termed "HEDIS-like" measures in which data are reported in a manner very similar to the HEDIS standards.

The DPH conducts a statewide survey of adults called the Kentucky Behavioral Risk Factor Surveillance Survey (KyBRFS). This survey includes data on diabetes standards of care, and two measures aligned with HEDIS measures on A1C testing and retinal eye exams. In addition, the KyBRFS includes other measures on key standards of care on diabetes management. These measures provide a view of overall population health.

Finally, the Office of Data Analytics (ODA) maintains a nationally benchmarked set of indicators based on hospital discharge data, "Prevention Quality Indicators (PQIs)". These measures are defined and overseen by the Agency for Healthcare Research and Quality (AHRQ). The measures are calculated on conditions for which good outpatient care can potentially prevent the need for hospitalization, or for which early intervention can prevent complications or more severe disease. For example, patients with diabetes may be hospitalized for diabetic complications if their conditions are not adequately monitored and appropriate medication or care provided, if they do not receive the patient education needed for appropriate self-management, or if there are barriers that prevent patients from seeking care, or inhibit their ability to effectively manage their condition.

It should also be noted that the HEDIS and PQI measures are directly related to each other. Improvements in HEDIS measures should produce improvements in the PQI measures as people with diabetes experience greater control of blood sugar, blood pressure (measured by HEDIS) will incur fewer hospitalizations for the complications of diabetes (measured by the PQIs).

## MEDICAID – HEDIS MEASURES

Table 27 reports HEDIS data on adults ages 18-75 enrolled in one of Kentucky’s Medicaid MCO plans. For the statewide weighted average, the (+) percentages compare favorably and the (-) percentages compare unfavorably to the 2021 HEDIS national benchmark for the 50<sup>th</sup> percentile for all Medicaid MCO plans nationally.

HEDIS Scores are based on 2021 Medicaid data.

Table 27: Kentucky Medicaid Managed Care HEDIS Scores Measurement Year 2021 (adults ages 18-75 enrolled in a Kentucky Medicaid Managed Care Plan)							
	Aetna	Anthem	Humana	Molina	United	WellCare	Statewide Weighted Average**
<b>HbA1c Testing</b>	83.45%	87.59%	86.13%	86.37%	93.67%	85.16%	<b>85.81% (-)</b>
<b>HbA1c Poor Control (&gt;9.0%)*</b>	38.44%	39.17%	36.74%	47.20%	36.50%	50.36%	<b>44.60% (-)</b>
<b>HbA1c Control (&lt;8.0%)</b>	50.36%	51.09%	51.34%	43.80%	49.39%	39.17%	<b>44.98% (-)</b>
<b>Eye Exam</b>	53.28%	49.39%	50.61%	43.55%	38.69%	55.72%	<b>51.05% (-)</b>
<b>Kidney Health Evaluation</b>	22.20%	24.89%	26.80%	26.72%	21.19%	22.57%	<b>24.25%<sup>†</sup></b>
<b>Blood Pressure Control (&lt;140/90 mm Hg)</b>	60.34%	58.64%	64.23%	55.96%	63.99%	53.77%	<b>57.31% (-)</b>
*Lower score is better							
**(+)= Compares favorably; (-)= Compares unfavorably to 2021 HEDIS National Benchmark (50 <sup>th</sup> percentile)							
†Comparison data for this measure is not available							
Source: Medicaid MCO Data, Department for Medicaid Services							

## KEHP – HEDIS MEASURES

The KEHP contracts with Merative to provide analysis for the selected diabetes data for KEHP. Table 28 shows HEDIS rates for employees and retirees diagnosed with diabetes.

**Table 28: KEHP Diabetes HEDIS Measures 2021**

Measure	KEHP Rate
A1C Test Age 18-75	81%
Dilated Eye Exam (age 18-75)	32%
Medical Attention for Nephropathy	79%

## DEPARTMENT FOR PUBLIC HEALTH HEDIS-LIKE MEASURES

DPH conducts the KyBRFS which tracks specific health measures for Kentucky adults. Table 27 includes data on diabetes standards of care from the KyBRFS. Only the items related to A1C are similar to a HEDIS measure; however, the other measures reported are key standards of care that are critical as measures of diabetes management. Nearly 95%

of Kentucky adults with diabetes report they have had at least one A1C test in the previous 12 months. Seventy-five percent report that they have had two or more A1C tests in the previous 12 months, as is considered standard for a person with diabetes.

**Table 29: Diabetes Standards of Care for Kentucky Adults (2021 KY BRFSS)**

One or more A1C tests in past 12 months	94%
Two or more A1C tests in past 12 months	76%
Foot exam from HCP in past 12 months	73%
Dilated eye exam in past 12 months	64%

## PARTICIPATION IN DPP AND DSMES SERVICES

The committee has also identified DPP and DSMES participation as an important measure for monitoring of progress.

### Diabetes Prevention Program:

As detailed in the previous “Addressing Diabetes” section, DPH/KDPCP, along with CDC, tracks the number and identity of CDC-Recognized DPP organizations in Kentucky. In 2022, there were 35 such organizations. KDPCP prepares listings and maps of these organizations every other month and shares them with partners via websites. CDC also reports the number of DPP participants by state to the KDPCP. The number is cumulative since the program’s inception. The most recent report (October 2022), indicated that enrollment increased from 297 at baseline to 18,725.

KEHP also tracks information about their member participation in the National DPP. In 2021, 2,473 members enrolled in the DPP program.

### Diabetes Self-Management Education and Support:

At the state level, access to accredited/recognized DSMES services has improved significantly over the past several years, as illustrated in the comparison maps in Section 3. Despite this success, there are still areas of the state that have no access to in-person DSMES. Even where programs do exist, the frequency of offerings is inadequate to serve all those in need. In addition, transportation and other barriers to class attendance necessitate new modes of delivery of DSMES. Online providers have now become available in Kentucky. Telehealth models that were successfully piloted have now been implemented more broadly across the state. Having multiple methods for obtaining the service should increase access and participation.

Participation in DSMES is a covered benefit for adult Medicaid beneficiaries. Use of this benefit nearly doubled following Medicaid expansion in 2014, but has declined slightly since then. As less than even 1% of the eligible population, it is an underused benefit. As shown in the DSMES maps above, which details program availability across the state, there is good opportunity to see growth



in participation by the Medicaid population.

**Table 30: Number and Percent of Adult Medicaid Beneficiaries who had a Claim for DSMES**

2017	2018	2019	2020	2021
765 (0.5%)	636 (0.5%)	647 (0.5%)	505 (0.3%)	707 (0.4%)

DSMES continues to be a covered benefit under the KEHP.

Year	DSMES unique members
2019	406
2020	310
2021	350

## OFFICE OF DATA ANALYTICS - PREVENTION QUALITY INDICATORS (PQI)

The prevention quality indicators provide insight into the extent of preventable serious diabetes complications requiring hospitalization for adults across the commonwealth.

### PQI 01 | Diabetes Short Term Complications Admission Rate

This measure reflects admissions for short-term complications of diabetes and includes admissions with a principal diagnosis of diabetes with ketoacidosis, hyperosmolarity or coma among those ages 18 or older. It excludes obstetric admissions and transfers from other institutions.

### PQI 03 | Diabetes Long Term Complications Admission Rate

This measure reflects admissions for long term complications of diabetes and includes admissions with a principal diagnosis of diabetes with renal, eye, neurological, circulatory or other diabetes complications not otherwise specified. It excludes obstetric admissions and transfers from other institutions.

### PQI 14 | Uncontrolled Diabetes Without Mention of Short-term or Long-term Diagnosis Codes

This measure reflects admission for hypoglycemia or hyperglycemia without coma and no mention of codes included in PQI01 or PQI03. It excludes obstetric admissions and transfers from other institutions.

### PQI 16 | Lower-Extremity Amputation among people with Diabetes

Admissions for any listed diabetes diagnosis in combination with any listed procedure for lower extremity amputation. It excludes toe amputations, traumatic amputation, obstetric admissions and transfers from other institutions.

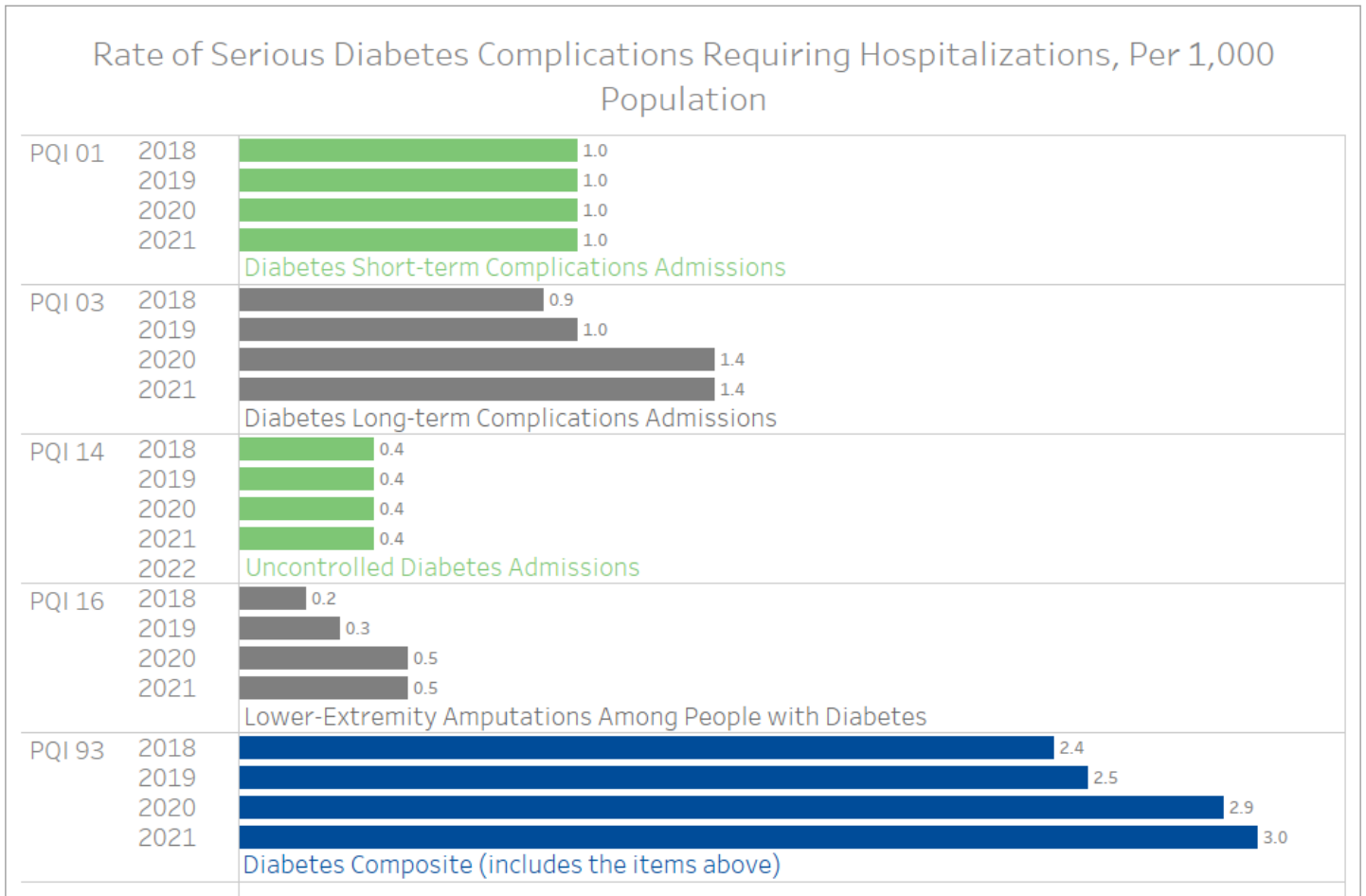
### PQI 93 | Prevention Quality Diabetes Composite

Admissions for patients ages 18 and older who meet the inclusion and exclusion rules for:

- PQI 01
- PQI 03
- PQI 14
- PQI 16

The most recent data available for Kentucky’s diabetes PQI measures are provided in Chart 7.

**Chart 7: Prevention Quality Indicator Rates for Kentucky**



# Attachments

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# Attachment 1 | Legislation - KRS 211.751-753

## 211.751 GOALS, BENCHMARKS, AND PLANS TO REDUCE INCIDENCE OF DIABETES, IMPROVE CARE, AND CONTROL COMPLICATIONS.

The Department for Medicaid Services, the Department for Public Health, the Office of Data Analytics, and the Personnel Cabinet shall collaborate to identify goals and benchmarks while also developing individual entity plans to reduce the incidence of diabetes in Kentucky, improve diabetes care, and control complications associated with diabetes.

**Effective:** June 27, 2019

**History:** Amended 2019 Ky. Acts ch. 90, sec. 7, effective June 27, 2019. -- Created 2011 Ky. Acts ch.83, sec. 1, effective June 8, 2011.

## 211.752 ANNUAL REPORTS TO LEGISLATIVE RESEARCH COMMISSION.

The Department for Medicaid Services, the Department for Public Health, the Office of Health Data and Analytics, and the Personnel Cabinet shall submit a report to the Legislative Research Commission by January 10 of each odd-numbered year on the following:

1. The financial impact and reach diabetes of all types is having on the entity, the commonwealth, and localities. Items included in this assessment shall include the number of lives with diabetes impacted or covered by the entity, the number of lives with diabetes and family members impacted by prevention and diabetes control programs implemented by the entity, the financial toll or impact diabetes and its complications places on the program, and the financial toll or impact diabetes and its complications places on the program in comparison to other chronic diseases and conditions;
2. An assessment of the benefits of implemented programs and activities aimed at controlling diabetes and preventing the disease. This assessment shall also document the amount and source for any funding directed to the agency or entity from the Kentucky General Assembly for programs and activities aimed at reaching those with diabetes;

3. A description of the level of coordination existing between the entities on activities, programmatic activities, and messaging on managing, treating, or preventing all forms of diabetes and its complications;
4. The development or revision of detailed action plans for battling diabetes with a range of actionable items for consideration by the General Assembly. The plans shall identify proposed action steps to reduce the impact of diabetes, prediabetes, and related diabetes complications. The plan shall also identify expected outcomes of the action steps proposed in the following biennium while also establishing benchmarks for controlling and preventing relevant forms of diabetes; and
5. The development of a detailed budget blueprint identifying needs, costs, and resources required to implement the plan identified in subsection (4) of this section. This blueprint shall include a budget range for all options presented in the plan identified in subsection (4) of this section for consideration by the General Assembly.

**Effective:** June 27, 2019

**History:** Amended 2019 Ky. Acts ch. 90, sec. 8, effective June 27, 2019. -- Created 2011 Ky. Acts ch. 83, sec. 2, effective June 8, 2011.

## 211.753 USE OF AGENCIES' EXISTING DIABETES INFORMATION, DATA, INITIATIVES, AND PROGRAMS TO IMPLEMENT KRS 211.751 AND 211.752.

The requirements of KRS 211.751 and 211.752 shall be limited to the diabetes information, data, initiatives, and programs within each agency prior to June 8, 2011, unless there is unobligated funding for diabetes in each agency that may be used for new research, data collection, reporting, or other requirements of KRS 211.751 and 211.752.

**Effective:** June 8, 2011

**History:** Created 2011 Ky. Acts ch. 83, sec. 3, effective June 8, 2011.

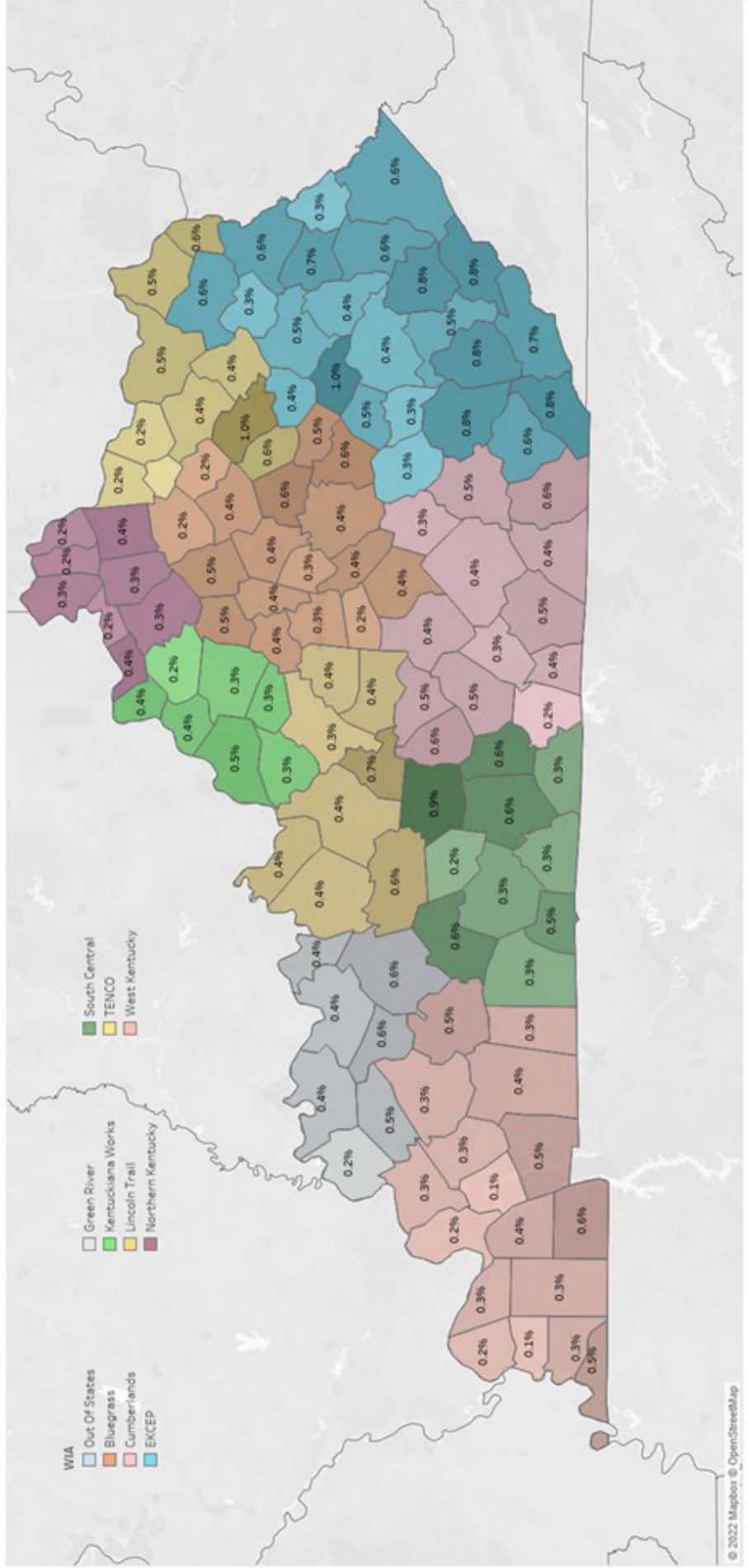


# Attachment 3 | Medicaid Children, Diabetes Prevalence by County, 2021



Office of Data Analytics  
 Kentucky Cabinet for Health and Family Services  
 Generated by: EAS/lynn  
 Database Refresh Date: 10/6/2022  
 Dashboard Created by: Lynn Iig  
 Project ID: DPH-221832

Medicaid Diabetes prevalence by county, 2021 Child





# Attachment 4 | Maternal Delivery and Non-Delivery Hospital Stays by Race and Diabetes Type

Appendix Companion to Table 9: Number and Percentage of Maternal Visits by Type and Maternal Diabetes Status of Mother: Kentucky 2021												
Type of Maternal Stay	White				Black or African American				Other Races			
	Pre-existing Maternal Diabetes	Gestational Diabetes	No Maternal Diabetes	Total Maternal Stays	Pre-existing Maternal Diabetes	Gestational Diabetes	No Maternal Diabetes	Total Maternal Stays	Pre-existing Maternal Diabetes	Gestational Diabetes	No Maternal Diabetes	Total Maternal Stays
Total Maternal Stays (Delivery and Non-Delivery)	143	4,408	82,823	87,374	31	502	11,696	12,229	11	406	6,007	6,424
(% of all maternal stays by diabetes type)	0.2%	5.0%	94.8%	100.0%	0.3%	4.1%	95.6%	100.0%	0.2%	6.3%	93.5%	100.0%
Non-Delivery Stays	48	414	47,878	48,340	11	80	6,971	7,062	2	25	3,676	3,703
(% of total stays which are non-delivery)	33.6%	9.4%	57.8%	55.3%	35.5%	15.9%	59.6%	57.7%	18.2%	6.2%	61.2%	57.6%
Stays with Delivery	95	3,994	34,945	39,034	20	422	4,725	5,167	9	381	2,331	2,721
(% of total stays with delivery)	66.4%	90.6%	42.2%	44.7%	64.5%	84.1%	40.4%	42.3%	81.8%	93.8%	38.8%	42.4%

Source: Health Facilities and Services Data, Office of Data Analytics. 2021 Kentucky Hospital Discharge Data, based on all listed diagnoses  
 Note(s): Maternal Diabetes Status: Gestational Diabetes ICD-10 Codes O244x; Pre-Existing Diabetes ICD-10 Codes O240x-O243x

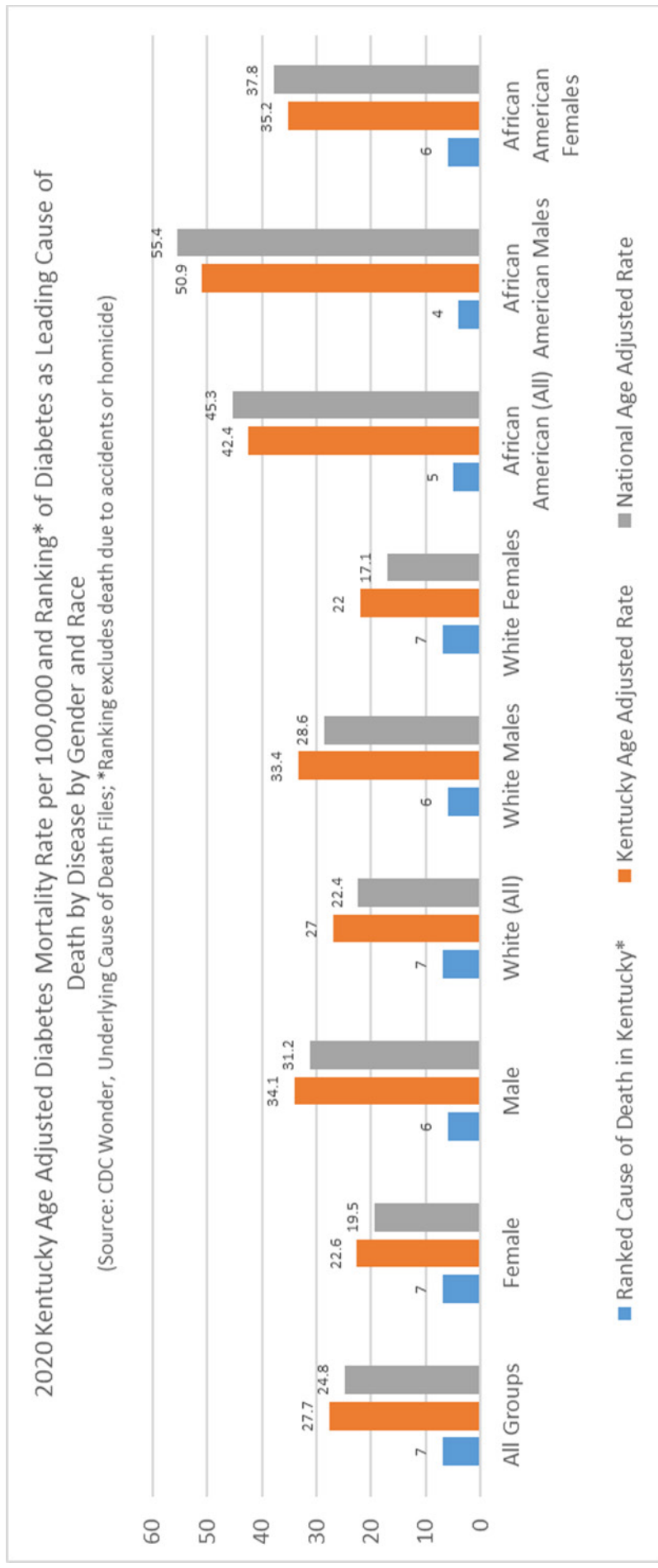
# Attachment 5 | Delivery and Non-Delivery Hospital Stays by Delivery Type, Race, and Diabetes Type

Appendix Companion to Table 10: Number and Percentage of Delivery Stays by Type and Maternal Diabetes Status of Mother, Kentucky: 2021												
Type of Delivery Stay	White				Black or African American				Other Races			
	Pre-existing Maternal Diabetes	Gestational Diabetes	No Maternal Diabetes	Total Maternal Stays	Pre-existing Maternal Diabetes	Gestational Diabetes	No Maternal Diabetes	Total Maternal Stays	Pre-existing Maternal Diabetes	Gestational Diabetes	No Maternal Diabetes	Total Maternal Stays
All Delivery Stays (% of all delivery stays by diabetes type)	95	3,994	34,945	39,034	20	422	4,725	5,167	9	381	2,331	2,721
	0.2%	10.2%	89.5%	100.0%	0.4%	8.2%	91.4%	100.0%	0.3%	14.0%	85.7%	100.0%
Vaginal (% of deliveries by diabetes type)	32	2,161	23,075	25,268	10	196	3,075	3,281	8	231	1,642	1,881
	33.7%	54.1%	66.0%	64.7%	50.0%	46.4%	65.1%	63.5%	88.9%	60.6%	70.4%	69.1%
C-Section (% of deliveries by diabetes type)	63	1,833	11,870	13,766	10	226	1,650	1,886	1	150	689	840
	66.3%	45.9%	34.0%	35.3%	50.0%	53.6%	34.9%	36.5%	11.1%	39.4%	29.6%	30.9%

Source: Health Facilities and Services Data, Office of Data Analytics. 2021 Kentucky Hospital Discharge Data, based on all listed diagnoses

Note(s): Maternal Diabetes Status: Gestational Diabetes ICD-10 Codes O244x; Pre-Existing Diabetes ICD-10 Codes O240x-O243x

# Attachment 6 | 2020 Kentucky Age Adjusted Diabetes Mortality per 100,000 and Ranking of Diabetes as Leading Cause of Death by Gender and Race



# Attachment 7 | Emergency Department Visits for Diabetes, by Area Development District

Patient ADD	White						Black or African American						Other					
	Discharges	Individuals	Avg. Charge	Total Charge	Discharges	Individuals	Avg. Charge	Total Charge	Discharges	Individuals	Avg. Charge	Total Charge	Discharges	Individuals	Avg. Charge	Total Charge		
01 - Purchase	770	563	\$19,412	\$14,947,296	138	92	\$19,881	\$2,743,585	17	14	\$23,855	\$405,541						
02 - <del>Pennyville</del>	840	631	\$13,968	\$11,732,854	186	137	\$12,235	\$2,275,768	16	14	\$12,417	\$198,668						
03 - Green River	1,015	722	\$13,215	\$13,413,667	136	88	\$11,478	\$1,560,965	24	20	\$7,183	\$172,394						
04 - Barren River	1,440	1,071	\$19,672	\$28,327,212	205	152	\$14,669	\$3,007,223	46	43	\$12,746	\$586,329						
05 - Lincoln Trail	1,296	946	\$16,147	\$20,926,741	156	117	\$13,673	\$2,132,929	25	20	\$12,323	\$308,073						
06 - KIPDA	3,090	2,329	\$21,605	\$66,760,323	1,804	1,215	\$20,211	\$36,461,163	120	100	\$18,626	\$2,235,082						
07 - Northern Kentucky	1,643	1,167	\$19,150	\$31,464,264	159	108	\$15,725	\$2,500,316	48	41	\$13,955	\$669,833						
08 - Buffalo Trace	252	161	\$20,841	\$5,251,854	11	9	\$15,371	\$169,082	0	0	\$0	\$0						
09 - Gateway	529	396	\$15,817	\$8,367,344	25	18	\$18,567	\$464,168	11	9	\$16,375	\$180,129						
10 - FIVCO	862	663	\$22,107	\$19,056,522	27	24	\$28,695	\$774,756	18	13	\$14,821	\$266,773						
11 - Big Sandy	1,008	772	\$29,610	\$29,846,448	8	6	\$28,530	\$228,243	*	*	\$7,203	\$14,405						
12 - Kentucky River	943	671	\$25,368	\$23,922,178	8	*	\$20,822	\$166,573	*	*	\$53,350	\$106,700						
13 - Cumberland Valley	1,650	1,218	\$17,419	\$28,741,413	26	16	\$11,589	\$301,324	*	*	\$3,867	\$11,601						
14 - Lake Cumberland	1,212	849	\$18,091	\$21,926,160	40	36	\$24,465	\$978,607	36	26	\$11,307	\$407,039						
15 - Bluegrass	3,362	2,406	\$23,280	\$78,265,937	825	500	\$18,417	\$15,194,249	45	42	\$25,216	\$1,134,733						
<b>TOTAL</b>	<b>19,912</b>	<b>14,565</b>	<b>\$19,713</b>	<b>\$402,950,213</b>	<b>3,754</b>	<b>*</b>	<b>\$18,289</b>	<b>\$68,958,952</b>	<b>413</b>	<b>349</b>	<b>\$15,550</b>	<b>\$6,697,299</b>						

Source: Health Facilities and Services Data, Office of Data Analytics. 2021 Kentucky Hospital Discharge Data, based on all listed diagnoses.

\* Data reporting is suppressed when there are five or fewer cases in one cell to protect privacy

# Attachment 8 | Number and Crude Rate (Per 1,000 Population) of Hospitalizations for Diabetes as Primary Cause (Kentucky residents only; 2021)

Patient ADD	Total Medicaid population counts of counties with positive counts shown.											
	White			Black or African American			Other			Total		
	Population	Number with Diabetes Primary Dx	Crude Rate per 1,000 population	Population	Number with Diabetes Primary Dx	Crude Rate per 1,000 population	Population	Number with Diabetes Primary Dx	Crude Rate per 1,000 population	Population	Number with Diabetes Primary Dx	Crude Rate per 1,000 population
01 - Purchase	170,878	357	1.97	12,230	55	5.21	2,548	8	7.57	185,656	420	4.62
02 - <del>Pennyville</del>	173,066	341	1.87	21,820	60	4.31	2,236	10	12.23	197,122	411	5.15
03 - Green River	190,715	346	1.75	11,423	39	4.80	2,862	20	9.64	205,000	405	4.37
04 - Barren River	263,344	667	2.48	18,910	74	4.20	8,295	38	9.08	290,549	779	4.75
05 - Lincoln Trail	236,480	606	2.59	19,674	67	4.11	4,011	15	9.69	260,165	688	4.90
06 - KIPDA	726,151	1,478	1.84	176,142	650	3.39	28,707	109	4.70	931,000	2,237	3.23
07 - Northern Kentucky	415,652	867	2.40	15,994	59	7.69	8,166	61	10.62	439,812	987	6.39
08 - Buffalo Trace	51,961	108	2.22	1,253	*	5.83	231	*	4.33	53,445	113	3.39
09 - Gateway	79,508	219	2.82	694	*	7.20	491	*	6.23	80,693	227	4.22
10 - FIVCO	124,846	393	2.94	1,850	14	9.13	935	8	7.90	127,631	415	5.98
11 - Big Sandy	133,711	418	2.99	814	*	2.47	0	0	-	134,525	420	2.84
12 - Kentucky River	99,736	475	4.52	564	*	19.33	0	0	-	100,300	479	8.56
13 - Cumberland Valley	219,437	690	3.14	1,620	8	5.19	405	*	4.95	221,462	700	3.89
14 - Lake Cumberland	194,383	469	2.31	3,446	20	5.88	1,339	7	7.75	199,168	496	4.53
15 - Bluegrass	679,595	1,592	2.58	72,464	256	3.70	19,299	29	5.28	771,358	1,877	3.49
TOTAL	3,759,463	9,026	2.55	358,898	1,317	5.39	79,525	311	8.01	4,197,886	10,654	4.63

Source: Health Facilities and Services Data, Office of Data Analytics. 2021 Kentucky Hospital Discharge Data, based on all listed diagnoses.

\* Data reporting is suppressed when there are five or fewer cases in one cell to protect privacy



# Attachment 9 | Number and Crude Rate (per 1,000 Population) of Hospitalizations for Diabetes as Any Cause (Kentucky residents only; 2021)

Patient ADD	Number and Crude Rate (per 1,000 Population) of Individuals Having at Least One Hospitalization with a Diabetes Diagnosis Total Medicaid population counts of counties with positive counts shown.											
	White			Black or African American			Other			Total		
	Population	Number with Diabetes Primary Dx	Crude Rate per 1,000 population	Population	Number with Diabetes Primary Dx	Crude Rate per 1,000 population	Population	Number with Diabetes Primary Dx	Crude Rate per 1,000 population	Population	Number with Diabetes Primary Dx	Crude Rate per 1,000 population
01 - Purchase	170,878	3,876	23.58	12,382	369	27.25	2,656	75	36.45	185,916	4,320	29.17
02 - <del>Pennyville</del>	173,066	3,545	20.71	22,826	443	21.28	2,965	58	28.49	198,857	4,046	23.49
03 - Green River	190,715	3,634	19.94	11,548	242	24.05	3,297	92	32.77	205,560	3,968	25.59
04 - Barren River	263,344	5,367	21.33	19,309	483	30.62	8,792	164	41.89	291,445	6,014	30.94
05 - Lincoln Trail	236,480	5,215	21.70	19,983	397	22.62	4,999	139	45.97	261,462	5,751	30.09
06 - KIPDA	726,151	13,706	17.75	176,142	4,527	25.11	28,858	655	16.66	931,151	18,888	19.58
07 - Northern Kentucky	415,652	8,380	22.90	16,436	348	23.31	8,387	277	38.16	440,475	9,005	28.12
08 - Buffalo Trace	51,961	1,079	21.90	1,305	41	30.90	380	30	114.92	53,646	1,150	55.16
09 - Gateway	79,508	1,922	25.60	2,077	26	11.93	588	17	27.64	82,173	1,965	20.81
10 - FIVCO	124,846	3,514	26.52	2,026	57	20.56	1,064	46	46.60	127,936	3,617	31.99
11 - Big Sandy	133,711	4,114	30.44	932	12	17.60	878	23	25.32	135,521	4,149	24.94
12 - Kentucky River	99,736	3,514	34.17	844	29	40.71	749	21	38.22	101,329	3,564	37.27
13 - Cumberland Valley	219,437	6,303	28.70	3,152	64	21.29	1,685	58	33.02	224,274	6,425	27.95
14 - Lake Cumberland	194,383	4,131	21.15	4,404	92	20.47	2,148	67	45.56	200,935	4,290	29.67
15 - Bluegrass	679,595	12,684	21.76	72,587	1,601	25.09	21,417	215	25.04	773,599	14,500	23.94
<b>Total</b>	<b>3,759,463</b>	<b>80,984</b>	<b>23.46</b>	<b>365,953</b>	<b>8,731</b>	<b>24.16</b>	<b>88,863</b>	<b>1,937</b>	<b>37.05</b>	<b>4,214,279</b>	<b>91,652</b>	<b>28.30</b>

Source: Health Facilities and Services Data, Office of Data Analytics. 2021 Kentucky Hospital Discharge Data, based on all listed diagnoses.

\* Data reporting is suppressed when there are five or fewer cases in one cell to protect privacy

# Attachment 10 | Acronym List

Acronym List	
<b>A1C</b>	Hemoglobin A1C
<b>ABCs</b>	A1C, Blood Pressure, Cholesterol, and Smoking
<b>ADA</b>	American Diabetes Association
<b>ADD</b>	Area Development District
<b>AHRQ</b>	Agency for Healthcare Research and Quality
<b>ALOS</b>	Average Length of Stay
<b>AMA</b>	American Medical Association
<b>BMI</b>	Body Mass Index
<b>C-Section</b>	Cesarean Section
<b>CDC</b>	Centers for Disease Control and Prevention
<b>CDCES</b>	Certified Diabetes Care and Education Specialist
<b>CDHP</b>	Consumer Driven Health Plans
<b>CHFS</b>	Cabinet for Health and Family Services
<b>CHW</b>	Community Health Worker
<b>CM</b>	Case Management
<b>COPD</b>	Chronic Obstructive Pulmonary Disease
<b>DKA</b>	Diabetic Ketoacidosis
<b>DM</b>	Disease Management
<b>DMS</b>	Department for Medicaid Services
<b>DPH</b>	Department for Public Health
<b>DPP</b>	National Diabetes Prevention Program
<b>DSMES</b>	Diabetes Self-Management Education and Support
<b>DVB</b>	Diabetes Value Benefit
<b>ED</b>	Emergency Department
<b>EHR</b>	Electronic Health Record
<b>EMR</b>	Electronic Medical Record
<b>EQR</b>	External Quality Review
<b>FFS</b>	Fee for Service
<b>FFY</b>	Federal Fiscal Year
<b>FQHC</b>	Federally Qualified Health Center
<b>HCS</b>	Humana CareSource

<b>HEDIS</b>	Healthcare Effectiveness Data and Information Set
<b>HIT</b>	Health Information Technology
<b>HLWD</b>	Healthy Living with Diabetes
<b>HRA</b>	Health Risk Assessment
<b>KDPCP</b>	Kentucky Diabetes Prevention and Control Program
<b>KDN</b>	Kentucky Diabetes Network
<b>KEHP</b>	Kentucky Employees' Health Plan
<b>KHA</b>	Kentucky Hospital Association
<b>KHIE</b>	Kentucky Health Information Exchange
<b>KyBRFS</b>	Kentucky Behavioral Risk Factor Survey
<b>LDE</b>	Licensed Diabetes Educator
<b>LHD</b>	Local Health Department
<b>MCO</b>	Managed Care Organization
<b>NACDD</b>	National Association of Chronic Disease Directors
<b>NCQA</b>	National Committee for Quality Assurance
<b>ODA</b>	Office of Data Analytics
<b>OHE</b>	Office of Health Equity
<b>PHC</b>	Personal Health Consultant
<b>PHP</b>	Passport Health Plan
<b>PNC</b>	Personal Nurse Consultant
<b>PPO</b>	Preferred Provider Organization
<b>PQI</b>	Prevention Quality Indicators
<b>Rx</b>	Prescription
<b>SFY</b>	State Fiscal Year
<b>SDOH</b>	Social Determinants of Health
<b>USPSTF</b>	U.S. Preventive Services Task Force