

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

# 2021

## DIABETES REPORT



# 2021 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 Health Data and Analytics (OHDA), 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 HEALTH DATA AND 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

Kentucky Cabinet for Health and Family Services and Kentucky Personnel Cabinet. Kentucky Diabetes Report. Frankfort, KY: KY Cabinet for Health and Family Services, Department for Medicaid Services, Department for Public Health, Office of Health Data and Analytics, and KY Personnel Cabinet, Department of Employee Insurance, 2021.

*The following individuals participated in the preparation of the 2021 Diabetes Report.*

### CABINET FOR HEALTH AND FAMILY SERVICES

#### Department of Public Health

Steven Stack, MD, Commissioner  
Connie Gayle White, MD, MS, FACOG, Deputy Commissioner for Clinical Affairs  
Sue Thomas-Cox, RN, Manager, Chronic Disease Prevention Branch  
Theresa A. Renn, BSN, RN, CDCES, MLDE, Manager, Kentucky Diabetes Prevention and Control Program  
Teresa A. Wood, PhD, Epidemiologist, Chronic Disease Prevention Branch  
Sarojini Kanotra, PhD, MPH, Epidemiologist, Kentucky Behavioral Risk Factor Surveillance  
Vivian Lasley-Bibbs, MPH, Epidemiologist, Office of Health Equity

#### Office of Health Data and Analytics

Robert E. Putt, Executive Director  
Maik Schutze, Chief Analytics Officer  
Allison Lile, Health Care Data Administrator  
Lynn Ng, Data Analyst  
Jana Lazur, Project Manager  
Jamine Hamner, Project Manager  
Angela Taylor, Data Architect

#### Department for Medicaid Services

Lisa Lee, Commissioner  
Veronica Judy-Cecil, Senior Deputy Commissioner  
Judy Ann Theriot, MD, CPE, Medical Director  
Angela W. Parker, RHIT, CHCQM, Director, Division of Program Quality and Outcomes  
Troy Sutherland, MPA, Quality Manager, Division of Program Quality and Outcomes  
Carolyn Kerr, RN, Nurse/Consultant Inspector

### PERSONNEL CABINET

#### Department of Employee Insurance, Kentucky Employees' Health Plan

Reina Diaz-Dempsey, Commissioner  
Jennifer Thompson, RDN, LD, Staff Assistant, Office of the Commissioner  
Bruce Cottew, Healthcare Data Administrator, Office of the Commissioner

### KENTUCKIANA HEALTH COLLABORATIVE

Stephanie Clouser, Data Scientist

# Table of Contents

---

- A Message from the Health and Family Services Cabinet and the Personnel Cabinet ..... 4
- Executive Summary ..... 5
  - Scope of Diabetes in Kentucky ..... 6
  - Addressing Diabetes in Kentucky ..... 9
  - Measuring Progress ..... 10
- Goals and Actions to Improve Diabetes Prevention and Outcomes ..... 11
- The Scope of Diabetes in Kentucky ..... 18
- Addressing Diabetes in Kentucky ..... 41
- Measuring Progress ..... 51
- Attachments ..... 56
  - Attachment 1 | Legislation - KRS 211.751-753 ..... 57
  - Attachment 2 | Medicaid Adults, Diabetes Prevalence by County, 2019 ..... 58
  - Attachment 3 | Medicaid Children, Diabetes Prevalence by County, 2019 ..... 59
  - Attachment 4 | Maternal Delivery and Non-Delivery Hospital Stays by Race  
and Diabetes Type ..... 60
  - Attachment 5 | Vaginal and C-Section Deliveries by Race and Diabetes Type ..... 61
  - Attachment 6 | 2016 Kentucky Age Adjusted Diabetes Mortality per 100,000  
and Ranking of Diabetes as Leading Cause of Death by Disease: by Gender  
and Race ..... 62
  - Attachment 7 | Emergency Department Visits for Diabetes, by Area Development  
District and Race ..... 63
  - Attachment 8 | Number and Crude Rate of Hospitalization for Diabetes as  
Primary Cause (Kentucky residents only; 2019) ..... 64
  - Attachment 9 | Number and Crude Rate of Hospitalization for Diabetes as  
Any Cause (Kentucky residents only; 2019) ..... 65
  - Attachment 10 | Acronym List ..... 66
  - Attachment 11 | Impact of COVID-19..... 67
  - Attachment 12 | Healthy Living with Diabetes Infographic..... 68

# 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 Health Data and Analytics—formerly the Office of Health Policy) 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 2021 Kentucky Diabetes Report, we 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.


***KENTUCKY PARTNERS ... MUST CONTINUE TO WORK TOGETHER TO DEVELOP INNOVATIVE 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***

Preventing new cases, screening to find cases early, offering evidence-based services to those with diabetes, assuring a workforce to handle this load, and improving data to track outcomes are goals recommended by this report. Kentucky partners – healthcare providers, hospital systems, public and private health plans, persons with diabetes, public health agencies, technology resources, communities and more - must continue to work together to develop innovative 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 fifth statewide collaborative report foster new energy among collaborators/champions and engage more stakeholders in efforts to improve the health of the Commonwealth.

Sincerely,

Sincerely,



Eric Friedlander, Secretary  
*Cabinet for Health and Family Services*

Gerina D. Whethers, Secretary  
*Personnel Cabinet*

# Executive Summary

## BACKGROUND

The 2021 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 Health Data and Analytics (OHDA), 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 fifth 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 a greater emphasis on presentation of the data and information in a more useful form.

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 initial 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 the National Diabetes

Prevention Program (DPP).

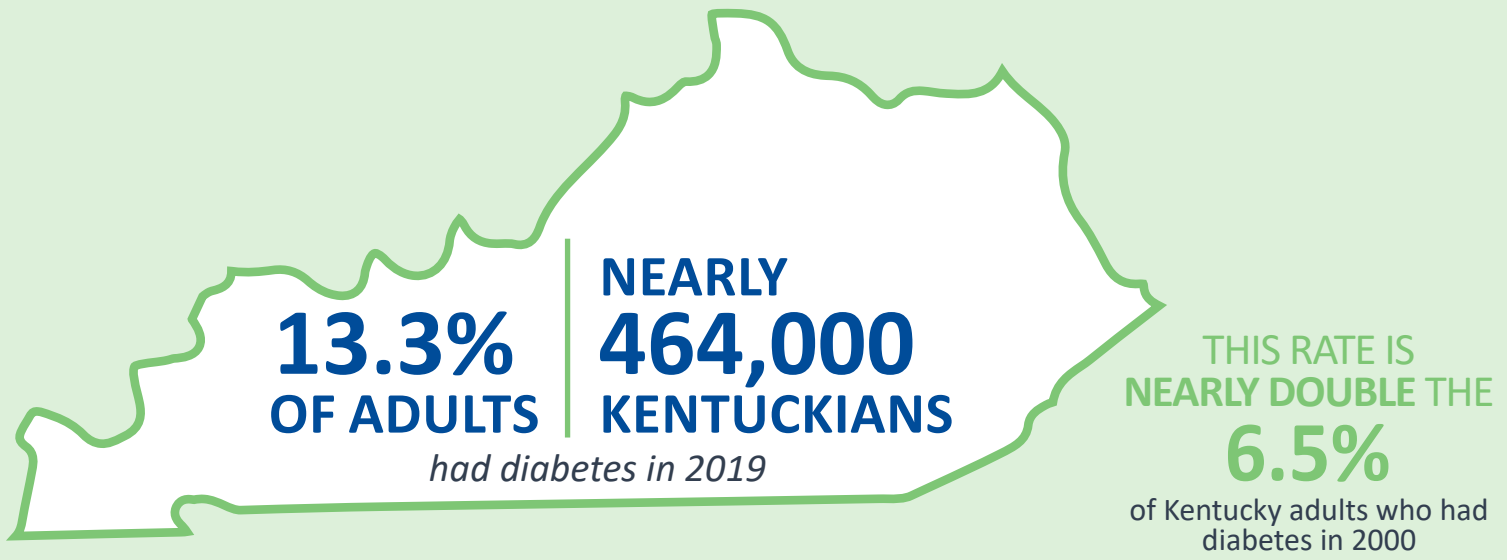
2. **Increase appropriate screening** for prediabetes, diabetes, and gestational diabetes by promoting evidence-based screening guidelines.
3. **Ensure that people** with diabetes have access to evidence-based services, including Diabetes Self-Management Education and Support (DSMES), and case and disease management, which improve knowledge, skills, and behaviors necessary to manage their disease and improve outcomes.
4. **Fund a sustainable** diabetes prevention and control public health infrastructure and workforce at the state and local level.
5. **Improve capacity for**, and use of, diabetes and chronic disease surveillance systems and Health Information Technology (HIT) systems needed to determine the extent and impact of diabetes on the Commonwealth.

**THE COMMITTEE HAS IDENTIFIED SPECIFIC GOALS WITH RELATED ACTION TO STRENGTHEN DIABETES PREVENTION, MINIMIZE DIABETES COMPLICATIONS, AND IMPROVE OUR ABILITY TO HAVE RELIABLE DATA TO TRACK AND UNDERSTAND THE SCOPE OF THIS EPIDEMIC.**

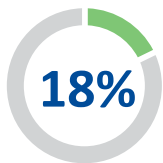
In addition, the Commonwealth must also take actions to impact certain social determinants of health and equity. Social determinants of health are factors that not only negatively affect the ability of certain population groups to access healthcare, but also seriously limit their ability to live a healthy 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.

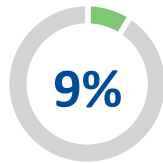


ANOTHER **11%** HAVE PREDIABETES AND ARE AT RISK FOR DEVELOPING DIABETES.



### MEDICAID

adult\* members had a diagnosis of diabetes in 2019



### KEHP

adult\* members had a diagnosis of diabetes in 2019

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



**2,864** children under the age of 19 covered by Medicaid

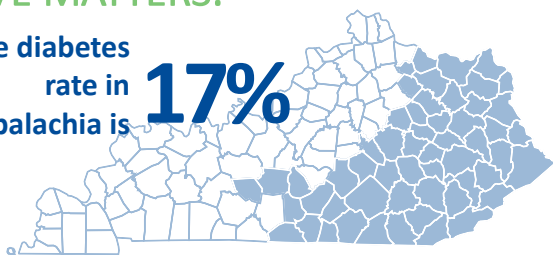
**282** children 17 years and younger covered by Kentucky Employees' Health Plan

## HAVE A DIABETES DIAGNOSIS

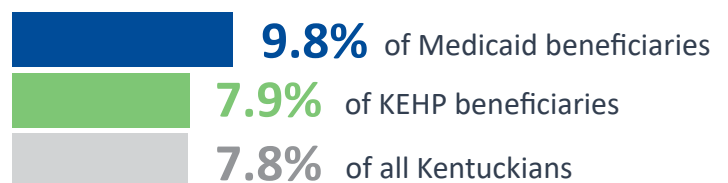
*\* Adults are defined as individuals over the age of 19 for Medicaid and individuals 18 years and older for Kentucky Employees' Health Plan (KEHP)*

## WHERE YOU LIVE MATTERS.

The diabetes rate in Appalachia is **17%**

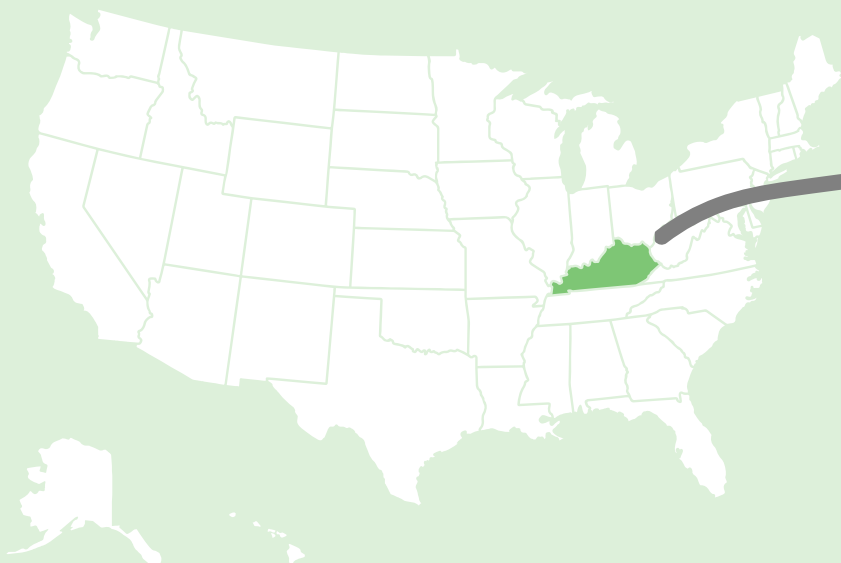


## DIABETES IS COMMON DURING PREGNANCY.



who gave birth in 2019.

# DIABETES IS SERIOUS.

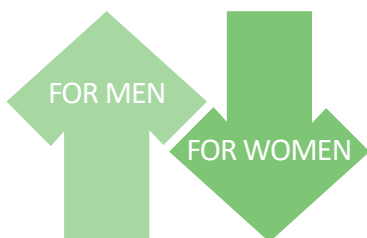


KENTUCKY HAS THE

**4<sup>TH</sup> HIGHEST**

MORTALITY RATE  
FROM DIABETES IN  
THE U.S.

SINCE 2001,  
DIABETES  
MORTALITY  
RATES HAVE



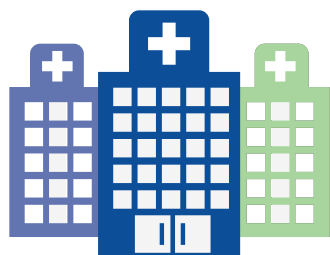
Death Rates are substantially  
**HIGHER** FOR African  
Americans  
than for white Kentuckians.

DEATH RATES IN APPALACHIA  
ARE HIGHER THAN NON-APPALACHIA.

## 10,462 Kentuckians

visited the emergency department a total of **16,497 times** for diabetes in 2019.

**8,270** KENTUCKIANS HAD AT LEAST ONE HOSPITAL STAY FOR DIABETES IN 2019.



Diabetes was the  
primary diagnosis for

**11,545**  
HOSPITALIZATIONS

in 2019.

AVERAGE LENGTH OF STAY

**5 DAYS**



# DIABETES IS COSTLY.

Second most costly common chronic disease

## KENTUCKY MEDICAID

**\$129 MILLION**

for all diabetes non-prescription claims in 2019



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

## KEHP

**\$216 MILLION**

for combined medical and prescription drug costs in 2019

Emergency department visits resulted in billed charges of approximately

**\$92 MILLION**

EACH INPATIENT STAY HAD AN

**AVERAGE CHARGE**

OF

**\$39,262**

*resulting in*



**TOTAL CHARGES**

OF MORE THAN

**\$453 MILLION**

*(\$453,274,627 to be exact.)*

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

- Structured lifestyle change programs such as the National Diabetes Prevention Program have been proven to prevent or delay type 2 diabetes in adults with prediabetes through good nutrition, physical activity, and a 5% to 10% weight loss.
- Quality care from healthcare teams is critical to reduce risks for diabetes-related complications. This can include:
  - Aggressive treatment to manage blood sugar, blood pressure, and cholesterol
  - Smoking cessation promotion
- Diabetes self-management education and support, appropriate self-care and other risk reduction, and behavior change strategies are also critical to manage diabetes and avoid complications.



# Addressing Diabetes in Kentucky

---

## APPLYING THE EVIDENCE BASE TO IMPROVE DIABETES OUTCOMES

One key to 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 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 education about diabetes prevention and control 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.

Successes related to these efforts include growth in access and utilization of DPP and growth in access to accredited or recognized DSMES programs. 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

---

The partners involved in this report have agreed to establish comparable benchmarks to measure progress in diabetes management in the state. Collectively, these data provide a picture of clinical care and management, and 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).
- OHDA 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 in order 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.

# Goals and Actions to Improve Diabetes Prevention and Outcomes

---

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 2020, 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 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 extent and impact of diabetes on the Commonwealth.

## 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 2023. 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 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 (KDPCP and/or OHE) 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 pilot an electronic bi-directional referral system for DPP</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 participate in the Medicaid/MCO workgroup formed 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
<p><b>A. Increase KEHP member participation in biometric screening (includes blood glucose) to 35%.</b></p>	<ol style="list-style-type: none"> <li>1. KEHP will continue to provide/promote biometric screenings (including blood glucose) for all health plan participants</li> </ol>
<p><b>B. Develop a method to calculate baseline diabetes screening rates from claims data.</b></p>	<ol style="list-style-type: none"> <li>1. DPH, DMS, OHDA, and KEHP will collaborate to improve the use of claims data to report screening rates for prediabetes and diabetes</li> </ol>
<p><b>C. Develop a method to calculate baseline gestational diabetes screening rates from claims data.</b></p>	<ol style="list-style-type: none"> <li>1. DPH, DMS, OHDA, and KEHP will collaborate to improve the use of claims data to report screening rates for gestational diabetes</li> <li>2. KEHP will establish a method to track gestational diabetes screening rates using claims data and calculate a baseline</li> </ol>
<p><b>D. Promote and provide information on evidence-based screening and guidelines.</b></p>	<ol style="list-style-type: none"> <li>1. DPH will work with healthcare providers to increase the number providing evidence-based screening among populations impacted by health disparities</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) 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. Increase the number of accredited/recognized DSMES providers in Kentucky.</b></p>	<ol style="list-style-type: none"> <li>1. DPH will provide training and technical support to local health departments (LHDs) to provide the nationally accredited/recognized DSMES program, Healthy Living With Diabetes</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. DPH will pilot telehealth DSMES services in at least two health department areas serving disparate populations</li> <li>3. DPH will maintain the <a href="#">online directory of diabetes resources</a> including listings of DSMES programs statewide</li> <li>4. KEHP’s wellness vendor will provide DSMES information at biometric screening events</li> <li>5. DMS will work with MCOs to incorporate DSMES into the MCO disease/case management (CM/DM) and quality programs</li> <li>6. DPH will work with providers to make referrals</li> <li>7. KEHP’s medical third party administrator will work with disease/case managers to make referrals to DSMES</li> </ol>
<p><b>C. Improve referral mechanisms for DSMES.</b></p>	<ol style="list-style-type: none"> <li>1. DPH will work with state and national partners to pilot an electronic bi-directional referral system for 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> </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 medical third party 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
<b>A. Administer the delivery of population-based diabetes prevention and control services.</b>	<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>
<b>B. Collect, analyze and distribute diabetes-related data to stakeholders at least annually.</b>	<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 complete an annual diabetes resources assessment</li> </ol>
<b>C. Inform, educate, and empower people about diabetes-related health issues utilizing two evidence-based interventions.</b>	<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>
<b>D. Mobilize at least 25 new and existing state and local community partnerships to identify and address diabetes-related health issues.</b>	<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>
<b>E. Develop policies and plans that support individual and community diabetes-related health efforts.</b>	<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> <li>2. DPH and DMS will implement the national CDC 6   18 plan to prevent type 2 diabetes</li> </ol>
<b>F. Link people to needed diabetes-related services through at least one resource.</b>	<ol style="list-style-type: none"> <li>1. DPH will maintain the online directory of diabetes references</li> <li>2. Routinely update listings (DSMES, DPP programs, Medical Nutrition Therapy providers, coalitions, etc.)</li> <li>3. Conduct a pilot project regarding electronic referrals for DSMES and DPP</li> <li>4. Promote the <a href="#">online directory of diabetes references</a> to people with diabetes, communities, stakeholders, diabetes educators, providers, and more</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, CDE)
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 CAPABILITIES FOR, AND USE OF, DIABETES AND CHRONIC DISEASE SURVEILLANCE SYSTEMS AND HEALTH INFORMATION TECHNOLOGY (HIT) SYSTEMS NEEDED TO DETERMINE THE EXTENT AND IMPACT OF DIABETES ON THE COMMONWEALTH.**

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. If 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. OHDA will analyze administrative claims/hospital data to assess the scope of readmissions for diabetes complications</li> <li>2. OHDA 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

---

## 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 is 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 is 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.

---

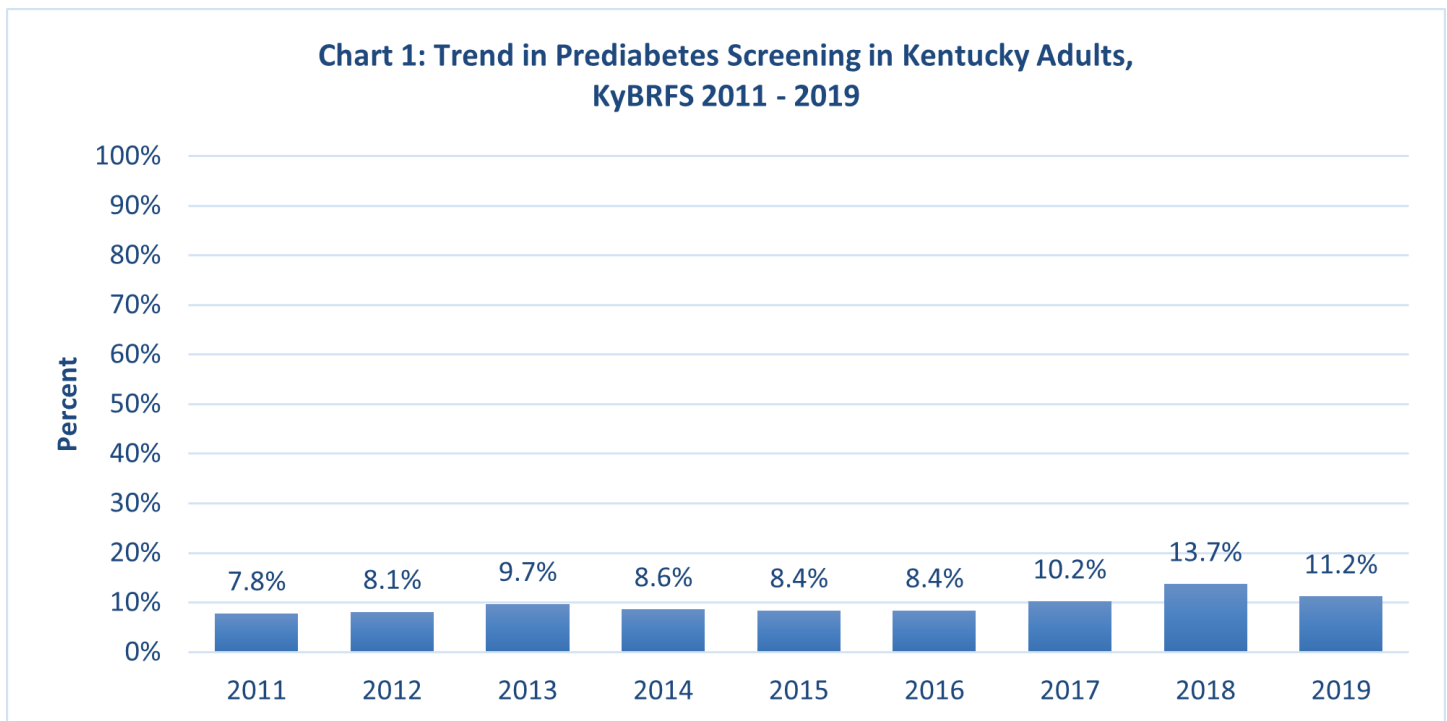
**COLLECTING AND SHARING  
STANDARDIZED AND MEANINGFUL  
DATA IS THE FIRST STEP IN  
IDENTIFYING HEALTH DISPARITIES  
AND IN UNDERSTANDING, TRACKING,  
REDUCING, AND SUBSEQUENTLY  
ELIMINATING THEM IN OUR WORK  
TOWARD ACHIEVING HEALTH EQUITY.**

## WHAT IS THE PREVALENCE OF PREDIABETES IN KENTUCKY?

- One in 10 Kentucky adults have been told that they have prediabetes (317,642).
- Men have slightly higher rates of prediabetes than women.
- Whites have a higher prevalence of prediabetes than African Americans.
- Prediabetes prevalence increases with age.

Table 1: Kentucky Adults 2019 Prediabetes Prevalence (Source: KyBRFS)		
Characteristic	Prediabetes Prevalence	Estimated Number with Prediabetes
<b>Adults age 18 and older</b>		
All Adults	11.2%	317,642
<b>Gender</b>		
Men	11.3%	153,834
Women	11.1%	163,808
<b>Race</b>		
African American	10.7%	22,776
White	11.4%	274,229
<b>Age</b>		
18-44	6.0%	84,180
45-54	14.2%	64,582
55-64	16.5%	73,297
65+	17.2%	95,583

Prediabetes tracking began in 2011, when the rate was 7.8%. As of 2019, it has increased to 11.2%.

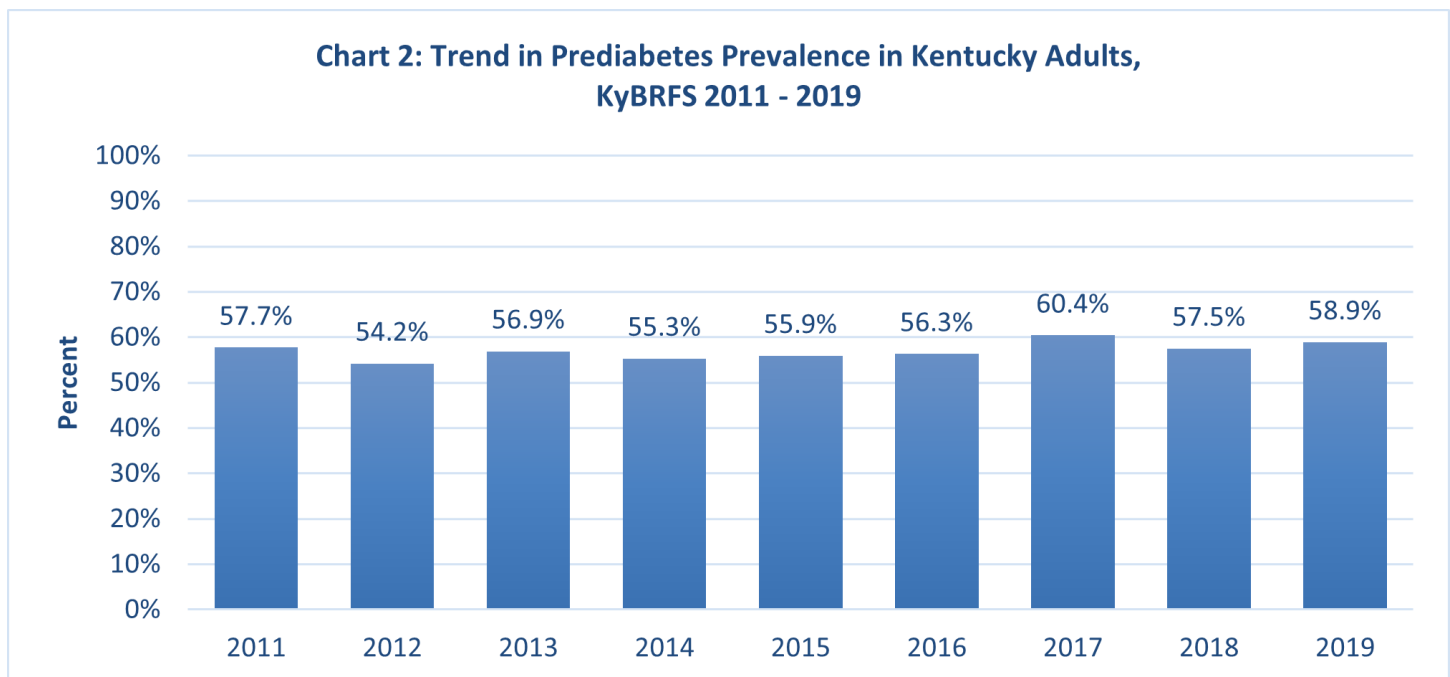


## WHAT PROPORTION OF THE ADULT POPULATION WAS SCREENED FOR DIABETES AND PREDIABETES?

- In the past three years, 58.9% 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 2019 Diabetes and/or Prediabetes Screening (Source: KyBRFS)		
Characteristic	% Screened in past 3 years	Estimated Number Screened
<b>Adults age 18 and older</b>		
All Adults	58.9%	1,604,639
<b>Gender</b>		
Men	56.2%	740,222
Women	61.4%	864,418
<b>Race</b>		
African American	59.5%	120,551
White	58.8%	1,357,818
<b>Age</b>		
18-44	46.8%	625,014
45-54	63.5%	274,062
55-64	76.6%	331,742
65+	71.2%	373,821

Screening rates for diabetes/prediabetes have remained essentially flat between 2011 (57.7%) and 2019 (58.9%).



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

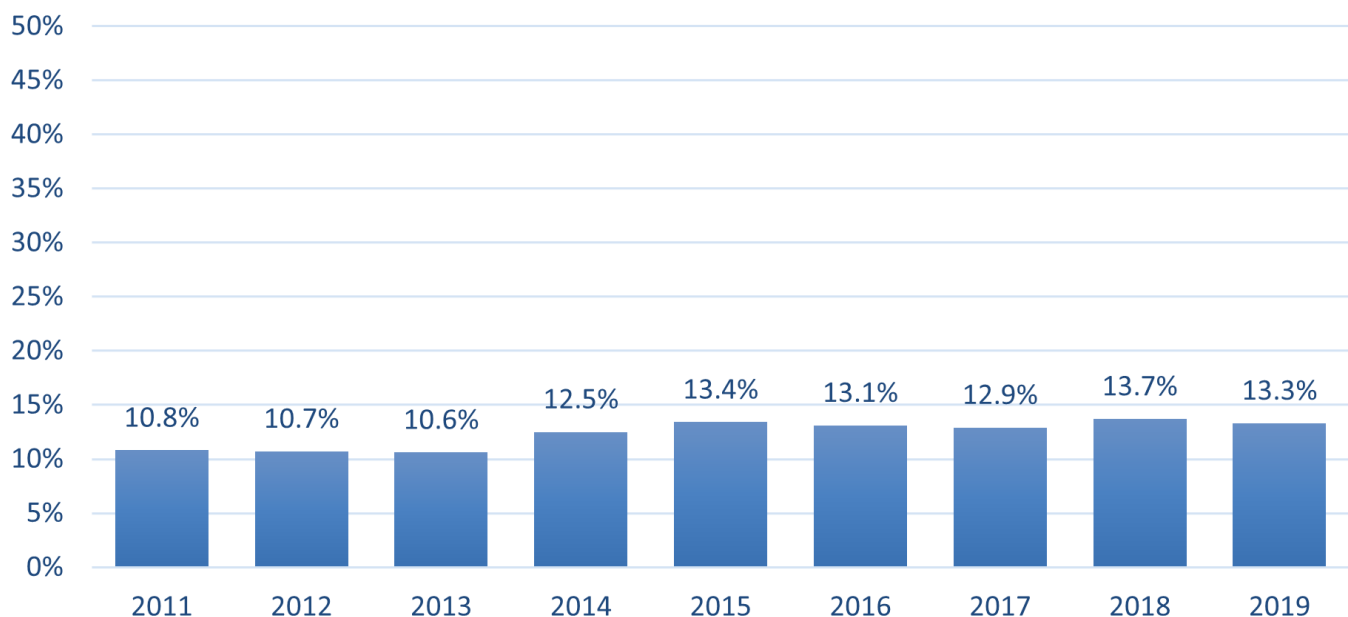
- Kentucky ranks seventh highest in the nation for adult diabetes prevalence.
- Nearly 464,000 Kentucky adults have been diagnosed with diabetes.
- The prevalence of diabetes in Appalachia is 17.2% and compared to 11.9% in non-Appalachia.
- Diabetes prevalence increases with age (see Table 3).

**Table 3: Kentucky Adults 2019 Diabetes Prevalence**  
(Source: KyBRFS)

Characteristic	Diabetes Prevalence	Estimated Number with Diabetes
<b>Adults age 18 and older</b>		
All Adults	13.3%	463,951
<b>Gender</b>		
Men	13.7%	232,506
Women	13.0%	231,445
<b>Race</b>		
African American	13.9%	36,258
White	13.5%	398,241
<b>Geography</b>		
Appalachia	17.2%	162,505
Non-Appalachia	11.9%	301,446
<b>Age</b>		
18-44	3.2%	49,802
45-54	16.5%	92,991
55-64	20.9%	123,538
65+	25.6%	197,620

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 8.9% of the adult KEHP population in 2019, up slightly from 8.4% in 2017.
- Diabetes prevalence is higher among men (11.2%) than for women (7.5%).
- The prevalence of diabetes increases with age. Diabetes is present in 1 in 10 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 2019 Diabetes Prevalence		
Characteristic	Diabetes Prevalence	Number with Diabetes
<b>Adults age 18 and older</b>		
All Adults	8.9%	18,701
<b>Gender</b>		
Men	11.2%	8,901
Women	7.5%	9,800
<b>Age*</b>		
18-44	2.8%	2,673
45-54	10.4%	5,116
55-64	15.9%	9,849
65+ Not Eligible for Medicare**	20.0%	1,155

\* Total number reported under 'Age' is higher than total 'Adults age 18 and older' due to double counting of individuals between the age bands.

\*\* 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 35% (99 out of 282) 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	0.40%	282
Boys	0.42%	155
Girls	0.36%	127

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

Table 6: 2019 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	4.9%	6.3%	575	541
BIG SANDY	7.2%	8.8%	394	345
BLUEGRASS	5.6%	6.8%	1,977	1,768
BUFFALO TRACE	7.0%	8.1%	177	156
CUMBERLAND VALLEY	6.4%	7.7%	582	534
FIVCO	7.4%	9.8%	350	357
GATEWAY	5.6%	7.7%	212	228
GREEN RIVER	5.9%	7.3%	475	405
KENTUCKY RIVER	7.8%	9.2%	369	336
KIPDA	5.7%	7.0%	1,768	1,523
LAKE CUMBERLAND	5.4%	6.7%	471	469
LINCOLN TRAIL	5.3%	6.6%	522	468
NORTHERN KY	5.1%	6.6%	677	653
PENNYRILE	6.5%	7.8%	551	486
PURCHASE	5.4%	6.1%	420	353
<i>Out of State</i>	<i>5.3%</i>	<i>7.4%</i>	<i>280</i>	<i>279</i>

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

- There were 174,955 adult Medicaid beneficiaries with diabetes in calendar year 2019, representing 17.77% of the total adult Medicaid population.
- Diabetes prevalence is higher among women (18.4%) than for men (16.9%).
- The prevalence of diabetes increases with age. Diabetes is present in 1 in 15 members between the ages of 19-44, 1 in 4 members between ages 45-54, over 1 in 3 members ages 55-64 and more than 1 in 3 of those 65 years and older.
- Diabetes prevalence is highest among “other” or unknown race beneficiaries at 20.9%.
- Beneficiaries in Appalachian and non-metro counties have higher rates of diabetes than those in non-Appalachian or metro counties.

Table 7: Medicaid Adults– 2019 Diabetes Prevalence		
Characteristic	Diabetes Prevalence	Number with Diabetes
<b>Adults age 19 and older</b>		
All Adults	17.8%	174,955
<b>Gender</b>		
Men	16.9%	71,601
Women	18.4%	103,354
<b>Age</b>		
19-44	6.9%	38,947
45-54	25.1%	40,363
55-64	34.5%	51,588
65+	40.9%	44,057
<b>Race/Ethnicity</b>		
White	17.3%	118,853
African American	16.3%	16,301
Hispanic	13.4%	2252
All Other Races and Unknown	20.9%	37,549
<b>Geography</b>		
Appalachia	20.2%	74,856
Non-Appalachia	16.3%	100,098
Metro	16.0%	75,606
Non-Metro Urban	19.1%	74,840
Non-Metro Rural	20.2%	24,508
Unknown-Out of State	50.0%	1
Source: Medicaid Claims Data		

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



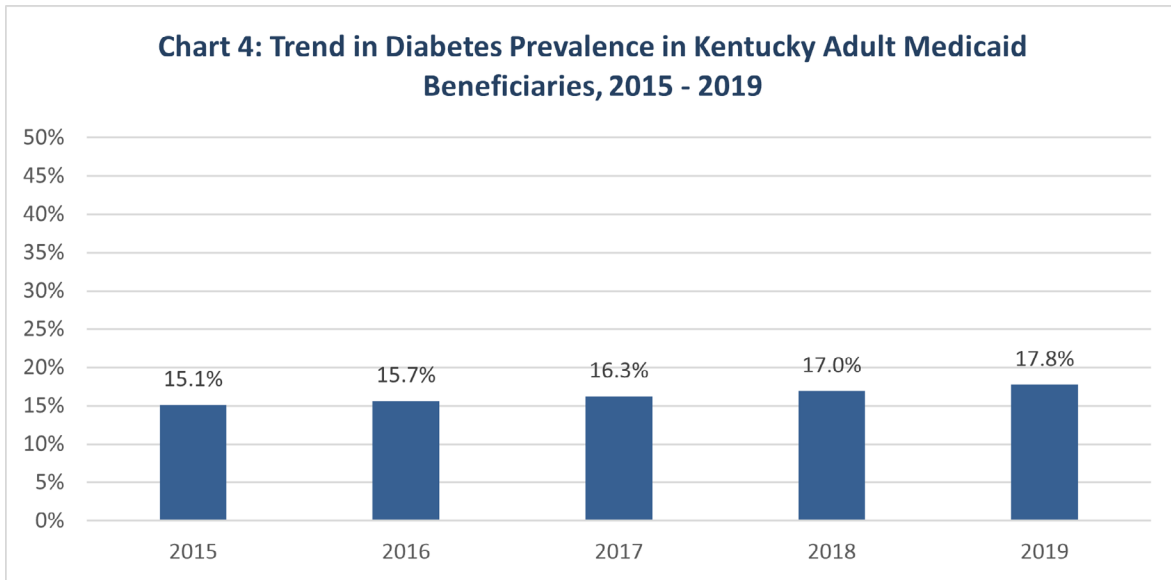
- In calendar year 2019, there were 2,864 youth Medicaid beneficiaries with diabetes, representing 0.47% of the total youth Medicaid population.
- Diabetes prevalence is slightly higher among girls (0.53%) than for boys (0.41%).
- The prevalence of diabetes increases slightly with age, with the highest rate of 1.42% seen in the 15 to 18 year old age group.
- Diabetes prevalence is highest among “other” race beneficiaries at 0.55%.
- 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 – 2019 Diabetes Prevalence		
Characteristic	Diabetes Prevalence	Number with Diabetes
<b>Youth age 18 and under</b>		
All Youth	0.47%	2,864
<b>Gender</b>		
Girls	0.53%	1,574
Boys	0.41%	1,290
<b>Age</b>		
<5	0.03%	53
5-9	0.19%	314
10-14	0.54%	872
15-18	1.42%	1,625
<b>Race/Ethnicity</b>		
White	0.48%	1,880
African American	0.41%	324
Hispanic	0.26%	91
All Other races and Unknown	0.55%	569
<b>Geography</b>		
Appalachia	0.55%	1,083
Non-Appalachia	0.43%	1,781
Metro	0.43%	1,399
Non-Metro Urban	0.51%	1,133
Non-Metro Rural	0.51%	332
Source: Medicaid Claims Data		

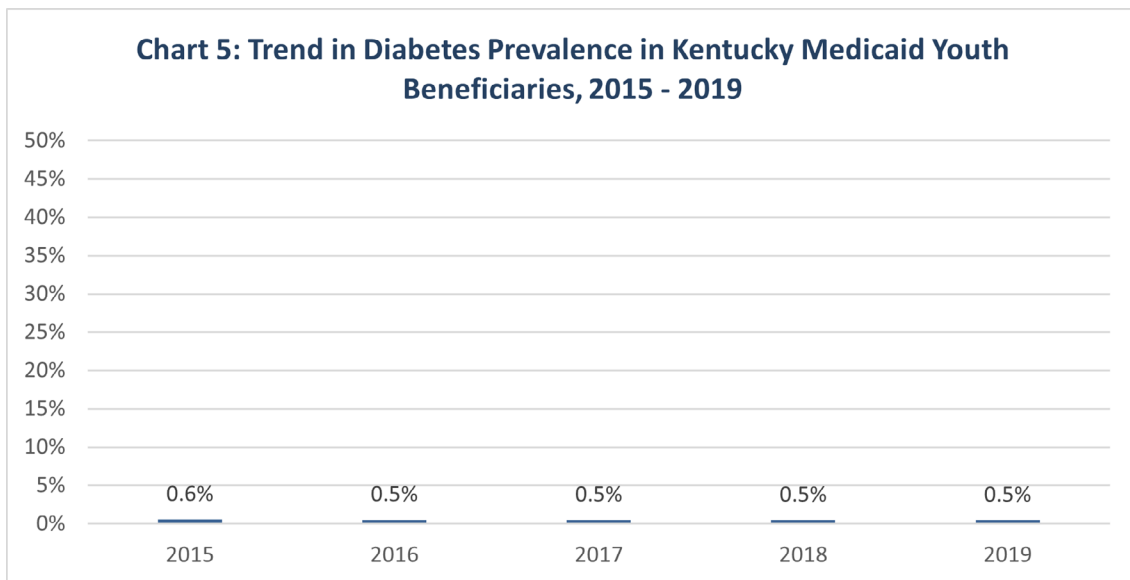
See Attachment 3 for a county level map of diabetes among youth Medicaid beneficiaries.

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

- Diabetes prevalence has increased slightly each year between 2015 and 2019.
- By 2019, the diabetes prevalence rate, among all adult Medicaid beneficiaries was 17.8%, up 1.5% since the last published diabetes report, which used 2017 data.
- The total number of adult beneficiaries with diabetes increased 2.3 fold from 76,386 in 2013 to 174,955 in 2019, but the percent of beneficiaries with diabetes remained similar.



- Diabetes prevalence among youth has decreased slightly each year between 2015 and 2019.
- The diabetes prevalence in Kentucky Medicaid youth has remained stable since 2015.



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

- Gestational diabetes rates are noticeably higher than average in Kentucky River District (10.6%), Northern Kentucky District (10.2%), Gateway District (8.8%), and Big Sandy District (8.8%).
- Gestational diabetes was present in 3,646 (7.2%) of Kentucky live births in 2019, and an additional 551 (1%) of mothers had been diagnosed with diabetes pre-pregnancy.
- Two ADDs have somewhat higher pre-pregnancy diabetes rates: Kentucky River at 1.4% and Big Sandy at 1.3%.

**Table 9: Diabetes status of Kentucky mothers with Live Births in 2019**  
(Source: KDPH Office of Vital Statistics)

Area Development District of Residence	Pre-pregnancy Diabetes		Gestational Diabetes		No Diabetes	Unknown	Total Number By District
	Number	%	Number	%	Number	Number	Number
BARREN RIVER	30	0.8%	304	7.8%	3,444	98	3,876
BIG SANDY	19	1.3%	129	8.8%	1,293	31	1,472
BLUEGRASS	104	1.1%	799	8.5%	8,479	45	9,427
BUFFALO TRACE	10	1.5%	49	7.2%	569	50	678
CUMBERLAND VALLEY	55	1.9%	187	6.5%	2,582	36	2,860
FIVCO	16	1.2%	116	8.3%	1,029	235	1,396
GATEWAY	6	0.6%	83	8.8%	844	13	946
GREEN RIVER	19	0.7%	76	2.90%	2,312	201	2,608
KENTUCKY RIVER	16	1.4%	125	10.6%	1,034	7	1,182
KIPDA	96	0.8%	546	4.6%	11,080	188	11,910
LAKE CUMBERLAND	32	1.4%	157	6.8%	2,057	67	2,313
LINCOLN TRAIL	32	1.0%	199	6.2%	2,907	96	3,234
NORTHERN KY	60	1.0%	588	10.2%	4,412	726	5,786
PENNYRILE	36	1.1%	173	5.4%	2,231	780	3,220
PURCHASE	24	1.2%	115	5.5%	1,918	24	2,081
<b>TOTAL</b>	<b>555</b>	<b>1.1%</b>	<b>3,646</b>	<b>7.2%</b>	<b>46,191</b>	<b>2,597</b>	<b>52,989</b>

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

- Gestational diabetes was present in 8% of all mothers who delivered in Kentucky hospitals in 2019.
- 51% of births to Kentucky mothers with gestational diabetes in Kentucky hospitals were vaginal deliveries and 49% were Cesarean-Section (C-section) deliveries.
- 29% of births to mothers with pre-existing (type 1 or type 2) diabetes were vaginal deliveries and 71% were C-section deliveries.
- 66% of births to mothers with no diabetes diagnosis were vaginal deliveries and 34% were C-section deliveries.

**Table 10: Diabetes and Type of Delivery, All Kentucky Hospital Deliveries 2019**  
(Source: Health Facilities and Services Data, Office of Health Data and Analytics)

Type of Delivery	Pre-existing Diabetes	Gestational Diabetes	Deliveries without Diabetes	Total Deliveries
<b>Stays with Delivery</b>	<b>537</b>	<b>3,720</b>	<b>43,476</b>	<b>47,733</b>
<b>(% of all delivery stays)</b>	<b>1%</b>	<b>8%</b>	<b>91%</b>	<b>100%</b>
Vaginal	158	1,908	28,646	30,712
(% of delivery stays by diabetes type)	29%	51%	66%	64%
C-Section	379	1,812	14,830	17,021
(% of delivery stays by diabetes type)	71%	49%	34%	36%

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

- Gestational diabetes was present in 9.82% of Medicaid beneficiaries who gave birth in 2019.
- 53% of births to mothers with gestational diabetes covered by Medicaid were vaginal deliveries and 47% were C-Section deliveries.
- 37% of births to Medicaid mothers with pre-existing (type 1 or type 2) diabetes were vaginal deliveries and 63% were C-Section deliveries.
- 66% of births to Medicaid mothers with no diabetes diagnosis were vaginal deliveries and 34% were C-Section deliveries.

**Table 11: Diabetes and Type of Delivery, Medicaid Mothers, Kentucky: 2019**

Type of Delivery	Pre-existing Diabetes	Gestational Diabetes	No Diabetes Diagnosis Indicated	Total Delivery Stays
<b>Number of Delivery Stays</b>	<b>673</b>	<b>2,639</b>	<b>23,570</b>	<b>26,882</b>
<b>(% of all delivery stays by diabetes type)</b>	<b>3%</b>	<b>10%</b>	<b>88%</b>	<b>100%</b>
Vaginal	252	1,388	16,071	17,711
(% of deliveries by diabetes type)	37%	53%	68%	66%
C-Section	421	1,251	7,499	9,171
(% of deliveries by diabetes type)	63%	47%	32%	34%

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 8% of women covered by KEHP who gave birth in 2019.
- 83% of births to mothers with gestational diabetes covered by KEHP were vaginal deliveries and 17% were C-Section deliveries.
- 62% of births to mothers covered by KEHP with pre-existing (type 1 or type 2) diabetes were vaginal deliveries and 38% were C-Section deliveries.
- 89% of births to mothers covered by KEHP with no diabetes diagnosis were vaginal deliveries and 12% were C-Section deliveries.

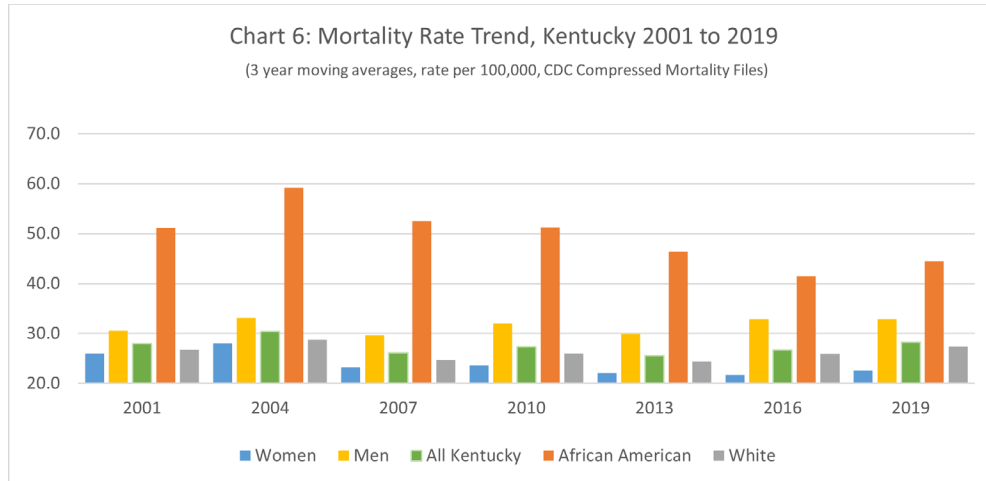
**Table 12: KEHP Number and Percentage of Vaginal and C-Section Deliveries by Type of Diabetes Diagnosis of Mother, Kentucky: 2019**

	Pre-pregnancy Diabetes	Gestational Diabetes	No Diabetes Diagnosis Indicated	Total Delivery Stays
<b>Stays with delivery</b>	<b>18</b>	<b>138</b>	<b>1,592</b>	<b>1748</b>
<b>(% of all delivery stays by diabetes type)</b>	<b>1%</b>	<b>8%</b>	<b>91%</b>	<b>100%</b>
Vaginal Deliveries	13	118	1,428	1,559
(% of deliveries by diabetes type)	62%	83%	89%	88%
C-Section Deliveries	5	20	164	189
(% of deliveries by diabetes type)	38%	17%	12%	12%

Data Source: KEHP Claims data for births in 2019

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

- In 2019, Kentucky had the fourth highest rate of death due to diabetes in the nation. This is a change in ranking from 14<sup>th</sup> in the nation in 2014.
- 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 significant decrease over time.



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

**Table 13: 2019 Ranking\* of Diabetes among Leading Causes of Death Shown by Race and Gender**  
(Source: Kentucky Department for Public Health, Vital Statistics)

	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>6<sup>th</sup></b>	<b>1,578</b>	<b>28.5</b>	<b>21.6</b>
Men	5 <sup>th</sup>	855	34.7	27.3
Women	6 <sup>th</sup>	723	23.6	16.9
White (All)	6 <sup>th</sup>	1,420	27.7	19.9
White Men	5 <sup>th</sup>	765	33.5	25.6
White Women	6 <sup>th</sup>	655	23.1	15.0
African American (All)	4 <sup>th</sup>	146	43.4	37.1
African American Men	4 <sup>th</sup>	83	59.2	45.1
African American Women	5 <sup>th</sup>	63	32.2	31.1

\*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 2019, four out of the five Area Development Districts (ADDs) with the highest diabetes death rates were in eastern Kentucky; with Green River District in eastern Kentucky ranked fifth.

**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	110	30.3	6 <sup>th</sup>
BIG SANDY	53	28.6	6 <sup>th</sup>
BLUEGRASS	236	24.2	6 <sup>th</sup>
BUFFALO TRACE	23	35.8	5 <sup>th</sup>
CUMBERLAND VALLEY	124	42.3	4 <sup>th</sup>
FIVCO	52	27.3	6 <sup>th</sup>
GATEWAY	24	24.0	7 <sup>th</sup>
GREEN RIVER	90	32.5	5 <sup>th</sup>
KENTUCKY RIVER	73	54.9	4 <sup>th</sup>
KIPDA	270	21.6	6 <sup>th</sup>
LAKE CUMBERLAND	112	38.2	5 <sup>th</sup>
LINCOLN TRAIL	104	31.4	5 <sup>th</sup>
NORTHERN KY	158	29.8	5 <sup>th</sup>
PENNYRILE	80	29.2	5 <sup>th</sup>
PURCHASE	69	26.4	7 <sup>th</sup>
<b>TOTAL</b>	<b>1,578</b>	<b>28.5</b>	<b>6<sup>th</sup></b>

## HOW MANY HOSPITALIZATIONS OCCUR DUE TO DIABETES?

- Diabetes was the primary diagnosis for 11,545 hospitalizations with an average length of stay (ALOS) of 5.2 days, average charge of \$39,262 and total billed charges of \$453,274,627.
- 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 43% (4,946) of all cases with an ALOS of 6.08 days, average charge of \$39,310 and total billed charges of \$194,428,764.
- 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 2019, DKA accounted for 34% (3,896) of all diabetes-primary cause hospitalizations, with an ALOS of 3 days, an average charge of \$23,901, and total billed charges of \$93,117,008.
- Diabetes with renal manifestations have the longest ALOS of 7.2 days, an average charge of \$78,272, and total billed charges of \$8,062,022 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 2019**

*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	Total Discharges	Total Individuals	Percent of Discharges	ALOS	Avg. Charge	Total Charges
Without mention of complication	24	23	0.2%	3.8	\$15,991	\$383,778
Ketoacidosis (DKA)	3,896	2,462	33.7%	3.0	\$23,901	\$93,117,008
Hyperosmolarity	363	317	3.1%	3.7	\$28,399	\$10,309,017
With Renal Manifestations	103	86	0.9%	7.2	\$78,272	\$8,062,022
With Ophthalmic manifestations	3	2	0.0%	2.0	\$16,928	\$50,784
With Neurological Manifestations	649	391	5.6%	4.9	\$30,358	\$19,702,510
With Peripheral Circulatory Disorders	1,559	1,178	13.5%	8.3	\$81,575	\$127,174,777
Other Specified Manifestations	4,946	3,809	42.8%	6.1	\$39,310	\$194,428,764
Unspecified Complications	2	2	0.0%	3.0	\$22,983	\$45,966
<b>Total</b>	<b>11,545</b>	<b>8,270</b>	<b>100.0%</b>	<b>5.2</b>	<b>\$39,262</b>	<b>\$453,274,627</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 \$453 million in 2019.
- 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**  
(Source: Health Facilities & Services Data, Office of Health Data & Analytics)

Patient ADD	Discharges	Individuals	Avg. Charge	Total Charge	ALOS
BARREN RIVER	821	570	\$34,742	\$28,523,216	5.9
BIG SANDY	471	360	\$51,963	\$24,474,349	5.5
BLUEGRASS	1,990	1,375	\$42,946	\$85,463,379	5.7
BUFFALO TRACE	114	90	\$40,389	\$4,604,347	4.6
CUMBERLAND VALLEY	751	545	\$39,665	\$29,788,139	5.8
FIVCO	439	322	\$37,151	\$16,309,459	4.6
GATEWAY	258	182	\$39,564	\$10,207,409	5.4
GREEN RIVER	438	314	\$32,572	\$14,266,397	4.2
KIPDA	2,498	1,812	\$36,879	\$92,122,410	4.6
KENTUCKY RIVER	562	387	\$44,294	\$24,893,427	5.3
LAKE CUMBERLAND	567	402	\$49,417	\$28,019,427	5.4
LINCOLN TRAIL	778	542	\$28,905	\$22,488,304	4.3
NORTHERN KY	1,042	740	\$40,012	\$41,692,840	5.8
PENNYRILE	382	286	\$33,968	\$12,975,835	5.0
PURCHASE	434	343	\$40,197	\$17,445,691	4.9
<b>TOTAL</b>	<b>11,545</b>	<b>8,270</b>	<b>\$39,262</b>	<b>\$453,274,627</b>	<b>5.2</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 more than \$91 million in 2019.
- 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**

(Source: Kentucky Outpatient Hospital Encounter Claims 2019)

Patient ADD	Discharges	Individuals	Average Charges	Total Charges
BARREN RIVER	1,134	747	\$4,130	\$4,683,730
BIG SANDY	676	432	\$8,911	\$6,024,114
BLUEGRASS	2,795	1,775	\$5,504	\$15,382,783
BUFFALO TRACE	136	102	\$5,575	\$758,157
CUMBERLAND VALLEY	1,256	794	\$5,902	\$7,412,451
FIVCO	600	299	\$4,396	\$2,637,796
GATEWAY	375	214	\$4,287	\$1,607,466
GREEN RIVER	864	522	\$5,183	\$4,478,202
KENTUCKY RIVER	611	361	\$7,621	\$4,656,160
KIPDA	3,424	2,390	\$6,271	\$21,473,097
LAKE CUMBERLAND	926	604	\$5,004	\$4,633,385
LINCOLN TRAIL	867	563	\$3,901	\$3,382,067
NORTHERN KY	1,237	700	\$4,013	\$4,964,444
PENNYRILE	933	502	\$6,237	\$5,819,513
PURCHASE	663	457	\$6,017	\$3,989,253
<b>TOTAL</b>	<b>16,497</b>	<b>10,462</b>	<b>\$5,571</b>	<b>\$91,902,618</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 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%).
- Over half of those with diabetes are obese, compared to 33% of those without diabetes.
- Half of those with diabetes are physically inactive (50%) compared to 30% of those without diabetes.

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

Chronic Condition	With Diabetes	Without Diabetes
Arthritis	54%	31%
Asthma	17%	8%
Coronary heart disease	19%	4%
Hypertension	78%	35%
High cholesterol	66%	33%
ALL natural teeth extracted (65 or older only)	30%	23%
Current smokers	24%	24%
Obesity	56%	33%
No leisure time physical activity	50%	30%

## 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 2019.
- More than half of all hospitalizations for a primary diagnosis of hypertensive disease include a secondary diagnosis of diabetes.

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

Primary Diagnosis	With Diabetes			Without Diabetes			% of Discharges with Diabetes
	Discharges	Individuals	Total Charges	Discharges	Individuals	Total Charges	
Hypertensive Disease	10,930	7,838	\$465,505,233	9,109	6,976	\$373,363,463	55%
Ischemic Heart Disease	7,553	6,531	\$691,122,402	9,185	8,358	\$784,027,805	45%
Congestive Heart Failure	902	789	\$32,873,362	1,407	1,228	\$58,589,080	39%
Cerebrovascular Disease	6,351	4,812	\$363,974,830	9,270	7,311	\$602,366,040	41%
<b>Total</b>	<b>25,736</b>	<b>19,970</b>	<b>\$1,553,475,827</b>	<b>28,971</b>	<b>23,873</b>	<b>\$1,818,346,388</b>	<b>47%</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. Diabetes has the fourth highest average charge at \$39,262.

**Table 20: Kentucky 2019 Inpatient Discharges for Common Chronic Diseases**  
(Source: Health Facilities & Services Data (HFSD), Office of Health 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	763	688	\$14,109	\$10,765,269
Asthma Childhood	1,053	912	\$22,726	\$23,930,592
COPD	12,501	9,699	\$28,739	\$359,262,349
Coronary Artery Disease	4,974	4,670	\$99,527	\$495,046,004
<b>Diabetes</b>	<b>11,545</b>	<b>8,270</b>	<b>\$39,262</b>	<b>\$453,274,627</b>
Heart Failure	2,309	2,017	\$39,611	\$91,462,441
Hypertension	20,039	14,814	\$41,862	\$838,868,696

## 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: 2019 Cost of Diabetes and Other Common Chronic Diseases for Adult Medicaid Beneficiaries**

Chronic Condition	# of Beneficiaries	Total Cost	Average Cost Per Patient
Asthma	24,799	\$11,402,048	\$460
Cerebrovascular Disease	19,077	\$142,654,946	\$7,478
Congestive Heart Failure	17,756	\$48,008,374	\$2,704
COPD	78,219	\$108,970,920	\$1,393
Coronary Artery Disease	34,633	\$91,749,026	\$2,649
<b>Diabetes</b>	<b>97,720</b>	<b>\$128,506,915</b>	<b>\$1,315</b>
Hypertensive Disease	164,583	\$118,063,947	\$717

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: 2019 Cost of Diabetes and Other Common Chronic Diseases for Youth Medicaid Beneficiaries**

Chronic Condition	# of Beneficiaries	Total Cost	Average Cost per Patient
Asthma	23,911	\$10,420,882	\$436
Cerebrovascular Disease	481	\$1,190,531	\$2,475
Congestive Heart Failure	90	\$799,400	\$8,882
Chronic Bronchitis	7,515	\$924,021	\$123
Coronary Artery Disease	65	\$33,518	\$516
<b>Diabetes</b>	<b>1,924</b>	<b>\$7,546,799</b>	<b>\$3,922</b>
Hypertensive Disease	2,009	\$1,327,711	\$661

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, cancer, and osteoarthritis.
- The highest per patient cost condition is congestive heart failure followed by coronary artery disease, COPD, osteoarthritis, asthma, and diabetes.
- Table 23 reflects only hospitalization costs and medications taken during the hospital stay for diabetes and other co-morbidity issues but does not include pharmacy costs by members who receive prescriptions on an outpatient basis.

**Table 23: KEHP Comparison of Diabetes and Other Chronic Conditions in Adults for 2019**

Condition	Patients	Net Pay Med	Net Pay RX	Net Pay Med and Rx	Net Pay per Patient
Asthma	5,844	\$2,035,648	\$48,882,369	\$50,918,017	\$8,713
Cancer	19,251	\$73,148,284	\$123,803,879	\$196,952,163	\$10,231
Chronic Back	45,234	\$48,174,009	\$224,054,317	\$272,228,326	\$6,018
Chronic Obstruc Pulm Dis (COPD)	2,697	\$2,567,065	\$31,891,686	\$34,458,750	\$12,777
Congestive Heart Failure	1,050	\$1,965,050	\$17,632,706	\$19,597,756	\$18,665
Coronary Artery Disease	5,471	\$33,275,693	\$48,557,591	\$81,833,284	\$14,958
<b>Diabetes</b>	<b>28,019</b>	<b>\$16,522,602</b>	<b>\$199,829,475</b>	<b>\$216,352,077</b>	<b>\$7,722</b>
Hypertension, Essential	44,898	\$13,462,889	\$232,753,009	\$246,215,898	\$5,484
Osteoarthritis	17,379	\$50,386,023	\$141,331,014	\$191,717,037	\$11,032
Overweight/ Obesity	5,723	\$11,069,283	\$46,415,188	\$57,484,471	\$10,044

## 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 reflects only hospitalization costs and medications taken during the hospital stay for diabetes and other co-morbidity issues but does not include pharmacy costs by members who receive prescriptions on an outpatient basis.

**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	2,344	\$822,035	\$5,868,238	\$6,690,273	\$2,854
Cancer	211	\$3,225,845	\$909,725	\$4,135,570	\$19,600
Chronic Back	3,898	\$951,223	\$6,725,641	\$7,676,865	\$1,969
Chronic Obstruc Pulm Dis(COPD)	33	\$28,371	\$411,844	\$440,215	\$13,340
Congestive Heart Failure	8	\$29,458	\$482,468	\$511,925	\$63,991
Coronary Artery Disease	2	\$339	\$10,279	\$10,618	\$5,309
<b>Diabetes</b>	<b>379</b>	<b>\$1,117,076</b>	<b>\$4,068,374</b>	<b>\$5,185,450</b>	<b>\$13,682</b>
Hypertension, Essential	118	\$143,257	\$883,945	\$1,027,202	\$8,705
Osteoarthritis	68	\$56,861	\$158,983	\$215,844	\$3,174
Overweight/ Obesity	273	\$280,192	\$867,064	\$1,147,256	\$4,202



# 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 the DPP, visit [www.cdc.gov/prevention](http://www.cdc.gov/prevention).

## 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.

The “2017 National Standards for Diabetes Self-Management Education and Support” define DSMES as: “The ongoing process of facilitating the knowledge, skills, and ability necessary for diabetes self-care as well as activities that assist a person in implementing and sustaining the behaviors needed to manage his or her condition on an ongoing basis beyond or outside of formal self-management training.” These standards, supported by the Association of Diabetes Care and Education Specialists (ADCES) and the ADA, also note that DSMES is a “critical element” of care for all people with diabetes. Numerous studies have demonstrated the benefits of DSMES, which include improved clinical outcomes and quality of life while reducing hospitalizations and healthcare costs. Engagement in DSMES services improves A1C by 0.6%, as much as many medications – with no side effects.

In 2020, a consensus report of the American Diabetes Association, Association of Diabetes Care & Education Specialists, Academy of Nutrition and Dietetics, American Academy of Family Physicians, American Academy of PAs, American Association of Nurse Practitioners, and American Pharmacists Association on DSMES in adults with type 2 diabetes was released. The report updated and reaffirmed

four critical times to assess, provide, and adjust DSMES services: 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 a very underutilized service.

## CURRENT DIABETES PREVENTION AND CONTROL EFFORTS

DPH, OHDA, 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.*

#### Prevention of Type 2 Diabetes/DPP

- Continue to offer DPP as a covered benefit at 100%.
- Continue management and expansion of DPP.
- Lark (digital DPP/care management platform provider) will continue to actively identify members who are at risk for diabetes.
- Continue to offer wellness points through wellness vendor WebMD for completion of DPP.

#### DSMES

- Continue to cover DSMES as a covered benefit under the health plan.
- Anthem continues to identify members who have a diabetes diagnosis and refer them to DSMES services in their community.

#### Case/Disease Management

- 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.
- Anthem makes outbound calls to the most at risk members and treating physicians to collaboratively address healthcare coordination.
- Anthem provides KEHP with IHM reporting to demonstrate the success of the program.

#### 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 written health assessment with StayWell 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 2019, 70% of members with diabetes attained optimal adherence to their diabetes medications, producing a savings of more than \$5 million.

**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	Newly Optimally Adherent Members	Estimated Medical Savings**
2015	17,139	10,597	62%	19	\$56,100
2016	17,885	11,810	66%	1,865	\$5,507,300
2017	18,569	12,508	67%	1,719	\$5,076,200
2018	18,807	12,886	68.5%	1,678	\$4,955,100
2019	19,138	13,493	70.5%	1,761	\$5,200,200

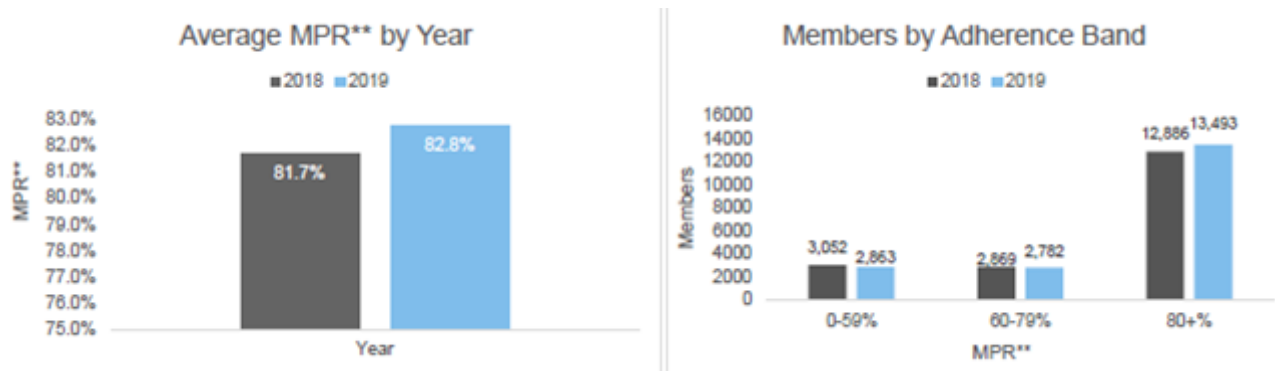
\*Total Members only represents those who were eligible for at least 85% of the reporting period.  
 \*\*Estimated \$2,953 medical savings per optimal utilizer were derived from CVS/Caremark Enterprise Analytics Pharmacy Economical Model, 2014

**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 2018 to 2019		
Population with Diabetes	RXs to treat diabetes	RXs for other conditions
LivingWell CDHP	21.4%	9.6%
LivingWell PPO	10.5%	-3.4%
LIVINGWELL BASIC CDHP	-12.3%	5.0%
<b>TOTAL PLANS</b>	<b>15.0%</b>	<b>3.44%</b>

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



\*The average medication possession ratio (MPR) has continued to increase year over year.

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

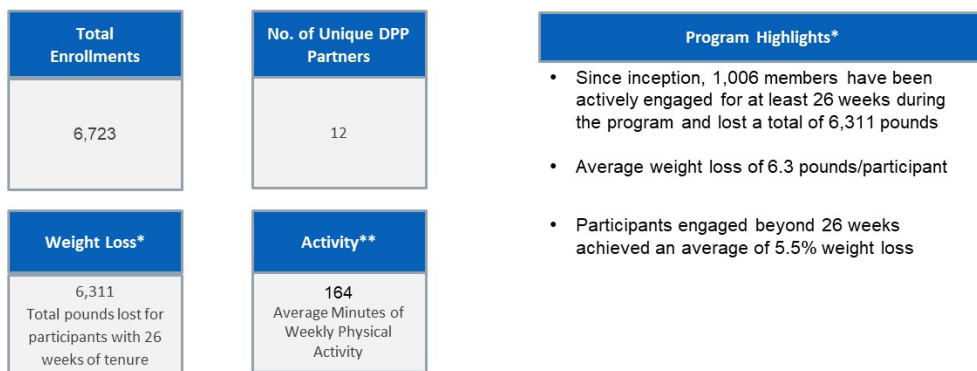
In 2013, KEHP began a new program of recruiting and referring eligible members to a Diabetes Prevention Program, and in 2014, offered the benefit at no cost to all members who met program qualifications. Beginning in 2015, KEHP partnered with Anthem to administer, manage, and expand enrollment in the 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 2019, KEHP enrolled 6,723 members in a DPP class with the partnership with Solera. The number of DPP unique providers receiving reimbursement is 12. The program is producing positive results. KEHP members participating in DPP classes are losing weight, increasing physical activity, and reducing blood glucose levels at or below CDC recommended levels. As seen in the chart below, in 2019, DPP participants who stayed in the program beyond 26 weeks averaged 5.5% weight loss.

**Figure 2: KEHP DPP Results**

**Program Highlights**



\* The participants included in this analysis have at least 26 weeks of tenure in Q4 2019 of the program. This approach aligns with CDC Diabetes Prevention Recognition Program reporting criteria, which requires 9 months enrollment for reportable weight loss.

\*\* For everyone who achieved M3 (4 session in 9 weeks), Participant Physical Activity CDC study benchmark was 150 minutes of weekly physical activity.

## 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 five MCOs in 2019: Anthem Medicaid, Aetna Better Health, Humana CareSource, Passport Health Plan, and WellCare. Each is required to conduct a Health Risk Assessment (HRA) for new members and identify health needs, provide robust case management/disease management (CM/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.

## 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.

<p>Prevention of Type 2 Diabetes/DPP</p>	<ul style="list-style-type: none"> <li>• Promote awareness of prediabetes and DPP to the general public.</li> <li>• Create unique media messages targeted at high-risk populations in Eastern Kentucky.</li> <li>• Provide continuing education about prediabetes and DPP to healthcare professionals.</li> <li>• Support training costs for DPP lifestyle coaches.</li> <li>• Track locations of DPP programs and new DPP classes and share via the Kentucky Diabetes Resource Directory, websites, and with payers (KEHP).</li> <li>• Maintain <a href="http://preventprediabetesky.org">preventprediabetesky.org</a> resources and marketing.</li> <li>• Implement a robust diabetes care quality improvement project with select primary care practices and other partners.</li> <li>• Create/maintain active partnerships to increase bidirectional referrals for DPP and DSMES.</li> <li>• Provide DPP providers access to Data Analysis of Participants System (DAPS).</li> <li>• Maintain a strong and active partnership with the KEHP.</li> </ul>
<p>DSMES</p>	<ul style="list-style-type: none"> <li>• Promote awareness of diabetes and benefits of DSMES to the public and professionals.</li> <li>• Provide continuing education about evidence-based diabetes self-management education and support (DSMES), including the four critical times to refer for DSMES.</li> <li>• Provide training, curricula, and materials for select LHDs and other DSMES providers.</li> <li>• OHE and KDPCP work to tailor and modify trainings to address cultural competency, the SDOH and health inequities that impact health and health outcomes.</li> <li>• Track locations of DSMES programs and share via the online directory of diabetes resources.</li> <li>• Oversee an accredited/recognized DSMES program (Healthy Living with Diabetes) and provide DSMES services through LHDs via multiple modalities, including telehealth.</li> <li>• Maintain a strong and active partnership with KEHP to support increased DSMES referrals by nurse coaches.</li> </ul>
<p>Case/Disease Management</p>	<ul style="list-style-type: none"> <li>• Share educational materials (eg., diabetes basics, nutrition basics and prediabetes basics) with MCOs and KEHP for use with their members.</li> <li>• Keep updated and share locations of DPP and DSMES services across the state.</li> </ul>
<p>Other</p>	<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 over 40 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 is 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> </ul>

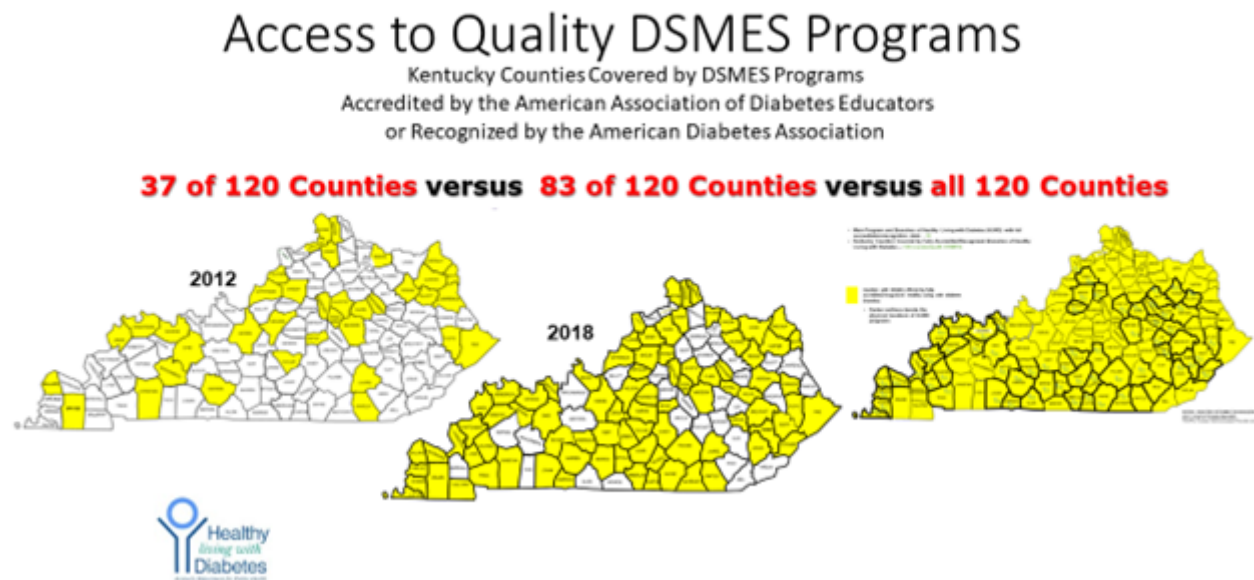
## INNOVATION HIGHLIGHTS:

KDPCP, along with many partners across the state, has worked to improve access to, and utilization of, evidence-based interventions for diabetes prevention and control, specifically the DPP DSMES programs. In addition, two health systems' quality improvement interventions have also been implemented: a referral pilot for the national diabetes prevention program and the Kentucky Diabetes Learning Collaborative. All have resulted in a number of achievements as described below – some in spite of, and/or in response to, the emergence of the COVID-19 pandemic in early 2020.

Achievements in the area of DSMES include:

- Increased the number of counties covered by a recognized/accredited DSMES program from 37 in 2012 to 83 in 2018 and, with the launch of DSMES delivered via telehealth, to 120 counties in 2020 (see maps below).
- KDPCP received a grant, Reaching Out for Better Health, from the Association of Diabetes Care & Education Specialists (ADCES). The grant, testing a model for remote delivery of DSMES, spanned from January 1, 2019-December 31, 2019 and was the foundation of the Healthy Living with Diabetes (HLWD) DSMES telehealth work. This grant project, completed in cooperation with Lake Cumberland District Health Department, was highlighted in an ADCES podcast in April 2020 <https://thehuddle.simplecast.com/episodes/initiating-telehealth-in-your-practice-tips-tricks-from-someone-whos-been-there>.
- With the onset of the pandemic, KDPCP worked quickly to assure that Kentuckians would still have access to DSMES services. In March 2020, four HLWD teams were identified to be part of a HLWD telehealth pilot. The pilot teams began delivery of DSMES in April 2020 and by December 2020, 6 HLWD teams were providing DSMES by telehealth and four more HLWD Teams were trained to begin offering DSMES by telehealth in 2021.
  - Between April 1, 2020 and December 31, 2020, 134 individuals had at least one encounter with the HLWD DSMES telehealth team. The average hours of education per participant during this reporting period was 7.1.
- Most of the DSMES by telehealth was provided through a virtual platform, though, if they had issues with connectivity, accommodations were made and it was provided telephonically
- The average age of telehealth participants was >60 years.
- 968 Kentucky residents have had at least one encounter with the HLWD program between July 1, 2018 and March 31, 2020 .
- Total HLWD DSMES participants in 2020 is 236.
- Average A1C for persons completing HLWD DSMES face-to-face or remotely in 2020 pre-DSMES was 7.44% and post-DSMES was 6.84%, a reduction of 60%.
  - According to the Type 2 Consensus Report DSMES results in an average A1C reduction of 0.45-0.57% when compared with usual care for people with type 2 diabetes treated with a variety of modalities (lifestyle alone, oral, and injected medication) (*ref: Powers, et. Al* <https://doi.org/10.1177%2F0145721720930959>)
- DPH/KDPCP received continued accreditation by the ADCES Diabetes Education Accreditation Program (DEAP) for their novel “umbrella accreditation” program HLWD on January 15, 2020. In addition, DPH/KDPCP applied for and achieved recognition by the American Diabetes Association Education Recognition Program (ERP) on May 8, 2020. The DEAP and ERP accreditation and recognition are valid for four years. See Attachment 12 for the Healthy Living with Diabetes Infographic.
  - In the “umbrella program” model, DPH holds accreditation and recognition and local health departments can join as branches/sites. As of December 31, 2020, 17 local or district health departments are recognized and accredited sites/branches of HLWD.
- As of January 2021, KDPCP HLWD leadership has provided consultation about the HLWD model for delivering DSMES to eight different state Diabetes Prevention and Control Programs.

Figure 3: Kentucky Counties Covered by Accredited/Recognized DSMES Programs



Health Systems' Quality Improvement Efforts include two projects, the Referral Pilot for the National Diabetes Prevention Program, and the Kentucky Diabetes Learning Collaborative. Achievements of each are included below.

### REFERRAL PILOT FOR NATIONAL DIABETES PREVENTION PROGRAM

KDPCP, at KDPH, received a multi-year grant from the Centers for Disease Control and Prevention (CDC). The purpose of the grant 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 (Referral Pilot for the National Diabetes Prevention Program) focuses on implementing a system to facilitate bi-directional e-referral between healthcare systems and CDC-recognized lifestyle change programs for adults with prediabetes.

This pilot began in 2019. For 2019, KDPH collaborated with the KY Regional Extension Center (KY REC), 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 National Diabetes Prevention Program (NDPP).

Since the NDPP 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 NDPP 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 NDPP provider, KHIE provides the practice with a free, secure CareAlign account.

For 2020, the project has had a 19% increase in identifying and adding the diagnosis of prediabetes to a patient chart. Despite the COVID-19 global pandemic resulting in the need to transition to virtual classes, 48 patients were referred to NDPP classes and 23 are regularly attending. The first two participants recently completed their one-year program



losing a total of 27 pounds and a combined 16,526 minutes of physical activity. Both participants achieved their 5% weight loss goal. One patient's A1c decreased from 6.1 to 5.7. Family Practice Associates has been very successful in outreach to patients on the project. In October 2020, the practice utilized text blasting via EHR to 277 patients with prediabetes. Within an hour the practice had an 18% response rate with patients expressing interest in the class.

We are very excited about the collaborative partnerships we have built and the success this project has attained thus far.

## 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, has recently 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 was supported by a multi-year grant from the CDC.

This 14-month DLC provided 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. 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. 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 included KentuckyCare, One Cross Medical Clinic, Pennyroyal Healthcare Services dba Community Medical Clinic, Regional Healthcare Affiliates dba Health First Community Health, and TJ Regional Health. These practices represent 28 locations, 86 providers, 127,868 total patients, 7,883 adult patients with diabetes, and 3,325 or 42.2% with an A1C value greater than 9. Supporting public health partners at the local level included the Barren River, Green River, Lake Cumberland, Pennyryle, Kentucky River, and Purchase District Health Departments as well as the Lexington Fayette County Health Department. 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.

This initial Kentucky DLC cohort started in October 2019 and ended in December 2020. The population of focus was 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. Data reported through December 30, 2020 shows overall success in six of the seven measures.

## 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:

- Sixty-one of Kentucky's counties are covered by an in-person DPP program, all counties have access to online programs
- Increasing the number of CDC-Recognized DPP organizations in Kentucky from two in 2012 to 33 in July 2020:

- 48% of these are local health departments
- 17 organizations have full recognition
- Kentucky has four Medicare DPP suppliers
- Cumulative enrollment in Kentucky increased from 297 persons at baseline to 12,930 in July 2020
- Participants averaged 5.5% weight loss
- Kentucky ranks 18<sup>th</sup> in the nation in the number of national DPP recognized organizations and 12<sup>th</sup> in the nation for number participants (CDC, July 2020)
- Provided technical assistance to programs interested in telehealth delivery of DPP services

While this represents great progress, the maintenance of this improvement and future growth are in jeopardy. The numbers of CDC-recognized DPP organizations are declining in Kentucky. Likely reasons include the intensity and length of the program and inadequate reimbursement opportunities. Sustainability of these programs must be addressed. Similarly, a yearlong lifestyle change program is challenging to maintain for both participants and coaches. Removal of barriers to participation and continued participation must also be addressed. Use of technology to deliver/enhance the service, removal of co-pays and cost sharing where they exist, and support for coaches and programs should be considered.

## OTHER SUCCESSES

- The Kentucky Diabetes Network celebrated its 21<sup>st</sup> year as the diabetes statewide coalition.
- KDPCP partnered with University of Kentucky and stakeholders (University of Louisville, Cincinnati Children’s, Vanderbilt, KDE) to implement strategies related to diabetes in schools (e.g., training for licensed and unlicensed personnel, insulin administration, and monitoring of blood glucose).
  - The following four modules were developed:
    - **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
  - Modules were beta tested with a subset of school nurses and released for access by all on CE Central Sept 2020.

### Office of Health Data and Analytics (OHDA)

OHDA does not provide health programs as do the other agencies include in this report. OHDA 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 is 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 is 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 and Health 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 is 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 and Health Analytics (OHDA) 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. The (+) percentages compare favorably and the (-) percentages compare unfavorably to the 2020 HEDIS national benchmark for the 50th percentile for all Medicaid MCO plans nationally.

Although, not all plans measure scores were positive, Aetna stands out as having positive performance in four (4) of the six (6) diabetes measures. 2020 HEDIS Scores are based on 2019 Medicaid data.

Table 27: Kentucky Medicaid Managed Care HEDIS Scores 2020 (adults ages 18-75 enrolled in a Kentucky Medicaid Managed Care Plan)							
	<b>Aetna</b> (+) = Compares favorably ; (-) = Compares Unfavorably	<b>Anthem</b> (+) = Compares favorably ; (-) = Compares Unfavorably	<b>Humana</b> (+) = Compares favorably ; (-) = Compares Unfavorably	<b>Passport</b> (+) = Compares favorably ; (-) = Compares Unfavorably	<b>WellCare</b> (+) = Compares favorably ; (-) = Compares Unfavorably	Weighted Average (FINAL STATEWIDE RATE)	2018 HEDIS National Benchmark (50th Percentile)
<b>HbA1c Testing</b>	88.49% (+)	87.54% (-)	85.30% (-)	87.96% (+)	88.89% (+)	88.03% (+)	87.83%
<b>HbA1c Poor Control (&gt;9.0%)</b>	33.75% (+)	33.39% (+)	54.36% (-)	58.58% (-)	46.98% (-)	47.96% (-)	38.08% *
<b>HbA1c Control (&lt;8.0%)</b>	57.08% (+)	54.65% (+)	37.09% (-)	33.58% (-)	43.33% (-)	42.82% (-)	51.40%
<b>HbA1c Control (&lt;7.0%)</b>	41.12% (+)	38.14% (+)	26.03% (-)	24.32% (-)	34.06% (-)	31.09% (-)	35.07%
<b>Eye Exam</b>	50.86% (-)	53.16% (-)	50.77% (-)	40.69% (-)	56.83% (-)	50.70% (-)	57.89%
<b>Medical Attention for Nephropathy</b>	87.56% (-)	90.37% (-)	86.84% (-)	88.50% (-)	91.75% (+)	89.65% (-)	90.51%
<b>Blood Pressure Control (&lt;140/90 mm Hg)</b>	71.54% (+)	66.28% (+)	49.23% (-)	51.82% (-)	62.70% (-)	59.66% (-)	63.26%
*Lower Score is Better							
Source: Medicaid MCO Data, Department for Medicaid Services							

## KEHP – HEDIS MEASURES

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

with diabetes. For all three measures reported by IBM Watson Health, KEHP members have lower (poorer) rates than the national benchmark.

**Table 28: KEHP Diabetes HEDIS Measures 2019**

Measure	KEHP Rate <i>(+) compares favorably</i> <i>(-) compares unfavorably</i>	2019 HEDIS National Benchmark
<b>A1C Test Age 18-75</b>	84% (-)	94%
<b>Dilated Eye Exam (age 18-75)</b>	39% (-)	41%
<b>Medical Attention for Nephropathy</b>	83%(-)	91%

## 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 (2019 KY BRFSS)**

One or more A1C tests in past 12 months	95%
Two or more A1C tests in past 12 months	75%
Foot exam from HCP in past 12 months	74%
Dilated eye exam in past 12 months	69%

## 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 “Current Efforts” section, DPH/KDPCP, along with CDC, tracks the number and identity of CDC-Recognized DPP organizations in Kentucky. In 2020, there were 33 such organizations. KDPCP prepares listings and maps of these organizations every other month and shares them with partners via websites and the [Kentucky Diabetes Resource Directory](#). 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 (July 2020), indicated that enrollment increased from 297 at baseline to 12,930.

KEHP also tracks information about their member participation in the National DPP. In 2019, 6,723 KEHP members enrolled in a DPP class, and 1006 continued in the program past week 26.

### 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. At less than even 1% of the eligible population, it is an underused benefit. As shown in the DSMES maps above, which detail 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**

2015	2016	2017	2018	2019
822 (0.6%)	661 (0.4%)	767 (0.5%)	636 (0.4%)	636 (0.4%)

DSMES continues to be a covered benefit under the KEHP.

Year	DSMES unique members
2017	502
2018	469
2019	406

## OFFICE OF HEALTH DATA AND 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.

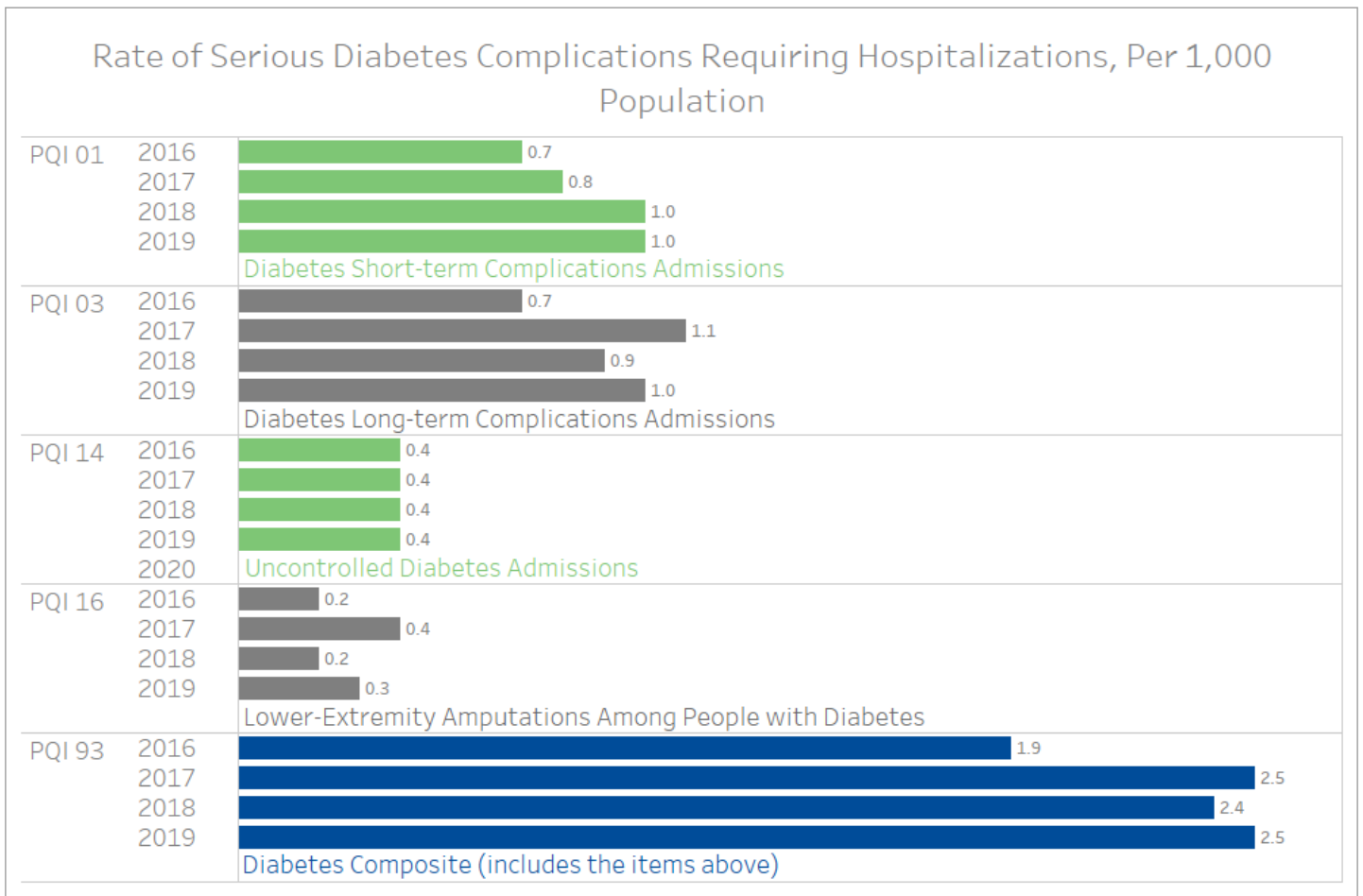
### PQI 93 | Prevention Quality Diabetes Composite

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

---



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

Appendix Companion to Table 9: Number and Percentage of Delivery and Non-delivery Maternal Hospital Stays and Type of Diabetes Diagnosis of Mother, Kentucky: 2019												
Type of Maternal Stay	WHITE				African American				OTHER RACES			
	Pre-existing diabetes	Gestational Diabetes	No Diabetes Diagnosis	Total Maternal Stays	Pre-existing diabetes	Gestational Diabetes	No Diabetes Diagnosis	Total Maternal Stays	Pre-existing diabetes	Gestational Diabetes	No Diabetes Diagnosis	Total Maternal Stays
Total Maternal Stays (Delivery and Non-Delivery)	627	3,421	82,261	86,309	123	341	10,662	11,126	39	294	5,073	5,406
(% of all maternal stays by diabetes type)	0.61%	3.33%	79.99%	83.92%	0.12%	0.33%	10.37%	10.82%	0.04%	0.29%	4.93%	5.26%
Non-Delivery Stays	194	268	45,432	45,894	47	43	5,983	6,073	11	25	3,105	3,141
(% of total stays which are non-delivery)	30.94%	7.83%	55.23%	53.17%	38.21%	12.61%	56.12%	54.58%	28.21%	8.50%	61.21%	58.10%
Stays with Delivery	433	3,153	36,829	40,415	76	298	4,679	5,053	28	269	1,968	2,265
(% of total stays with delivery)	69.06%	92.17%	44.77%	46.83%	61.79%	87.39%	43.88%	45.42%	71.79%	91.50%	38.79%	41.90%

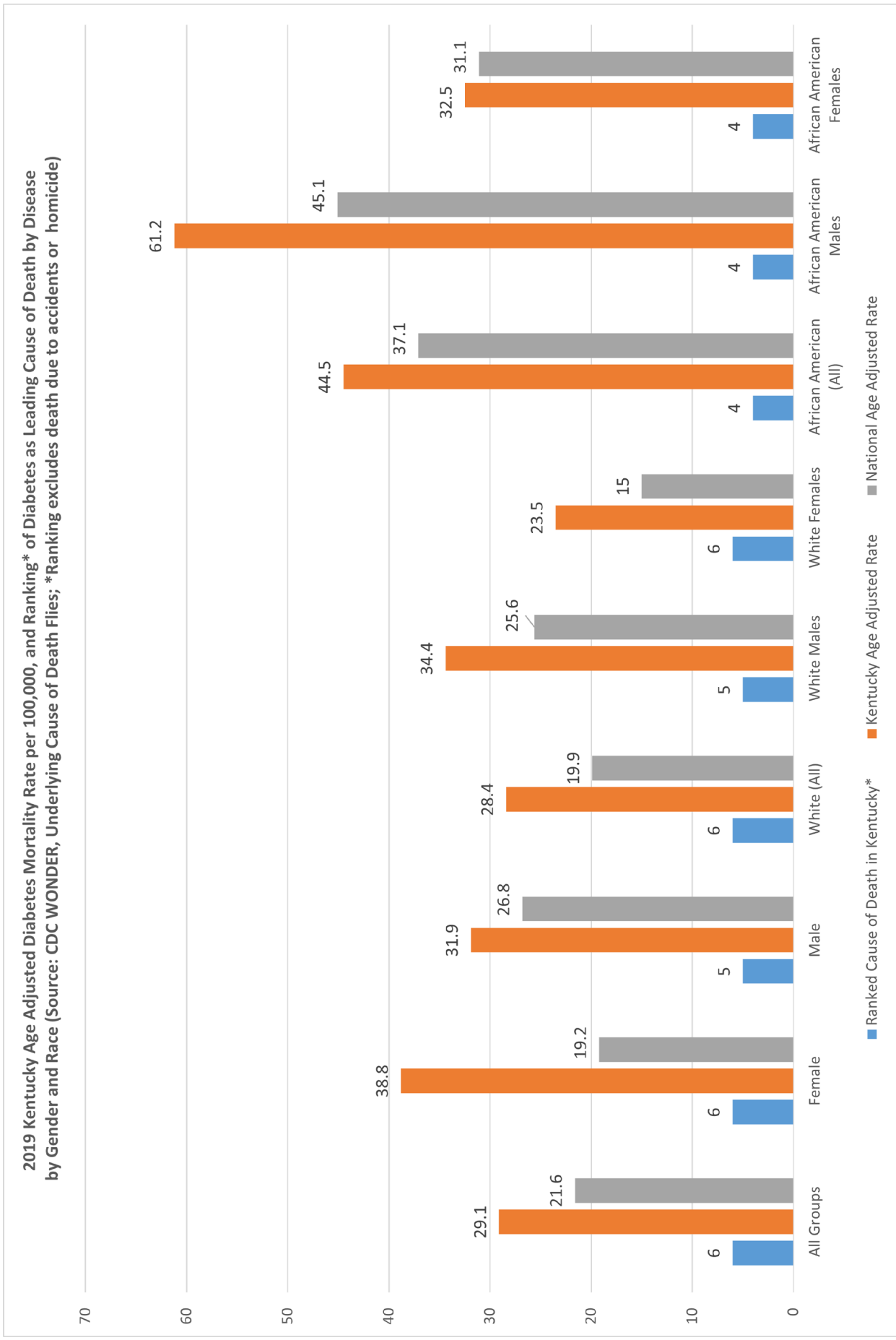
Source: Health Facilities and Services Data, Office of Health Data and Analytics. 2019 Kentucky Hospital Discharge Data, based on all listed diagnoses

# Attachment 5 | Vaginal and C-Section Deliveries by Race and Diabetes Type

Appendix Companion to Table 9: Number and Percentage of Vaginal and C-Section Deliveries by Type of Diabetes Diagnosis of Mother, Kentucky: 2019												
Type of Delivery	WHITE				African American				OTHER RACES			
	Pre-existing diabetes	Gestational Diabetes	No Diabetes Diagnosis	Total Maternal Stays	Pre-existing diabetes	Gestational Diabetes	No Diabetes Diagnosis	Total Maternal Stays	Pre-existing diabetes	Gestational Diabetes	No Diabetes Diagnosis	Total Maternal Stays
All Stays with Delivery (% of all delivery stays by diabetes type)	433 1.07%	3,153 7.80%	36,829 91.13%	40,415 100.00%	76 1.50%	298 5.90%	4,679 92.60%	5,053 100.00%	28 1.24%	269 11.88%	1,968 86.89%	2,265 100.00%
<b>Type of Delivery</b>												
Vaginal (% of deliveries by diabetes type)	118 27.25%	1,621 51.41%	24,254 65.86%	118 0.29%	27 35.53%	142 47.65%	3,047 65.12%	1,648 32.61%	13 46.43%	145 53.90%	1,345 68.34%	1,503 66.36%
C-Section (% of deliveries by diabetes type)	315 72.75%	1,532 48.59%	12,575 34.14%	315 0.78%	49 64.47%	156 52.35%	1,632 34.88%	1,581 31.29%	15 53.57%	124 46.10%	623 31.66%	762 33.64%

Source: Health Facilities and Services Data, Office of Health Data and Analytics. 2019 Kentucky Hospital Discharge Data, based on all listed diagnoses

# Attachment 6 | 2019 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 and Race

2019 Emergency Department Encounters with Diabetes coded as the Primary Reason for the Admission												
PatientADD	White				Black or African American				Other			
	Discharges	Individuals	Average Charges	Total Charges	Discharges	Individuals	Average Charges	Total Charges	Discharges	Individuals	Average Charges	Total Charges
01 - PURCHASE	529	368	\$6,019	\$3,183,841	113	74	\$6,030	\$681,364	21	15	\$5,907	\$124,048
02 - PENNYRILE	717	381	\$6,558	\$4,702,295	203	110	\$5,250	\$1,065,665	13	11	\$3,966	\$51,553
03 - GREEN RIVER	750	456	\$5,163	\$3,872,302	93	48	\$5,541	\$515,306	21	18	\$4,314	\$90,594
04 - BARREN RIVER	984	651	\$4,125	\$4,058,504	117	75	\$3,855	\$451,054	33	21	\$5,278	\$174,172
05 - LINCOLN TRAIL	756	483	\$4,014	\$3,034,413	100	73	\$3,068	\$306,797	11	7	\$3,714	\$40,858
06 - KIPDA	2,040	1,465	\$6,664	\$13,594,762	1,327	879	\$5,716	\$7,584,836	57	46	\$5,149	\$293,498
07 - NORTHERN KY	1,093	608	\$4,098	\$4,479,475	102	61	\$3,609	\$368,079	42	31	\$2,783	\$116,890
08 - BUFFALO TRACE	126	94	\$5,491	\$691,912	9	7	\$7,024	\$63,215	*	*	*	*
09 - GATEWAY	362	206	\$4,289	\$1,552,674	13	8	\$4,215	\$54,792				
10 - FIVCO	577	289	\$4,445	\$2,564,931	16	*	\$2,380	\$38,077	7	*	\$4,970	\$34,788
11 - BIG SANDY	665	426	\$8,940	\$5,944,982	7	*	\$9,107	\$63,747	*	*	*	*
12 - KY RIVER	599	355	\$7,688	\$4,604,920	10	*	\$3,451	\$34,506	*	*	*	*
13 - CUMBERLAND VALLEY	1,231	778	\$5,824	\$7,168,728	20	12	\$6,849	\$136,977	*	*	*	*
14 - LAKE CUMBERLAND	885	581	\$4,976	\$4,404,141	34	16	\$5,079	\$172,690	7	7	\$8,079	\$56,553
15 - BLUEGRASS	2,332	1,461	\$5,608	\$13,077,172	413	279	\$4,898	\$2,022,801	50	35	\$5,656	\$282,810
Total	13,646	8,602	\$5,638	\$76,935,054	2,577	1,656	\$5,262	\$13,559,907	274	204	\$5,137	\$1,407,658

(Source: Kentucky Outpatient Hospital Discharge Claims 2019; Kentucky Cabinet for Health and Family Services, Office of Health Data and Analytics)

\* Data reporting is suppressed when there are 5 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; 2019)

Number and Crude Rate (Per 1,000 Population) of Hospitalizations for Diabetes as Primary Cause (Kentucky residents only; 2019)											
ADD of Patient Residence	White			African American			Other			Total	
	Number with Diabetes Primary Cause	Crude Rate per 1,000 Population	Number with Diabetes Primary Cause	Crude Rate per 1,000 Population	Number with Diabetes Primary Cause	Crude Rate per 1,000 Population	Number with Diabetes Primary Cause	Crude Rate per 1,000 Population	Number with Diabetes Primary Cause	Crude Rate per 1,000 Population	
PURCHASE	308	1.80	29	2.33	6	0.48	343	1.75			
PENNYRILE	240	1.39	45	1.97	*	*	286	1.35			
GREEN RIVER	279	1.46	31	2.68	*	*	314	1.45			
BARREN RIVER	505	1.92	57	2.91	8	0.31	570	1.85			
LINCOLN TRAIL	501	2.12	36	1.80	*	*	542	1.95			
KIPDA	1,260	1.74	523	2.97	29	0.27	1,812	1.80			
NORTHERN KY	687	1.65	39	2.37	14	0.44	740	1.59			
BUFFALO TRACE	85	1.64	5	3.62		0.00	90	1.63			
GATEWAY	175	2.20	5	2.41	*	*	182	2.14			
FIVCO	314	2.52	4	1.91	*	*	322	2.45			
BIG SANDY	355	2.65	3	1.76	*	*	360	2.59			
KY RIVER	381	3.82	5	4.78	*	*	387	3.74			
CUMBERLAND VALLEY	536	2.44	7	2.17	*	*	545	2.37			
LAKE CUMBERLAND	387	1.99	8	1.73	7	0.67	402	1.92			
BLUEGRASS	1,166	1.72	194	2.67	15	0.19	1,375	1.66			
Total	7,179	1.91	991	2.69	100	0.29	8,270	1.85			

(Source: Health Facilities and Services Data, Office of Health Data and Analytics; Kentucky State Data Center)

\* 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; 2019)

ADD of Patient Residence	Number and Crude Rate of Hospitalizations for Diabetes as Any Cause (Kentucky residents only; 2019)											
	White			African American			Other			Total		
	Number with Diabetes any Cause	Crude Rate per 1,000 Population	Number with Diabetes any Cause	Crude Rate per 1,000 Population	Number with Diabetes any Cause	Crude Rate per 1,000 Population	Number with Diabetes any Cause	Crude Rate per 1,000 Population	Number with Diabetes any Cause	Crude Rate per 1,000 Population	Number with Diabetes any Cause	Crude Rate per 1,000 Population
PURCHASE	3,558	20.82	326	26.19	43	3.45	3,927	20.06				
PENNYRILE	3,294	19.03	369	16.17	31	1.96	3,694	17.45				
GREEN RIVER	3,483	18.26	231	20.00	29	2.12	3,743	17.33				
BARREN RIVER	5,351	20.32	443	22.58	78	3.01	5,872	19.01				
LINCOLN TRAIL	4,807	20.33	403	20.17	88	4.01	5,298	19.03				
KIPDA	13,165	18.13	4,084	23.18	340	3.21	17,589	17.45				
NORTHERN KY	7,728	18.59	297	18.07	134	4.17	8,159	17.58				
BUFFALO TRACE	1,043	20.07	33	23.88	3	1.50	1,079	19.50				
GATEWAY	1,899	23.88	39	18.78	10	3.00	1,948	22.94				
FIVCO	3,421	27.40	32	15.32	24	5.32	3,477	26.45				
BIG SANDY	3,796	28.39	14	8.24	16	4.45	3,826	27.52				
KY RIVER	3,370	33.79	30	28.65	6	2.13	3,406	32.88				
CUMBERLAND VALLEY	5,554	25.31	55	17.06	22	2.92	5,631	24.46				
LAKE CUMBERLAND	4,057	20.87	88	19.08	48	4.63	4,193	20.03				
BLUEGRASS	11,669	17.17	1,465	20.15	135	1.72	13,269	15.98				
Total	76,195	20.27	7,909	21.50	1,007	2.96	85,111	19.05				

(Source: Health Facilities and Services Data, Office of Health Data and Analytics; Kentucky State Data Center)

\* 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>CDE</b>	Certified Diabetes Educator
<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>OHDA</b>	Office of Health Data and 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

# Attachment 11 | Impact of COVID-19

---

Eighteen percent (18%) of Kentucky's 68,840 COVID-19 cases between March 6 and September 30, 2020 also included a diagnosis of diabetes, according to data available in the state surveillance system. Separate from the cases of COVID-19 that were reported, data regarding mortality due to COVID-19 was also collected from the Mortality Advisory Group, which includes deaths reported to the local health departments through regional epidemiologists that included COVID-19 as a cause of death. Thorough reviews are conducted locally of each death prior to reporting it to the Kentucky Department for Public Health as a COVID-19 death. Data include deaths where diabetes was listed as a comorbidity and where date of death was on or before September 30, 2020. Results are as follows:

- 6% (n=4,049) of Kentucky COVID-19 cases also had a report of diabetes
- Of the 1,174 Kentucky COVID-19 deaths, 42% (n=489) also had a report of diabetes
- The relative risk of a patient with diabetes for COVID-19 illness was 11.4 times higher than a case for a patient without diabetes. While this may be overstated due to underreporting of comorbidities, it is clear there is a distinct increased risk of dying from COVID-19 if you have a comorbidity of diabetes
- Out of all cases and deaths that were 'Ever Hospitalized' for COVID-19 (n= 6,090), 10% had diabetes listed as a comorbidity. However, hospitalization data remain incomplete with only 44% of patient records listing information relating to diabetes status.

Despite a speculation of underreporting or delayed reporting, the data gives reasonable accuracy and representation of those who died from COVID-19 with a comorbidity of diabetes. Delayed reporting issues continue to decline as system reporting becomes more robust and timely. The more complete and accurate information submitted by clinicians, long term care facilities, and hospitals reflecting all comorbidities and preexisting illness, the more exact our analyses to provide information for prevention techniques. The 11.42 relative risk of dying from COVID-19 with diabetes is likely somewhat overstated due to the delayed reporting issue but is indicative of the distinct increased risk of dying from COVID-19 if you have diabetes.

Continued analysis of all comorbidities associated with

COVID-19 deaths is an ongoing effort by the Kentucky Department for Public Health Division of Epidemiology and Health Planning.

# Diabetes Self-Management Education\* and Support



Refer Your Patients with Diabetes to:

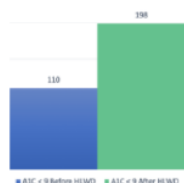
- Diabetes Self-Management Education and Support offered by Healthy Living with Diabetes (HLWD DSMES).<sup>++</sup>**



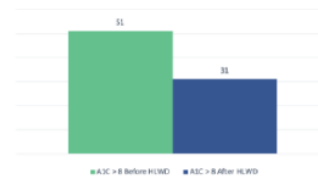
If **HLWD DSMES** Were a Pill, Would You Prescribe it? <sup>+</sup>

<b>Efficacy</b>	High
<b>Risks</b>	Low
<b>Side Effect</b>	None
<b>Cost Savings</b>	High

## A1C Levels Improved



The number of patients with an A1C < 9 increased 44 % after completing a **HLWD DSMES** program. <sup>^^</sup>



The number of patients with an A1C > 8 decreased 39% after completing a **HLWD DSMES** program. <sup>^^</sup>



## Healthy Eating <sup>^^</sup>

99% of patients who identify a **Healthy Eating Goal** and complete **HLWD DSMES** program report success.



## Being Active <sup>^^</sup>

93% of patients who identify a **Being Active Goal** and complete **HLWD DSMES** program report success.



## Self-Care Behaviors <sup>^^</sup>

81% of patients who identify a **Self-Care Behavior Goal** and complete **HLWD DSMES** program report success.



## Utilization of Services <sup>^</sup>

87.5% of patients report they know when to go to the **ER** and **call a doctor** for a diabetes related problem after attending a **HLWD DSMES** program.



## Patient Satisfaction <sup>^</sup>

96% of patients report they are satisfied with and would tell a friend or family member about the **HLWD DSMES** program.



## Quality Programming

Facilitating the **knowledge, skills, and ability** for diabetes self-care.

<sup>++</sup> See KY Diabetes Resource Directory, <https://prdweb.chfs.ky.gov/KYDiabetesResources/>; <sup>^^</sup>Annual AADE Report (2017-2020); <sup>^</sup> post-DSMES survey (2017-2020); + Powers, Margaret A., et al., (June, 2020), <https://doi.org/10.1177/0145721720930959>; 6.25.20

