



Texas BRFSS Topical Brief

Wearable Device Use among Texas Adults

Background

Wearable devices first emerged in 2009 with the original Fitbit, which was capable of tracking the user’s movement, sleep, and calorie burn.¹ Since then, wearable device technology has only grown. Wearable devices are now capable of measuring a user’s heart rate and blood pressure. In late 2018, Apple introduced a new feature on its Apple Watch: the ability to perform a mobile electrocardiogram.² This new ability can notify a user of an irregular heartbeat, or atrial fibrillation, which could lead to cardiovascular (CV) events such as a heart attack or stroke. As wearable devices become more adept at collecting health information, their ability to be a useful public health tool also increases. In order to determine the feasibility of wearable devices as a public health tool, an understanding of who the users of wearable devices are and to what degree they are being used must be attained.

Methods

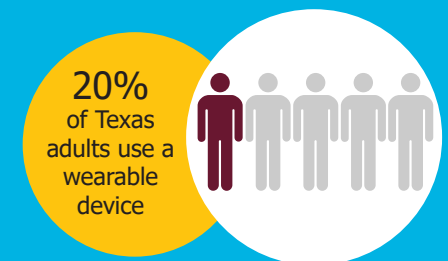
The 2017 Texas Behavioral Risk Factor Surveillance System (BRFSS) survey included four questions about wearable devices. The survey also collected sociodemographic, health behavior, and chronic condition data. A chronic condition index variable was created from 12 chronic condition variables: angina, arthritis, asthma, cancer, kidney disease, chronic obstructive pulmonary disease (COPD), diabetes, high blood pressure, high cholesterol, heart attack, obesity, and stroke. Prevalence estimates and confidence intervals were calculated using the SURVEY procedures in SAS 9.4.

Results

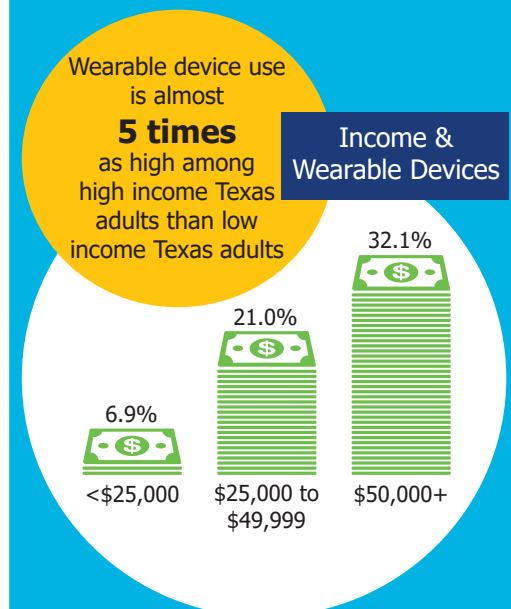
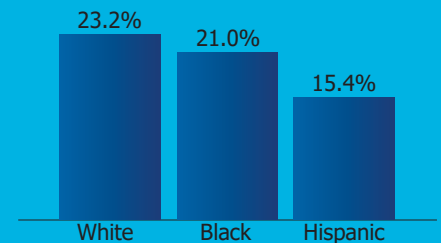
In 2017, an estimated 20% of Texas adults used a wearable device to track their nutrition, sleep, or physical activity (Table 1). Adults ages 18 to 29 had a significantly higher prevalence (28.9%) of wearable device use compared to older Texans. Income also plays an important role, with high income Texans using wearable devices (32.1%) at significantly higher rates than middle (21.0%) and low income (6.9%) Texans (Table 1). Physical activity was the most common reason to use a wearable device, with nearly 80 percent of users citing this reason. Wearable

Table 1. Wearable Device Use by Demographic Characteristics among Texas adults, 2017 Texas BRFSS

	%	95% CI
Total	20.0	18.2-21.9
Age		
18-29 years	28.9	23.9-34.5
30-44 years	23.5	19.9-27.6
45-64 years	18.6	15.9-21.7
65+ years	7.6	5.4-10.6
Sex		
Male	18.0	15.5-20.7
Female	22.0	19.4-24.7
Race/Ethnicity		
White, non-Hispanic	23.2	20.5-26.0
Black, non-Hispanic	21.0	15.2-28.3
Hispanic	15.4	12.8-18.5
Education		
Up to high school graduate	9.0	7.1-11.4
Some college	25.9	22.0-30.3
College graduate	32.7	29.4-36.1
Household Income		
<\$25,000	6.9	5.0-9.4
\$25,000-<\$50,000	21.0	17.0-25.5
\$50,000+	32.1	28.8-35.7
Healthcare Coverage		
Has healthcare coverage	23.1	20.9-25.4
No healthcare coverage	10.8	7.9-14.6



Wearable Device Use (%) by Race/Ethnicity



device use was significantly higher among those with healthcare coverage (23.1%) compared to those without healthcare coverage (10.8%), and the same was true for using a wearable device to track physical activity (with healthcare coverage: 83.3%, 95% CI=78.6-87.1; without healthcare coverage: 56.9%, 95% CI=40.2-72.2).

Whether or not a person has a chronic condition also impacted wearable device use. Wearable device use was about 60 percent higher among Texas adults without a chronic condition (26.9%) than those with a chronic condition (16.7%) (Table 2). Wearable devices can be particularly useful for people with cardiovascular conditions due to their ability to monitor heart rate and signal irregularities in heartbeats. However, wearable device use among Texas adults with a cardiovascular condition such as angina or hypertension was 46 percent lower than those without a cardiovascular condition. Wearable device use among those with a chronic condition was highest among those with asthma (21.7%), who are obese (19.5%), and with kidney disease (19.2%) (Table 2).

Discussion

Wearable devices have emerged within the last decade as potentially powerful public health tools. Wearable devices have the ability to collect data that can be used to further study health outcomes. Aside from surveillance, public health professionals can use them to assist in modifying health behaviors and promoting healthier lifestyles. Many wearable devices already include a feature to signal the user to move at designated intervals, so it may be possible to incorporate health messaging into the devices that encourage other healthy behaviors. As the population becomes more sedentary, getting people up and moving will become important to battle rising obesity and chronic disease rates. But, in order for wearable devices to be an essential public health tool, use needs to increase, particularly among those who have chronic conditions. Educational and awareness campaigns could be particularly useful in getting people to adopt the wearable device technology. There is a lot of public health potential in wearable devices and now is the time to start developing it.

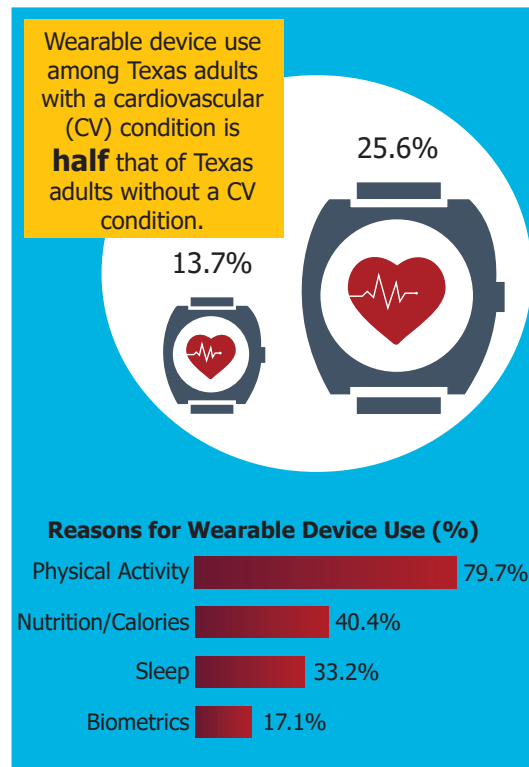
References

¹Comstock J. (2015, May 11). Eight years of Fitbit news leading up to its planned IPO. *MobiHealthNews*. <https://www.mobihealthnews.com/43423/eight-years-of-fitbit-news-leading-up-to-its-planned-ipo>
²NL. (2019, January 2). Will wearable devices make us healthier?. *The Economist*. <https://www.economist.com/the-economist-explains/2019/01/02/will-wearable-devices-make-us-healthier>

Table 2. Wearable Device Use by Chronic Condition among Texas Adults, 2017 Texas BRFSS

	%	95% CI
No. of chronic conditions		
No chronic conditions	26.9	23.1-31.0
At least 1 chronic condition	16.7	14.9-18.8
Type of chronic condition		
Angina	9.3*	4.7-17.6
Arthritis	11.5	9.1-14.3
Asthma	21.7	15.9-29.0
Cancer	9.5	6.9-12.9
Kidney Disease	19.2	10.6-32.1
COPD	12.7	7.1-21.5
Diabetes	7.6	5.3-10.8
Hypertension	12.8	10.6-15.4
High cholesterol	14.2	11.8-17.1
Heart attack	10.5	5.2-20.1
Obesity	19.5	16.6-22.8
Stroke	6.2*	3.1-12.0

*=Relative Standard Error (RSE) >30.0%, estimate not reliable.



What is the Texas Behavioral Risk Factor Surveillance System (BRFSS)?

BRFSS is an annual telephone survey conducted by Texas in coordination with the Centers for Disease Control and Prevention (CDC) that collects health-related data on topics like chronic health conditions, risk behaviors, and use of preventive services from the non-institutionalized adult population, aged 18 years and older. BRFSS data are used to identify emerging health problems, establish health objectives and track their progress, and develop and evaluate public health policies and programs to address identified problems. Limitations of BRFSS can include measurement and response errors, selection bias, non-response bias, and social desirability bias. Visit www.dshs.texas.gov/chs/brfss for more information.

