

Federal Funding of Scientific Research in Texas

Research expenditures in the state of Texas have increased 56.3% since 2007, yet the federal funding has decreased by 14.7% (Texas Higher Education Coordinating Board [THECB] 2008; THECB, 2018). The National Institutes of Health (NIH) continues to provide a steady amount of funding for research projects, but the demand and amount of grant applications has increased tremendously (Falk-Krzesinski, & Tobin, 2015). This increase has created a 30% drop in funding success rates (Falk-Krzesinski, & Tobin, 2015). With the federal budget of the NIH continuing to stay the same year to year it creates quite a competitive process for universities and institutions to fight for funding. Federal funding provides almost half of the expenditures on research in Texas. (THECB, 2018). Without this type of funding many universities and institutions in Texas would not be able to do nearly as much research as is currently being done.

Every year, billions of taxpayer dollars are spent by federal agencies in the United States to fund and support scientific research (Blume-Kohout, Kumar, & Sood, (2015). There needs to be some research investigating what areas these funds are being allocated to and if those areas are current growing problems within the United States and more specifically in Texas. This proposal investigates the federal funding of special topic areas in research and whether or not one area should be receiving more funding based off of how vast of a problem it is in Texas.

Literature Review

Federal funding for research in the state of Texas has gone down over 10% in since 2010 (THECB, 2012; THECB, 2018). Last year Texas universities and institutions used federal funding to fund 42.6% of all research conducted, compared to 54.5% used in 2010 (THECB, 2012; THECB, 2018). With federal funding for research decreasing in Texas it creates a more difficult time for researchers to pursue special research topics.

Texas ranked sixth in the United States for federal obligations funds for research which are funds obligated for research and are a measure of research activity (THECB, n.d.). Of these federal obligation funds, the National Institutes of Health (NIH) provided 60% in 2018 (THECB, n.d.). Since the majority of federal funding for research within Texas comes from the NIH, increasing funding from this agency could greatly impact the amount of research that is able to be investigated. Specifically, within areas of special interest more funding is needed. In areas of special interests, the expenditures at institutions and universities in Texas vary between topics. The areas of special interest include cancer, aging, cardiovascular, child health and human development, and mental health research (THECB, 2018).

For institutions and universities in Texas expenditures in research of child health and human development funding went up by seven percent from 2010 to 2017 compared to the overall expenditures for institutions and universities that went up by 30% (THECB, 2008; THECB, 2018). The following information comparing the different areas of special interest are comparing expenditures from 2010 to expenditures in 2017. The expenditures of mental health only went up by four percent and aging research went up by six percent (THECB, 2008; THECB, 2018). Both child health and human development and mental health categories make up 15% of the overall expenditures but only increased by 11% (THECB, 2008; THECB, 2018). Compared to cancer research which had a 44% increase in expenditure and used 73% of the overall expenditures (THECB, 2008; THECB, 2018). Cancer research used a majority of the expenditures for this time frame. The expenditures for cardiovascular research actually went down by 16% during this timeframe. (THECB, 2008; THECB, 2018). Each of the groups of aging, cardiovascular, child health and human development, and mental health research all use less than 10% of the overall expenditures.

Although cancer is an escalating issue and research needs to continue the funds from federal agencies, especially the NIH because it provides the majority of funding, can be better balanced between the areas of special interest. Especially considering that cancer is not the number one killer in Texas (CDC, 2018a). Heart disease is the number one killer and although the number three, four, and five killers in Texas often change spots, stroke is a high killer and often ranked in the top five (Texas Department of State Health Services [DSHS], 2018a). Cardiovascular research needs to receive more funding because it is a growing problem. Currently the NIH is not getting enough funding and if funding were to be increased then the NIH would be better able serve the states and allow for more special topic research projects. Specifically, in Texas if cardiovascular research were able to receive more funding then it would help save more lives.

Method/Design

Special research topics and current expenditures were compared in order to support why the NIH needs to receive more federal funding. The special topics include cancer, aging, cardiovascular, child health and human development, and mental health research will be investigated. These data were collected from the state of Texas and include expenditures of both university and institutional research. Expenditures in these five special topic areas were analyzed. Data were collected from years 2000 to 2017 of expenditures in each of these areas within the state of Texas.

Independent Samples T-test

An independent samples t-test was used to compare the change in expenditures from the last seventeen years in the five areas of special interest research within Texas. Each area of interest was separated into two groups by year and then the means were compared within each group. The recent expenditures on areas of special interest were investigated to see if the changes

of spending on those areas is correlated to the increase or decrease of the problem. Data were collected from yearly expenditure reports from the Texas Higher Education Coordinating Board.

Limitations

The yearly report from 2001 was not able to be found and was therefore not included in the study.

Results

Group one represents years 2000-2009 and group two represents years 2010-2017.

Within expenditures on aging research, there was a significant difference between group one ($M = 49,844,567.38$, $SD = 12,648,258.67$) and group two ($M = 62,826,881.63$, $SD = 10,746,511$) conditions; $t(14) = -2.21$, $p = .04$. Expenditures in cancer research also showed a significant difference between group one ($M = 509,734,919$, $SD = 167,549,534.05$) and group two ($M = 1,025,120,699.88$, $SD = 121,499,500.74$) conditions; $t(14) = -7.04$, $p < .001$. Both cardiovascular research and mental health research did not show a significant difference between groups. Cardiovascular - group one ($M = 106,073,853.38$, $SD = 23,473,916.13$) and group two ($M = 111,169,979.38$, $SD = 10,913,805.44$) conditions; $t(14) = -0.56$, $p = .59$. Mental Health - group one ($M = 61,780,133.13$, $SD = 27320237.49$) and group two ($M = 84,542,643$, $SD = 30,940,662.93$) conditions; $t(14) = -1.56$, $p = .14$. There was a significant difference in Child Health and Human Development research between group one ($M = 93,970,251.13$, $SD = 45,974,516.31$) and group two ($M = 150,617,478.88$, $SD = 7,897,784.77$) conditions; $t(14) = -3.44$, $p < .01$.

These results suggest that research in the special areas of interest of aging, cancer, and child health and human development have a significant increase in costs of research when comparing group one and group two. All three of these areas are being investigated at a higher cost in the last nine years compared to 2009 and before. For cardiovascular and mental health

research there were no significant differences found between groups. This finding suggests that less research is being done, or the cost of research is decreasing in these two areas.

Discussion

Is this higher cost of research being done in the areas of aging, cancer, and child health and human development worth it? Indeed, do these results reflect a problem within in Texas? In the most recent information from the Centers for Disease Control and Prevention [CDC] (2018a), heart disease was the leading cause of death in 2016 with cancer being in a close second. Since 1950, the first and second leading causes of death in Texas and in the nation have been heart disease and cancer respectively (DSHS, 2018a). Cardiovascular and cancer deaths are high killers in Texas but moreover they are also both a growing problem. In 2016, heart disease and stroke were the number one and three killers in Texas and killed 54,445, this compared to 51,377 in 2014 (CDC, 2018a). Cancer, on the other hand, killed 40,195 Texans in 2016 and 38,847 Texans in 2014 (CDC, 2018a). Although these are both escalating problems, cardiovascular health problems are increasing at a faster rate than cancer and causing more deaths, but yet cancer research is using much more of the federal funding than cardiovascular research.

Increases in funding for and research into the special interest area of cardiovascular research can help with the increasing problem and number one killer in Texas of heart disease, but in addition, it can also help with the number three killer: stroke (DSHS, 2018b). Although cancer falls second to cardiovascular diseases in leading causes of death in Texas, expenditures for cancer research increased by 44% since 2010, and cardiovascular research decreased by over 15% (THECB, 2008; THECB, 2018). In 2016, heart disease killed over 3,500 more people in Texas than cancer (CDC, 2018a).

Death rates for Alzheimer's disease are increasing in Texas (CDC, 2018b). In the most recent information from the CDC (2018a), Alzheimer's disease was the sixth leading cause of death in 2016. Because this is problem continues to flourish within Texas as well as in the United States, more research needs to be done. In order to do more research more funding needs to be available. Alzheimer's disease is a mental health issue. There has not been a huge increase in mental health in Texas from 2010 to 2014 (Substance Abuse and Mental Health Services Administration [SAMHSA], 2015). Although with data on Alzheimer's showing increases in deaths, more funding going into this area of research would be a good idea as well.

Aging is also an increasing problem in Texas. 3.2 million Texans are 65 and older and the number is growing ("Aging," n.d.). By 2050 that figure is expected to increase to almost 20 percent. The amount of people in Texas also continues to grow. From 2010 to 2017 the overall population of Texas changed by over three million people (U.S. Department of Commerce, n.d.). Children under the age of 18 made up 26% of the population in Texas in 2017 (U.S. Department of Commerce, n.d.). More funding for aging and child health and human development research would also be beneficial due to the increase of the elderly and children populations.

Conclusion

There are some significant differences found between the special topic areas of research within the state of Texas. There needs to be more funding provided to the NIH in order to relieve some of this difference and show more importance to these areas of special topics in research because they are becoming larger issues and it needs to be addressed through research. Cardiovascular health issues are two of the top five leading causes of death in Texas and continue to have expanding consequences. Yet funding for this area of research within the state has continued to decline in recent years.

Aging, cardiovascular, child health and human development, and mental health research are all using a small portion of the federal budget in Texas even though they are all continuing to expand as problems in the state. If the NIH was able to provide more funding it could help produce more research in these areas that are thriving issues in the state of Texas. Although cancer is a large problem and is growing, these other areas of interest are faster developing problems and spending more funds on researching these areas would be better utilized because they are expanding at a quicker rate.

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