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CHS 753

Term Project

$5 Million Grant Proposal

Analyzing Nevada's Need for the Promotion of Public Health Using Demographics and BRFSS Data: (Ever Told) Had Skin Cancer

Introduction

I propose that Nevada is the best possible recipient for a $5 million grant aimed towards the promotion of public health. The United Health Foundation states that an investment of $10 per person per year in local community evidence-based programs that are proven to increase physical activity, improve nutrition, and prevent smoking or other tobacco use could save the country more than $16 billion annually within five years. This can save the U.S. $5.60 for every $1 invested. Increased spending on public health programs is associated with a decrease in mortality from preventable causes of death such as cardiovascular disease, diabetes, stroke, and cancer. Unfortunately, Nevada is the lowest ranked state in public health funding at $46 per person. With Nevada being the lowest ranked state, the people of the state are at a disadvantage.

As the 4th fastest growing state (U.S. Census), Nevada needs an increase in the promotion of public health. This will increase the awareness of the people of this fast-growing state and give a better understanding of the benefits of public health and why government spending benefits everyone. The promotion of public health is fundamental to the growth, safety, and prosperity of the state of Nevada. Not only does it directly help the people, but studies show that the U.S. sees a return on investment and actually saves money in the end. From this information, I propose that Nevada needs more funding for the promotion of public health.

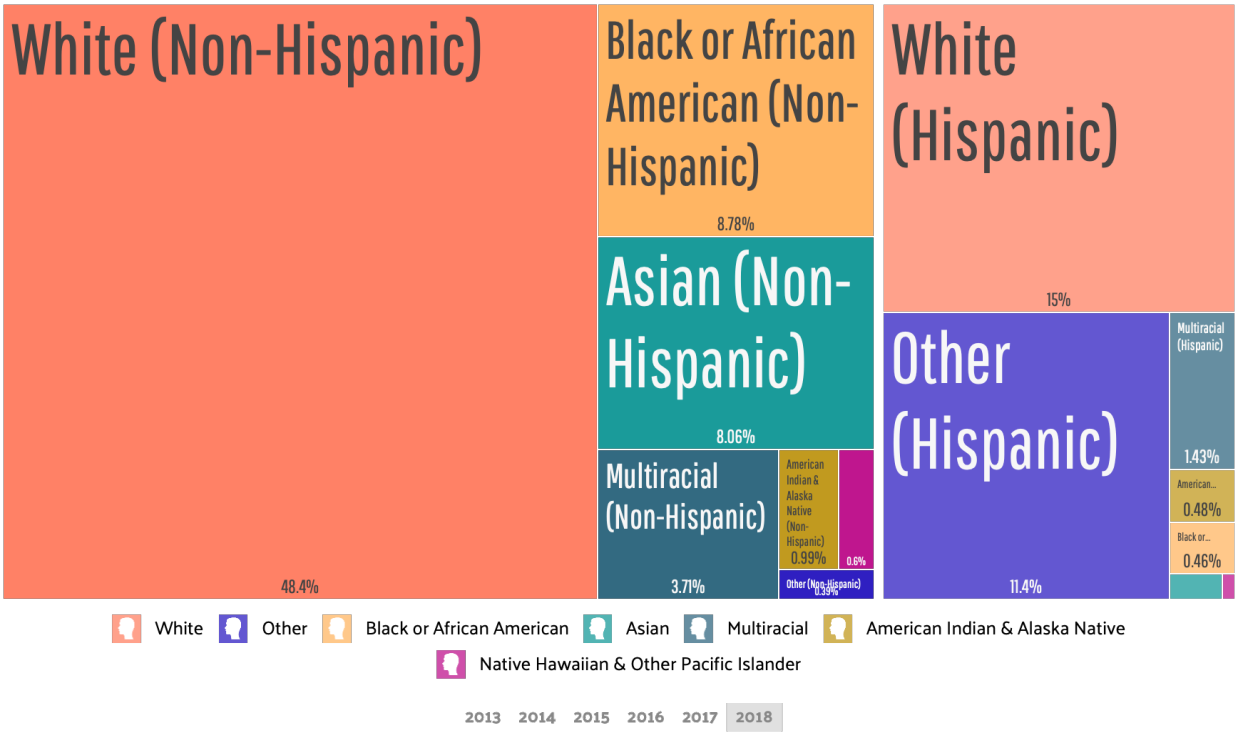
Description of Nevada

The beautiful state of Nevada was admitted to the Union on October 31, 1864. In total, Nevada's current population is 3.08 million. This is only 0.94% of the U.S. population. However, Nevada's net migration of 259,096 from 2010 – 2019 makes up 3.37% of the U.S. total migration. Combined with being the 4th fastest growing state, Nevada is becoming one of the top destinations in the U.S.

In the picture below, one can see the counties that make up Nevada and its bordering states Oregon, California, Idaho, Arizona, and Utah:

These bordering states have very diverse climates from each other, making Nevada a great home for those who like to travel. Nevada is made up of 16 counties. From 2010 census data, Washoe County makes up 15.6% of Nevada population and Clark County makes up 72.25% of Nevada population. Nevada's population per square mile is 24.6. The land area in square miles is 109,781 (Legislative Counsel Bureau). This shows that Nevada has a lot of land left for settling.

The chart below shows the racial/ethnic makeup of Nevada:



This is based on data from 2018 (DataUSA). Observe that the White (Non-Hispanic) population is below 50%. At an attempt to know why, we can look at the aforementioned net migration of 259,096 from 2010 – 2019. Also, Nevada is 5th highest in the U.S. for minority population percentage at 51.8%.

The median age of native-born Nevada citizens is 34 and the median age of foreign-born citizens is 47 (DataUSA). In general, the median age of all Nevada citizens is 38. The U.S. Census shows that 22.5% of Nevada citizens are under the age of 18 and 16.1% are 65 or older. The majority of Nevada is made up of working-age citizens.

Nevada's median household income in 2018 is $57,598 (U.S. Census). This is the 24th lowest in the country. There are more than 1 million households in Nevada and average persons per household is 2.68.

Vital Statistics and Health Status

In 2018, Nevada had 35,682 births which makes up 0.94% of the total U.S. births for that year. The following table shows the birth rate per 1,000 women aged 15 – 44 from the years 2006 to 2016:

While Nevada drastically peaked in 2007, it has settled into an average of about 63 births per 1,000 women.

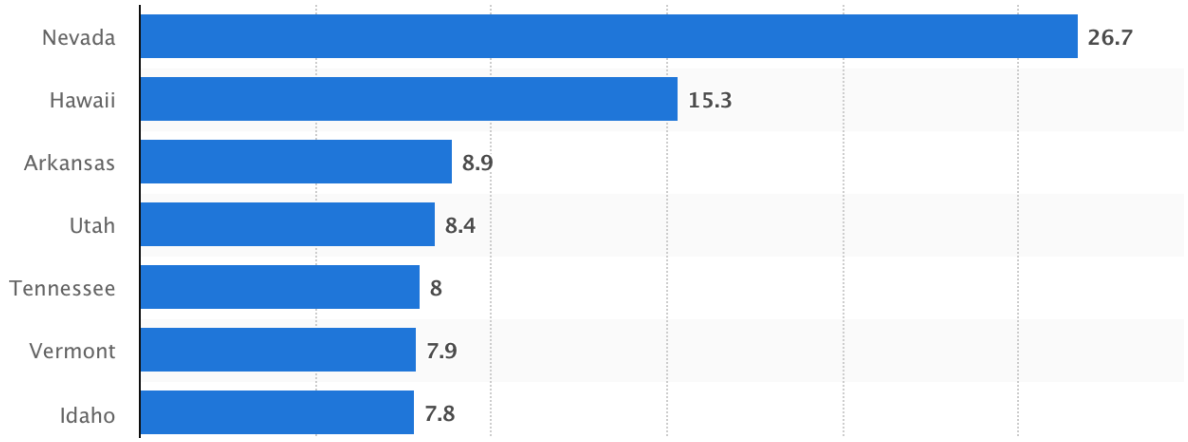
As for death rates, Nevada reported 24,715 Deaths in 2018, which makes up .87% of the total U.S. death total.

The following table from the CDC shows the top 10 leading causes of death in Nevada in 2017:

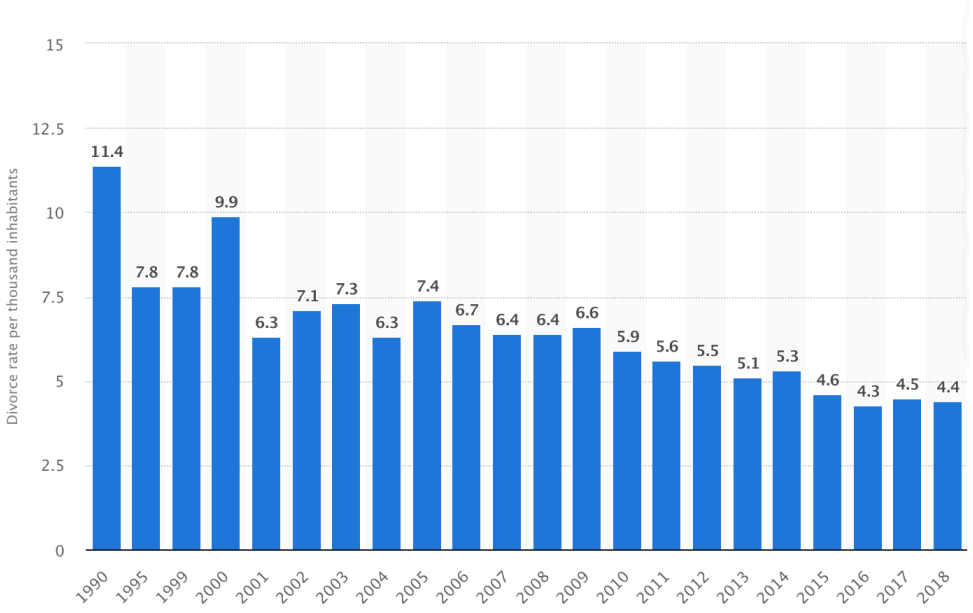
NV Leading Causes of Death, 2017	Deaths	Rate***	State Rank*	U.S. Rate**
1. Heart Disease	6,417	199.3	7th	165.0
2. Cancer	5,283	155.3	23rd	152.5
3. Chronic Lower Respiratory Disease	1,633	50.0	6th	40.9
4. Accidents	1,496	47.8	34th	49.4
5. Stroke	1,137	35.9	32nd	37.6
6. Alzheimer's disease	779	27.3	35th (tie)	31.0
7. Flu/Pneumonia	636	19.6	6th	14.3
8. Suicide	627	20.3	10th (tie)	14.0
9. Diabetes	608	18.3	43rd	21.5
10. Chronic Liver Disease/Cirrhosis	458	13.3	11th	10.9

Even though Nevada only makes up 0.94% of the U.S. population, it is 7th in deaths by heart disease and 6th in deaths from chronic lower respiratory disease and the flu/pneumonia. Nevada's infant mortality rate is 6.1 per 1,000 live births.

Data from 2018 shows that the marriage rates in Nevada are, by far, the highest amongst all U.S. states. Observe the following chart (Statista) with the top seven states in marriage rates per 1,000 people from 2018:



Divorce in Nevada used to be very high due to the state's laws. However, the chart below (Statista) shows that it has decreased over time:



From the *Behavioral Risk Factor Surveillance System, 2014* survey data, I studied the (Ever Told) Had Skin Cancer focus area. Skin cancer is the most common cancer in the U.S. With that said, people need to be more informed on this overwhelming presence and the dangers of it.

The following table shows the characteristics of the survey respondents:

Table 1) Characteristics of Respondents, BRFSS, Nevada, 2014

		N	%
Total		39585	100
Sex	Female	2150	57.14
	Male	1613	42.86
Age	18-34 yrs	585	15.55
	35-64 yrs	1882	50.01
	65+ yrs	1296	34.44
Education	College Graduated	1207	32.32
	High School or Less	1305	34.94
	Some College	1223	32.74
Race/Ethnicity	Hispanic	468	12.66
	Others	483	13.07
	White	2745	74.27
Income	$29k -	874	27.36
	$30k-49K	832	26.04
	$50k+	1489	46.6
Marital Status	No	1839	49.4
	Yes	1884	50.6
Delayed Medical	No	2576	72.93
	Yes	956	27.07
Health Plan	Medicaid	206	6.58
	No Plan	23	0.74
	Other Plans	2900	92.68
General Health	Excell/Good	3024	80.51
	Fair/Poor	732	19.49
Heavy Drinker	No	3295	92.71
	Yes	259	7.29
Had Skin Cancer	No	3331	89.09
	Yes	408	10.91

Observe that 10.91% of the respondents said yes to having been diagnosed with skin cancer. However, according to dermatology institutes, one in five people (20%) have skin cancer at some point in their life (American Academy of Dermatology). Unfortunately, the respondents of this survey do not make up a good sample of the true population. This is likely due to the age of

respondents as the majority of respondents are between the ages 35 – 64. With that said, we will still continue our analysis as we can still gain information as to what is happening in this survey.

In Table 2, we analyze the prevalence of our response, (Ever Told) Had Skin Cancer by the characteristics of the respondents:

Table 2) Prevalence of (Ever Told) Had Skin Cancer by Characteristics, BRFSS, Nevada, 2014

		%	95% C.I.		P-Value
Sex	Female	5.7079	4.6024	6.8134	0.1927
	Male	6.9391	5.4043	8.474	
Age	18-34 yrs	0.3553	0	0.7802	<.0001
	35-64 yrs	5.5171	4.0612	6.973	
	65+ yrs	18.308	15.4751	21.141	
Education	College Graduated	8.4797	6.5389	10.4205	<.0001
	High School or Less	3.8553	2.6177	5.0929	
	Some College	8.556	6.6266	10.4854	
Race/Ethnicity	Hispanic	0.3755	0	1.05	<.0001
	Others	0.784	0.0701	1.4979	
	White	11.0142	9.3876	12.6408	
Income	$29k -	5.2663	3.0678	7.4647	0.3258
	$30k-49K	7.2319	5.2892	9.1746	
	$50k+	7.0958	5.5094	8.6822	
Marital Status	No	5.8493	4.442	7.2566	0.2815
	Yes	6.9148	5.6176	8.212	
Delayed Medical	No	6.2891	5.2516	7.3266	0.4927
	Yes	7.1354	4.8474	9.4234	
Health Plan	Medicaid	3.8108	1.006	6.6156	0.1798
	No Plan	9.2746	0	26.8298	
	Other Plans	7.9769	6.7037	9.2501	
General Health	Excell/Good	5.9775	4.9549	7.0001	0.1368
	Fair/Poor	7.8377	5.394	10.2813	
Heavy Drinker	No	6.2833	5.2827	7.2839	0.3281
	Yes	8.5304	3.5172	13.5437	

Observe that the p-values for the following characteristics are below 0.05: age, education, and race/ethnicity. This allows us to make in depth hypotheses that the proportions are statistically significant and that the population distribution is something other than being evenly dispersed. It should be noted that of those who had skin cancer, our data shows that those with College or

Some College education level are more likely to have been diagnosed with skin cancer. Also, people of white race are extremely more likely to have been diagnosed with skin cancer.

Table 3 shows the adjusted odds ratios for our response, (Ever Told) Had Skin Cancer, by the characteristics of the respondents:

Table 3) Adjusted Odds Ratio for (Ever Told) Had Skin Cancer by Characteristics, BRFSS, NV, 2014

		aOR	95% C.I.		P-Value
Sex	Female vs. Male	0.6643	0.4418	0.999	0.0494
Age	18-34 vs. 65+	0.0356	0.0101	0.1255	<.0001
	35-64 vs. 65+	0.329	0.2146	0.5043	<.0001
	18-34 vs. 35-64	0.1081	0.0298	0.3918	0.0007
Race/Ethnicity	Hispanic vs. White	0.0854	0.015	0.5667	0.0101
	Other vs. White	0.0329	0.0309	0.177	<.0001
	Hispanic vs. Other	0.0655	0.0963	0.3735	<.0001
Education	High School vs. College	0.8283	0.4898	1.4009	0.4821
	Some College vs. College	0.9907	0.6358	1.5439	0.9672
	High vs. Some College	0.836	0.5169	1.3521	0.4652
Marital Status	Non-Married vs. Married	1.3022	0.85	1.995	0.225
Income	29.9k- vs. 50k+	0.862	0.4284	1.7344	0.6771
	30-49.9k vs. 50k+	1.0964	0.7017	1.713	0.686
	29.9k- vs. 30-49k	0.8951	0.66	1.2139	0.4757
General Health	Fair/Poor vs. Excel/Good	0.6387	0.3602	1.1323	0.1248
Heavy Drinker	Yes vs. No	1.6286	0.7467	3.5524	0.2202
Health Plan	No Plan vs. Medicaid	1.0841	0.4456	2.6376	0.8587
	No Plan vs. Other Plan	1.2591	0.1999	7.9294	0.8061
	Medicaid vs. Other Plan	0.9941	0.3514	2.8118	0.991

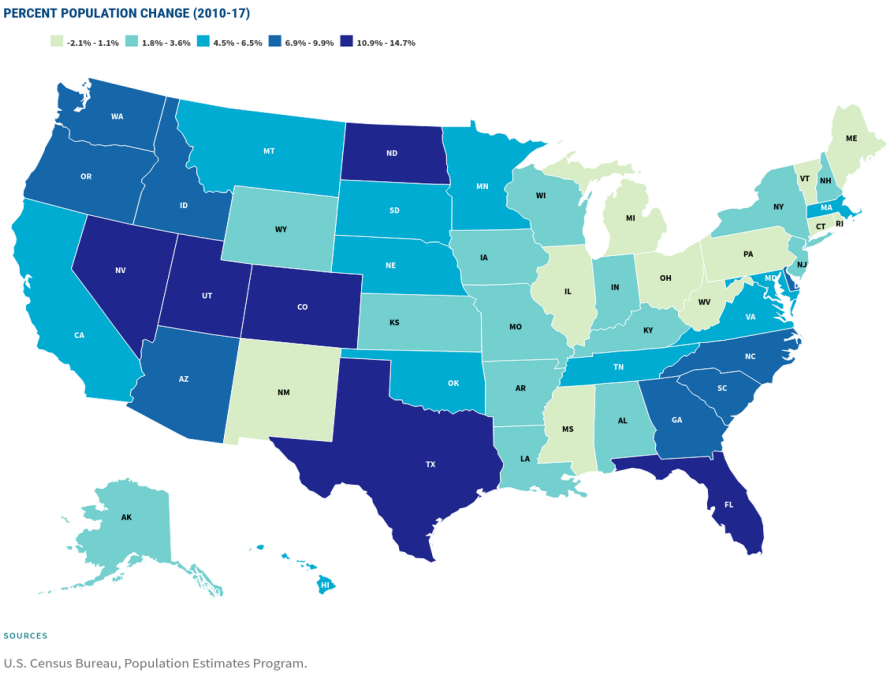
From Table 3, observe that the following aOR's have p-values below 0.05: Female vs. Male, 18-34 vs. 65+, 35-64 vs. 65+, 18-34 vs. 35-64, Hispanic vs. White, Other vs. White, and Hispanic

vs. Other. This means that these aOR's are statistically significant and we can analyze them. For sex, since the aOR is less than one, it implies that females are statistically less likely to have skin cancer according to our data. For age, all aOR's show that the younger age groups are less likely to develop skin cancer. For race/ethnicity, the aOR's of interest show that those who are not white are less likely to have skin cancer. In fact, skin cancer is harder to detect in people of color. It is a myth that people of color can be immune to developing skin cancer. However, research has shown that patients with skin of color are less likely than Caucasian patients to survive skin cancer (American Academy of Dermatology).

Observe that from Table 1, High School or Less is the most common Education status. However, from Table 2, the prevalence of (Ever Told) Had Skin Cancer by Education is highest for College and Some College. This is showing that those with a higher education are more likely to have been diagnosed with skin cancer. However, there is little reason for skin cancer to be more common in higher educated citizens. Rather, it is more likely that those with higher education are more informed on the dangers of skin cancer and the options that they have. This is unfair for the lower educated, working-class of Nevada. These facts help show that general knowledge of the available options help increase the diagnose rate of skin cancer. With a 92% survival rate of skin cancer when reported before the cancer spreads to the lymph nodes (American Academy of Dermatology), nothing is more important than getting frequent screenings. Unfortunately, not everyone knows this information. With that said, the promotion of health needs to be increased to help the less educated citizens.

Summary

When we look at Nevada's population change compared to the U.S., it can be seen that there are only a few states that rival it:



This should show just how important Nevada's health is as current investments will help benefit the vast population moving into Nevada. As one of the fastest growing states in the U.S., the funds must be spent now to get ahead of this monumental leap forward in population.

The correlation between public health promotion and the benefits of public health are strictly positive. An increase in public health promotion funds will increase the effects that public health has on Nevada. As discussed in the introduction, every $1 can save the U.S. $5.60. This kind of return on investment is well received by everyone.

In specific, skin cancer is a primary reason as to why public health promotion is so important. With skin cancer being the most common form of cancer, its awareness is not high enough. As seen in the data, education directly leads to skin cancer awareness. While not everyone can use their time and money to get an education, public health promotion can, at the very least,

supplement the knowledge to get frequent screenings so that time does not pass while carrying the dangerous skin cancer.

Going back to Table 3), the adjusted odds ratios suggest that minorities are less likely to report skin cancer. Although people of color have a lower risk of developing skin cancer than Caucasians, when skin cancer develops in people of color, it is often diagnosed at a more advanced stage which makes it more difficult to treat (American Academy of Dermatology). Information like this is not commonly known and needs to be taught to those who are not able to seek this as easily. It needs to be provided to them through well-funded, efficient public health promotion.

Not only does the public need to be aware of these dangers of skin cancer, but there are many more diseases that are not mentioned enough to the general public on what to watch out for. For example, heart disease is the number one cause of death in Nevada. Through the promotion of public health, the citizens of Nevada can be presented with what options they have to help avoid this disease. The brilliance of public health promotion is that it is not glued to one disease or illness. Public health awareness brings life and knowledge to everyone in Nevada about how to increase their quality of life.

Even though Nevada does not have the funds, the state has desperately attempted to make public health resources available. There are countless organizations in Nevada who try to promote public health but lack the funding to do an effective job. However, the effort should not go unnoticed as it shows that Nevada will put these grant funds to their proper use. Nevada is fast growing, full of new life, and needing education. In total, Nevada is the perfect recipient for a $5 million grant in order to help the promotion of public health.

Sources

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