Cardiovascular diseases are the leading cause of death globally, corresponding to 32% of all deaths worldwide according to the World Health Organization. Heart failure (HF) contribute to those deaths, with a growing prevalence associated to population aging. Estimates from the American Heart Association indicate that 6.2 million American adults had HF between 2013 and 2016, versus 5.7 million between 2009 and 2012. Traditionally, patients with heart failure were divided according to the left ventricular ejection fraction (EF) in two groups: preserved and reduced EF. In 2013 a third category was introduced in the American College of Cardiology/ American Heart Association guidelines to characterize patients with typical symptoms of HF but with an EF of 41% to 49%.

Today, EF is key for clinicians during HF diagnosis investigation, and for characterization, prognosis, patient triage and treatment selection. There’s an increasing need for granular data in the cardiovascular space, and EF is among the most valuable ones. This study is being conducted using the newly released Cerner Enviza EHR Data. The EHR data has over 98 million patients over all venues of care. It is collected from 119 different health systems throughout the country, in ambulatory, emergency room, and inpatient settings. The value of the EHR Data in conducting such a study is the ability to collect ejection fraction measurements at scale.

For this study, we focused our analyses on adults with at least one diagnosis code of heart failure, with at least one encounter since 2015 and we looked at the ejection fraction measurement performed since diagnosis and entered into the structured EHR data with a specific focus on the first measure done.

Ejection fraction measures below 5% or higher than 80% have been removed from the analyses.

The prevalence of heart failure in 2020: 2.1%
Who are the adults with a diagnosis of heart failure?

1,067,309 individuals with at least one encounter since 2015 have a diagnosis of heart failure.

**Gender**
- Male: 52.6%
- Female: 47.1%

**Race**
- White: 69.4%
- Black or African American: 13.2%
- Other: 4.8%
- Asian, or American Indian or Alaska Native, or Native Hawaiian or Other Pacific Islander: 2.3%

**Age**
- Mean(SD): 70.2 (13.6)
  - 18-34 years old: 1.6%
  - 35-44 years old: 3.5%
  - 45-54 years old: 8.9%
  - 55-64 years old: 18.3%
  - 65-74 years old: 25.2%
  - 75-84 years old: 28.4%
  - 85 years and older: 14.1%

**Geography**

Note: The total does not add up to 100% as the unknown and missing data categories are not presented.
The characteristics of those with and without ejection fraction measure

Of these 1,067,309 individuals, 5.6% (60,287) had at least one ejection fraction measure entered in the structured EHR data.

When looking at the population with at least one ejection fraction measure compared to those with no measure, we observed a different distribution in terms of gender and race.

Indeed, the proportion of male and white people was higher among those with at least one measure.

Classification of patient according to their ejection fraction

When classifying individuals according to their first ejection fraction measure, we noticed that more than half were classified as having a preserved ejection fraction (53.4%) followed by a reduced ejection fraction (37.7%) and 8.9% of the population had a borderline value.

Note: The total does not add up to 100% as the unknown and missing data categories are not presented.

Other includes Hispanic / Hispanic or Latino / Indian / Mixed racial group / Not Hispanic or Latino / Other Race
The proportion of patients with preserved ejection fraction increased with age, on the contrary the proportion of reduced EF decreased. The proportion of borderline value remained stable across all age ranges.

When comparing the socio-demographics characteristics of these 3 groups, some differences were observed. The proportion of males was higher among people with reduced ejection fraction and borderline value, with a difference even more noticeable in the first group.

Note: The total does not add up to 100% as the unknown and missing data categories are not presented.
As anticipated, the white population was the highest across all groups with a slightly higher proportion among those with a preserved ejection fraction. To note, a higher proportion of Black or African American was observed in the reduced ejection fraction population compared to the other two groups.

![Race distribution](chart)

**Note:** The total does not add up to 100% as the unknown and missing data categories are not presented.

Other includes Hispanic / Hispanic or Latino / Indian / Mixed racial group / Not Hispanic or Latino / Other Race

**References**

1. WHO fact sheet cardiovascular diseases. Available at: https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)


**About Cerner Enviza**

Cerner Enviza aims to accelerate the discovery, development and delivery of extraordinary insights and therapies to improve everyday health for all people globally. By combining decades of innovation, life sciences knowledge and collaborative research, Cerner Enviza provides data-driven solutions and expertise that helps bring remarkable clarity to healthcare’s most important decisions. For more information on Cerner Enviza, visit [www.cernerenviza.com](http://www.cernerenviza.com).

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