FACTORS DIETETICS STUDENTS CONSIDER WHEN APPLYING TO INTERNSHIP

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SIGNATURE PAGE

THESIS: FACTORS DIETETICS STUDENTS CONSIDER WHEN APPLYING TO INTERNSHIP

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I would like to dedicate this to the memory of my Mother-in-law, Romualda Seda Flores.
ABSTRACT

Background: There is no research describing what factors dietetics students consider when applying to dietetic internships (DI), but research from high school students suggests that Hispanics may be less likely to apply to a DI that requires them to relocate. Educators in California believe that their DIs are more competitive than those in other regions of the country.

Objective: To identify the influence of ethnicity, geographic location, and finances on student decisions about applying to a DI.

Methods: Internet-based survey using a convenience sample of dietetics students (n=196) in the states of Washington, Oregon, California, Arizona, New Mexico, and Texas. Students within 12 months of applying to DI were eligible to participate. Students were recruited via their Didactic Program in Dietetics (DPD) director.

Results: Hispanic Ethnicity was not associated with decreased willingness to relocate for DI, but living with a spouse, child, or significant other was, as was increasing age. Students who attended school in southern California were also less willing to relocate for DI, despite believing that DIs in California were more competitive than those in other states.

Conclusions: DPD students who are married or have children are less likely to be willing to relocate for DI. Older students are also less likely to relocate for a DI. Older, married students who live in southern California may be less likely to be matched to a DI because of increased competition for openings. A larger study should be conducted to determine if Hispanics in southern California face similar pressures.
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CHAPTER I

INTRODUCTION

According to current data from the Bureau of Labor Statistics, dietetics is one of the fastest growing professions, currently increasing at a rate of 21%.\(^1\) Factors that are influencing demand for dietetics professionals include the aging of the population, increases in obesity rates and increases in the incidence of chronic diseases which may be affected by nutrition interventions, as well as a renewed attention to nutrition in the prevention of chronic disease.\(^2\) It is also expected that there will be a significant loss of current dietetics practitioners from attrition and retirement in future years.\(^3\)

The Academy of Nutrition and Dietetics (formerly the American Dietetic Association) is the largest national association of dietetics professionals with a current membership of over 75,000.\(^4\) The Academy of Nutrition and Dietetics (AND) and the Accreditation Council for Education in Nutrition and Dietetics (ACEND) have developed competencies and standards for the training of Registered Dietitians (RDs). Currently, to become an RD one must have a bachelor’s degree, have completed Didactic Program in Dietetics (DPD) classes from an accredited institution, have completed 1200 hours of supervised practice, and successfully pass a national registration exam.\(^5\) The majority of students complete the supervised practice in Dietetic Internship (DI) programs that must be applied to after graduation. Currently only half of students who apply to DI are accepted.\(^6\)

Registered Dietitians, like many other health professionals such as physicians and nurses, are not as ethnically diverse as the general American population. This has been noted by the AND for decades. In 1997 Bryk and Soto reported that Hispanics represented only 1.7% of RDs.\(^7\) As of 2014, this percentage had only increased to 3%, despite a nation-wide increase of Hispanics from 10.8% to 17.1% during that time frame.\(^8\)\(^-\)\(^10\) Several articles have suggested that the DI shortage may be adversely affecting the success of minorities into the field of dietetics.\(^11\)\(^,\)\(^12\) For example, the number of Hispanic students graduating from DPD programs in 2008 compared to 2002 increased by 74%, but the number of Hispanic students accepted into a DI increased by only 8%, reflecting an 86% increase in Hispanic DPD graduates who did not continue on to a DI.\(^12\)
There are no published studies that examined why Hispanic students are not placed in DIs or becoming RDs at a pace comparable to their Caucasian counterparts, however a possible explanation could be where the large concentrations of Hispanic students reside and the competition for DIs in those geographic regions. Hispanics make up 38.4% of the ethnic diversity of California, which is significantly higher than the 17.1% of the total population of America. While there are a large number of DIs in California, there are not enough DIs, preceptors, and internship sites to meet the demand of the DPD graduates of the state, and there is a significant number of DPD graduates from out of state who apply to, and are accepted to, DI programs in California. Literature suggests that Hispanic students have fewer educational role models, have lower grade point averages (GPAs) and are less likely to relocate away from their family for education, however no studies have specifically looked at dietetics students and their willingness to relocate for education.

Statement of the Problem

There is little to no data to explain why there has not been an increase in diversity in the field of dietetics to reflect the increasing diversity in the overall American population.

Purpose of the Study

The purpose of this study was to examine what factors dietetics students in the western and southwestern states consider when deciding on the internship programs to which they will apply, in an effort to explain possible factors that might be preventing minorities, specifically Hispanics, who reside in high minority areas such as Southern California from becoming RDs.
Significance of the Study

The results of this study may influence how DI programs select and rank their candidates, especially in high-Hispanic areas such as Southern California.

Objectives

We identified three distinct areas of study that this project will pursue.

Objective 1: To explore the decision-making process of students applying to DIs.

Objective 2: To understand the influence of ethnicity, location, and finances on student decisions about applying to a DI.

Objective 3: To determine if Hispanic students in California are at a competitive disadvantage when applying for a DI because of increased competition from other students and a decreased willingness to relocate.

Hypotheses

The null and alternate hypotheses that were tested in this study are as follows:

H01: There is no difference between ethnicities in their willingness to relocate for a DI.

HA1: Hispanic students are less likely to apply for DIs that will require them to relocate compared to students of other ethnicities.
H02: There is no difference in the willingness to relocate between students who reside in southern California and those who reside in other areas of the country.

HA2: Students who reside in southern California are less likely to apply for DIs that will require them to relocate compared to students who live in northern California, the Pacific Northwest, and the Southwest.

H03: There is no difference in the willingness to relocate for a DI for Hispanic students whose parents were born in the United States (second generation) compared to parents who immigrated here (first generation).

HA3: Students whose parents are immigrants to the US will be less willing to relocate for a DI compared to students who are at least second generation.

H04: There are no significant predictors of willingness to relocate for DI.

HA4: There will be significant predictors of willingness to relocate for internship, specifically: Hispanic ethnicity, lower socio-economic status, having one or more parent who immigrated to the US, attending a commuter-based school in Southern California, and being the first in one's family to attend university.
### Definition of Terms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACEND</td>
<td>The Accreditation Council for Education in Nutrition and Dietetics. The accrediting agency for the Academy of Nutrition and Dietetics, responsible for maintaining educational standards.(^{17})</td>
</tr>
<tr>
<td>AND</td>
<td>The Academy of Nutrition and Dietetics. The largest professional organization of nutritional professionals in the United States.(^{18})</td>
</tr>
<tr>
<td>DI</td>
<td>Dietetic Internship. A mandatory step in the education to become a Registered Dietitian, consisting of a minimum of 1200 hours of supervised practice in an ACEND-accredited program.(^{19})</td>
</tr>
<tr>
<td>DICAS</td>
<td>Dietetics Internship Centralized Application Process. The website that allows DPD students to apply to multiple DI programs at the same time. Most DIs require all students to use DICAS to submit applications to their programs.(^{20})</td>
</tr>
<tr>
<td>DPD</td>
<td>Didactic Program in Dietetics. The undergraduate coursework that must be completed before a student qualifies to apply for a DI. DPD programs must be ACEND accredited.(^{19})</td>
</tr>
<tr>
<td>NELS</td>
<td>National Education Longitudinal Survey. A survey of 8(^{th}) graders that began in 1988. Respondents were re-surveyed in 1990, 1992, 1994, and 2000. Along with questionnaires on educational aspirations, family and other support, home environment, and educational experiences, students were also surveyed on health habits and given achievement tests in reading, math, science, and social studies.(^{21})</td>
</tr>
<tr>
<td>NHANES</td>
<td>National Health and Nutrition Examination Survey. An assessment program of the health and nutritional status of both children and adults in the US, combining interviews with physical assessment and biochemical analyses. The program has been collecting data continuously since 1999.(^{22})</td>
</tr>
<tr>
<td>RD</td>
<td>Registered Dietitian. A professional with an expertise in nutrition and the effects of nutrition on illness and health. To become and RD one must have a bachelor’s degree, have completed a DPD program and a DI, and have passed a national registration exam. May also be abbreviated as RDN, for Registered Dietitian, Nutritionist.(^{5})</td>
</tr>
</tbody>
</table>
CHAPTER II
LITERATURE REVIEW

A search of the available literature revealed that there are no studies that have directly examined the factors that dietetics students consider when applying to a DI, however there is a body of literature investigating the factors high school students consider when choosing and applying to universities, as well as studies specific to minority students and the factors they consider when choosing and applying to universities. While there are many different ethnic groups in the United States (US), we chose to focus on Hispanics in this study because our university, California State Polytechnic University, Pomona (CPP), is located in the eastern part of Los Angeles County, California which has a higher percentage of Hispanics than much of the rest of the US, and because CPP is a Hispanic Serving Institution. In 2013 Hispanics were the most prevalent ethnic group at CPP, making up 36.4% of the student body. Hispanics in America also face unique health care concerns because of differences in risk of chronic disease, differences in socio-economic factors, and differences in the access to health care and effectiveness of health care interventions.

This literature review focuses on (1) the unique health care concerns of Hispanics including barriers to accessing health care, (2) the need for culturally sensitive health care for minorities with a focus on the Hispanic population and the profession of dietetics, and (3) the research that explores how Hispanics access higher education compared to other ethnicities.

Unique Health Care Concerns of Hispanic Americans

Obesity across the nation has been increasing for the past 25 years, but not all ethnicities are experiencing obesity at the same rate. The Centers for Disease Control and Prevention collects statistics on obesity and disease, and their current data show that, among adults, Mexican Americans are more likely to be obese compared to non-Hispanic Whites and Asians. The prevalence of obesity among Hispanics is 39%. The only racial group in the US that has a higher rate of obesity is African Americans at 44%. The rate of diabetes is 66% higher among Hispanics compared to non-Hispanic Whites. Hispanics have a
higher prevalence of heart disease, hypertension, and stroke compared to non-Hispanic Whites.\textsuperscript{25} Hispanics, despite having a younger demographic compared to other racial groups in America, are more likely to report being in poor health than other ethnicities.\textsuperscript{26, 27}

Childhood overweight and obesity is especially prevalent in Hispanic children in the US.\textsuperscript{28} This may reflect cultural norms, as childhood overweight is often seen as a sign of health in Hispanic culture.\textsuperscript{29} \textit{Gordito} (literally “little fat”, but better translated as “chubby”) is a common moniker used affectionately in Hispanic culture.\textsuperscript{29} A recent study by Ogden et al analyzing National Health and Nutrition Examination Survey (NHANES) data found that Hispanic children have higher rates of overweight and obesity compared to non-Hispanic whites, African Americans, and Asians, although African American obesity starts to catch up in the teenage years (See Table 1).\textsuperscript{28}

Table 1

\textit{Prevalence of Overweight (BMI > 85\textsuperscript{th} Percentile for Age) by Ethnicity, US, 2011-2012 (mean and standard deviation)}

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>2-19 years</th>
<th>2-5 years</th>
<th>6-11 years</th>
<th>12-19 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Races</td>
<td>31.8 (29.1-34.7)</td>
<td>22.8 (18.7-27.6)</td>
<td>34.2 (30.1-38.5)</td>
<td>34.5 (30.1-39.2)</td>
</tr>
<tr>
<td>White</td>
<td>28.5 (24.0-33.4)</td>
<td>20.9 (14.4-29.2)</td>
<td>29.4 (21.6-38.7)</td>
<td>31.2 (24.3-39.1)</td>
</tr>
<tr>
<td>Black</td>
<td>35.2 (30.2-40.6)</td>
<td>21.9 (16.7-28.2)</td>
<td>38.1 (30.1-46.8)</td>
<td>39.8 (32.9-47.2)</td>
</tr>
<tr>
<td>Asian</td>
<td>19.5 (15.7-23.9)</td>
<td>9.0 (4.5-17.3)</td>
<td>19.9 (16.2-24.3)</td>
<td>24.6 (17.8-32.9)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>38.9 (36.3-41.6)</td>
<td>29.8 (24.0-36.4)</td>
<td>46.2 (41.5-50.9)</td>
<td>38.1 (21.9-44.8)</td>
</tr>
</tbody>
</table>

Adapted from Ogden et al, 2014\textsuperscript{28}

The Ogden study looked only at overweight and obesity rates and did not investigate possible causes for the ethnic discrepancies in prevalence. Other researchers have conducted studies of Hispanic lifestyle patterns in the US and have found an increase in fried foods, decreased intake of fruits and vegetables, and decreased physical activity compared to lifestyles in Latin America.\textsuperscript{30-32} Hispanics in the US eat out more often than in their native countries because it is more affordable and accessible, with the
consequence of increasing their caloric intake and promoting obesity.\textsuperscript{32} Hispanic children in the US are more likely to drink soda, juices, and juice drinks than in Latin American countries.\textsuperscript{33, 34} In recent years California public health efforts have attempted to decrease the consumption of soda and sugar sweetened beverages among youth, however in the same period there has been a rise in juice consumption among Hispanic children, possibly reflecting the percentage of that population that receives subsidies and government aid such as the Women, Infant, and Children (WIC) program which provides vouchers for 100% juice to its participants.\textsuperscript{34}

As Hispanics immigrate to the US, they appear to pick up unhealthy dietary habits and leave potentially healthy dietary habits and physical activity behind. Hubert et al, in a large (n=1005) 2005 study compared Mexican Americans in a settled community to Mexican American migrant farm workers. They found that acculturation to the typical “American” lifestyle increase obesity rates.\textsuperscript{30} The majority of the participants were immigrants to the US, born in Mexico. They found that body mass index (BMI) increased with number of years living in the US among the population that lived in cities and towns (more acculturated to the American lifestyle), however BMI decreased with number of years living in the US among migrant farm workers (less acculturation to the American lifestyle). The obese respondents were 60% more likely to be second-generation Hispanic Americans, and thus even further acculturated to the American lifestyle, compared to the leanest respondents.\textsuperscript{30} They also found, in accordance with others, that many poor immigrant neighborhoods are located in areas with decreased access to healthy foods or safe places to exercise, and increased access to fast food and convenience stores, with no significant increase in access to healthcare.\textsuperscript{30-32, 35} The Hubert study is significant because participants were interviewed either by telephone or in person, this study did not rely on secondary data analysis.

Mainous et al in 2008 analyzed 1999-2004 NHANES data to see if there was an effect of acculturation (as measured on the Short Acculturation Scale) to the typical American lifestyle, poverty, and access to healthcare. The Short Acculturation Scale is a five item scale based on reported language that respondents speak and think in that has been validated in other studies.\textsuperscript{36} Their data showed that acculturation to an American lifestyle increased access to medical care and improved socio-economic status (especially education levels), but also increased calorie intake and obesity.\textsuperscript{36} Individuals with higher levels
of acculturation were more likely to have a diet low in fiber and high in saturated fat compared to those with lower acculturation scores. This was a smaller study (n=467), based on previously collected data. This study was only able to show an association between obesity, diet, and acculturation, not causation.36

Beyond acculturation, socio-economic factors have an influence on the health status of Hispanics in the US. Hispanics are more likely to be at or below the poverty level compared to non-Hispanic Whites.37 Multiple studies have found that lower socio-economic status affects the ability to purchase healthy foods, access to effective health care, and the ability to live in neighborhoods that allow for healthy lifestyles.32-34, 36, 38 Hispanics tend to have a lower level of education compared to Whites and other ethnicities which can limit their economic potential and social mobility, as well as their health literacy.30, 39

Studies have shown a connection to socio-economic status and health in Hispanics. Zhang et al reviewed NHANES data from 2001-2010 for Hispanics, Whites, and African Americans with self-reported diabetes. They found that Hispanic respondents were significantly more likely to have not completed high school, to have a lower income, and to have less health care insurance compared to Whites and African Americans.27 Hispanics also reported more days of being in poor health compared to other ethnicities, but these results were not statistically significant.27

As we have demonstrated, Hispanics in America have a higher incidence of obesity, diabetes, and heart disease compared to Whites.24, 25, 27, 37-42 Although people with chronic conditions require more health care and populations with higher rates of chronic diseases would benefit more from preventative health care, minorities are less likely to have a primary care physician or insurance.42-50 Hispanics are less likely to be on medications for chronic medical conditions compared to non-Hispanic Whites.31 Possible barriers to accessing healthcare include economic, informational, logistic, and provider-based barriers such as language barriers, lack of cultural understanding, and lack of trust and respect.38, 42, 43

A number of studies have examined the impact of socio-economic status and access to health care. Minorities and especially Hispanics are typically of lower socioeconomic status than Whites.27, 37-40, 42 They have lower incomes and have less money that can be used to purchase insurance or afford co-pays if they have insurance. Even with the Affordable Care Act, many Hispanics have not applied for insurance
because they lack legal documents or are afraid of deportation. McGarry et al found that Hispanics were 35% less likely to have insurance coverage for prescription drugs compared to Whites and Blacks, even though they were significantly more likely to qualify for the low-income premium subsidy. This could be an explanation of why Hispanics take fewer medications, despite the prevalence of chronic disease.

The results from this study show that there were no ethnic differences in coverage among participants who were automatically enrolled in the program, suggesting that barriers to coverage could be lack of awareness of the program, lack of financial and/or health literacy, or decreased perceived benefit of having prescription drug coverage.

Financial barriers to health care is only part of the equation. Studies have shown that Caucasians have access to better health care compared to minorities, even when controlling for income and health status. Discrimination, whether perceived or real, has been cited as a potential barrier to adequate health care. One study by Mitchell et al demonstrated that even when low income minorities have access to healthcare, they may not have access to the same quality of care as people of higher economic standing. They found that hospitals in high minority and low income areas generally have worse outcomes than hospitals in White, affluent areas. These hospitals have higher mortality rates and are less likely to follow evidence based guidelines that have been proven to improve health outcomes; thus, even when Hispanics have access to healthcare, the healthcare may be substandard compared to that available to White Americans.

Hispanics are less likely to have employer-provided health insurance which increases the financial burden of preventative care and illness. When minorities do not have health insurance they often put off seeing a physician or other healthcare provider until the condition becomes very serious, leading them to over-utilize the emergency departments, increasing the cost of healthcare among those who can least afford it. Transport and timing of clinic and office hours may also limit the ability of minorities who may be working multiple jobs or not have access to a car to visit a doctor.

Call et al in a 2008 survey examined the effect of financial and insurance-related barriers, access barriers, and provider-related barriers to care among different ethnic groups. Provider-related barriers included not speaking the same language, lack of cultural understanding, and lack of trust in their doctor.
All of the participants in their study had Medicaid coverage. They found that Hispanics were more likely to report cost and coverage related barriers and provider-related barriers compared to Whites and African Americans. The only ethnic group that scored higher in these barriers was Hmong. It should be noted that this study was conducted in Minnesota where only 5% of the population is Hispanic and the results may be different in areas with larger Hispanic populations.

Having health care insurance can improve satisfaction with quality of care. Studies have shown that Hispanics recognize the overall benefits of insurance, as well as the factors that prevent them from getting it or using it. Ziemer et al conducted focus groups of Hispanics in North Carolina to investigate their attitudes toward health care insurance. They found that while having health care insurance was seen as a desirable thing, participants had concerns with the cost of insurance, possible language barriers, and fear of deportation or not having the correct documentation were identified as barriers to obtaining health care insurance. Participants also mentioned that they had negative experiences with healthcare, especially in emergency departments. Specific complaints included the cost, the long wait time, and perceptions of discrimination because of lack of documentation or lack of insurance. Again, this study was conducted in a state where the Hispanic population is less than the national average. North Carolina’s population is 8.9% Hispanic.

Dirk de Heer et al conducted a survey in 2009-2010 which investigated barriers to health care among Hispanics in Texas. They found that respondents who needed medical care were not always able to access it because of lack of transportation, financial difficulties, and fear of rejection or perceptions of not being treated with respect by healthcare providers or their staff. Respondents also cited language barriers, but this was not found to be statistically significant for putting off medical care. The researchers found that the transportation, financial, and perceived discrimination barriers continued to be significant, even as the percentage of the population with health care insurance increased, showing that having insurance coverage does not automatically lead to improved health care. Unlike the previous two studies, Texas is a state with a significant Hispanic population (38.4%), and the results from this study would probably be reproducible in a study in Southern California which is also 38.4% Hispanic.
As noted, provider-related barriers such as lack of cultural understanding and language barriers decrease the quality of care for minorities.42-46 In most settings, there is not enough educational material in the patient’s preferred language, and the patients don’t see themselves represented visually in educational and promotional materials.38, 43 Removing cultural and language barriers may help patients feel that they have more of a voice in their healthcare, which can improve trust with authority figures and could increase patient satisfaction.50, 51 Studies in the field of substance abuse have shown improved compliance with Hispanic patients with improved provider Spanish language skills.51

Gonzalez et al used data from a Pew Hispanic Center/Robert Wood Johnson Foundation Hispanic/Latino Health survey conducted in 2007. The original survey was a stratified random telephone survey of Hispanic Adults. Gonzalez et al focused on responses from foreign-born survey participants. They found that lower income Hispanics were more likely to express difficulties communicating with their healthcare provider, or feeling confused after a doctor’s visit. They were also less satisfied with their care due to perceived discrimination. Similar results were seen among uninsured respondents.53 These results are similar to those seen by other researchers.54

An analysis of data collected by the Kaiser Foundation compared patient ethnicity to preferred physician or nurse ethnicity and satisfaction with care. This study, by Chen et al, showed that 34% of Hispanics would prefer a healthcare professional who was also Hispanic. Interestingly, Hispanic respondents who preferred a non-Hispanic doctor or nurse also scored higher on a scale of perceived discrimination than those who had no ethnic preference; however the results were not statistically significant. There was a significant difference in the perception of discrimination between those who preferred a medical professional of their own ethnicity and those who did not, or had no preference.55 There was no perceived decrease in quality of care for Hispanic respondents who would prefer a non-Hispanic doctor but had one, however respondents who preferred a Hispanic doctor and did not have one rated the quality of care lower.55

Cooper et al recorded physician-patient interactions in primary care settings. They found that when physicians and patients were of the same ethnicity the visits were 2 minutes (10%) longer and that the tones of voices indicated more positive affect.54 This study did not include Hispanics, but other studies
have shown that ethnic and language concordance improves communications, increases patient activation and improves patient care.\textsuperscript{50, 56}

Multiple studies have demonstrated that healthcare providers who are themselves minorities are more likely to work with minority and underserved populations, and that minority patients are happier and better served when they have a health professional of the same ethnicity.\textsuperscript{43, 53-55, 57} Unfortunately, as the following section will demonstrate, there is a current lack of diversity in health care professions that limits the option of having a doctor, nurse, or dietitian of the same ethnicity for most minorities.\textsuperscript{29, 48, 50, 51}

The Need for Culturally Competent Healthcare Providers

Minorities have been underrepresented among many health professionals for years, although it has been improving. In 2008, 73.7\% of physicians were White, non-Hispanic and only 5.3\% of physicians identified as Hispanic.\textsuperscript{47} Current statistics from the Association of Medical Colleges indicate that the percentage of Hispanic doctors in the Pacific northwest and along the Mexican border varies from a low of 2.2\% in Washington to a high of 11.2\% in New Mexico.\textsuperscript{58} Only 4.7\% of California physicians are Hispanic, which is far below the percentages seen in the population at large.\textsuperscript{8, 58} Nationwide, nurses are 83.2\% White and 3.6\% Hispanic.\textsuperscript{59} Among RDs, 81.4\% are White and 3\% are Hispanic.\textsuperscript{9, 12} In contrast, the population of the US is much more diverse. One of the fastest growing minorities in America is Hispanics who currently make up 17.1\% of the total American population and 38.4\% of the population of California.\textsuperscript{8} This puts Hispanics at almost the same percentage of the White population in California. The number of people who identified as White and not “Spanish/Hispanic/Latino” in the last census was 39.0\% in California, far less than the 62.6\% in the entire US.\textsuperscript{8} Table 2 compares the percentages of Hispanic physicians and RDs to the general population of states in the western US.
Table 2

Percentages of Hispanics in Healthcare Compared to Populations

<table>
<thead>
<tr>
<th></th>
<th>MD*</th>
<th>RD**</th>
<th>Population ***</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>4.7%</td>
<td>5.8%</td>
<td>38.4%</td>
</tr>
<tr>
<td>Arizona</td>
<td>4.9%</td>
<td>4.9%</td>
<td>30.3%</td>
</tr>
<tr>
<td>New Mexico</td>
<td>11.2%</td>
<td>9.8%</td>
<td>47.3%</td>
</tr>
<tr>
<td>Texas</td>
<td>8.3%</td>
<td>10.6%</td>
<td>38.4%</td>
</tr>
<tr>
<td>Oregon</td>
<td>2.4%</td>
<td>1.1%</td>
<td>12.3%</td>
</tr>
<tr>
<td>Washington</td>
<td>2.2%</td>
<td>1.7%</td>
<td>11.9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5.3%</td>
<td>3.0%</td>
<td>17.1%</td>
</tr>
</tbody>
</table>

*Data from Association of American Medical Colleges Web site, as of 2014
**Data from CDR website, as of 2015
***Data from Census website, as of 2013

Increasing the number of minority healthcare providers should improve the health of minority communities by improving culturally competent care. Many medical professional organizations have been attempting to increase the number of minorities entering the profession through outreach to high school students, education pipelines, and scholarships, with a goal of improving patient care through diversity. Barriers to increasing the number of minorities in healthcare professions include lack of knowledge of the field, lack of minorities in science majors, and lack of role models. Healthcare workers who are minorities have also come across bias, racism, and stereotyping, which may be making it more difficult to recruit members of those communities and retain them throughout the rigorous and sometimes prolonged education needed to enter healthcare professions.

Veal et al discussed stressors with minority nursing students in focus groups and reported that many of these students do not feel connected to the programs or instructors and feel that they constantly have to prove their worth. Students who were more comfortable moving between cultures tended to do better in the nursing program, as did students who had “cultural brokers” who could help them navigate into the instructional environment. In the following section we will discuss the theory of “chain
migration” and how this may be having an effect in the Veal study. A study by Vogt and Taningco in 2008 examined why Hispanics do not enter the nursing profession. They interviewed Hispanics who were nurses, nurses’ aides, and not in the nursing profession. In this study they found that for non-nurses not having a role model in the profession made them decide on other careers, which is very similar to the findings of Veal et al.64,66

Providing quality and culturally competent health care to Hispanics is more than recognizing illness, providing medicine or speaking a few words of Spanish. Culturally competent care includes respect for the beliefs of the patient.43,67,68 White healthcare providers have been shown to rate their language skills and knowledge of other cultures much higher than the people of those other cultures, suggesting that the White healthcare providers feel more culturally competent than they actually are in practice.29,43 While all medical professionals are given varying degrees of education on cultural awareness, the training may not be enough to generate the level of cultural competence necessary to deliver culturally sensitive care.69-71 Cultural competence includes knowledge, awareness and skill, but also a true desire to engage with the person from the other culture.67 This may be especially important in diverse populations such as Hispanics, who may come from a variety of different countries and cultures, but are often discussed as a monolithic culture.57

In studies, Hispanics have often noted that the medical care available is not culturally sensitive. Pardasani et al conducted a survey of health care consumers in Indiana. The survey was not large (n=136), and included only 31 Hispanics (22%), but they found that Whites were more likely to find their medical care culturally competent than Blacks, and Hispanics rated cultural competence of care even lower than Blacks. Hispanic respondents noted that educational materials were not available in Spanish and, that the pictures in the materials were not culturally relevant. They felt that office staff were not diverse or “easy to talk to”.43 Hispanics also perceived that the office staff did not respect their religious beliefs, did not treat them with respect, and judged them because of their accents and appearance.43 This study surveyed only the patients and did not provide data on whether the office staff felt that they provided a different level of care to different ethnicities, however other studies have investigated this aspect.
Very few people are willing to admit to an explicit bias against people from a different race or ethnicity; however studies suggest that there may be an unconscious bias against Hispanics in health professionals.\textsuperscript{44,46} One study found that nursing and medical students were more likely to choose words such as “non-compliance” after being exposed to a subliminal prime of a Hispanic face for 15 milliseconds than after exposure to a non-Hispanic White face.\textsuperscript{44} In this study participants were also asked about their explicit feelings toward Hispanics and the researchers found that conscious lack of bias toward minorities did not translate into a lack of unconscious bias.\textsuperscript{44} This study was very small, with only 36 participants who were mostly young (average age was 24.2 years), Caucasian (81\%), and female (78\%). Because of the small and relatively homogenous group of participants, the results cannot be generalized to larger, older, or more diverse populations, however it does raise awareness of unintentional bias against minorities in young potential healthcare providers.\textsuperscript{44} It should be noted that this study took place in the southwest portion of the US, where Hispanics are the main minority population and the participants were most likely familiar with Hispanics.

Another study of primary care physicians found a similar bias against both African Americans and Hispanics using the implicit association test (IAT).\textsuperscript{45,46} The IAT has been validated in research and used in over 700 studies.\textsuperscript{45,46,72} It proposes to determine implicit bias by having participants make split-second decisions which do not allow for planned thought. Subjects are exposed to stimuli like words or faces and then tested on how quickly they respond to positive or negative terms. Implicit bias is shown when subjects respond more quickly to negative words after exposure to a Hispanic face than exposure to a White face.\textsuperscript{45,46,72,73} Blair et al used this technique to compare explicit and implicit bias against Hispanics and Blacks among physicians and the community in Colorado (21\% Hispanic).\textsuperscript{8} They attempted to survey 351 doctors and 375 patients (community members) and had a 60\% response rate for the doctors and 51\% response rate for the patients. They found very little explicit bias among either group, but a substantial implicit bias against Hispanics was demonstrated by over 60\% of the physicians, although the bias was stronger in the White community members than in the doctors.\textsuperscript{45}

In a second study, Blair et al analyzed data from 134 primary care physicians and 2908 members of the general public recruited from patients who were under the care of a physician for treatment of hypertension. The survey also took place in Colorado. The population served by the healthcare system in
which the doctors were recruited from was 60% Hispanic. Among the physicians, 43% had a moderate to strong implicit bias against African Americans and 51% had the same strength of bias against Hispanics, although they reported little to no explicit bias against either group. Researchers found that there was a strong association between implicit bias against African Americans and dissatisfaction of African Americans with the physician. There was not a corresponding correlation between bias against Hispanics and Hispanic dissatisfaction in this study, but Hispanics were more dissatisfied overall with physician care which may have skewed the results. This was a much larger study, but there is a possibility of response bias, especially among the community responders. The researchers had some basic demographic data of non-responders, including ethnicity, and Hispanics were far less likely to participate (57.2% non-response rate) compared to African Americans (47.8% non-response rate) or Whites (51.3% non-response rate).

Other studies comparing recent Hispanic immigrants with Hispanics who have been in the country longer showed that as English proficiency increases the patients are more sensitive to bias from physicians. It was proposed that recent immigrants might not have as much interaction with other cultures and might only attend health care clinics that are targeted to recent immigrants. This might “protect” them from perceived discrimination. In comparison, Hispanics with better English skills might seek healthcare in clinics that serve non-Hispanics also and might feel that the care they receive is worse than other patients at the clinic.

Physicians do not have enough time to provide all of the medical interventions needed for good preventative care, and their time is better spent focusing on the services that only they can provide and partnering with other healthcare professionals to provide the remaining services. Physicians do not get adequate nutrition education during their training to feel comfortable discussing specifics of nutrition with their patients. RDs receive in depth education about the science of nutrition, and they also receive education on counseling and nutrition education of patients, as well as practical training under supervision to develop counseling skills. This in depth education and practice is essential to understand dietary habits and to promote behavior change. Culture is intrinsic to how we eat, including the foods we choose and how we choose to eat them. When discussing the cultural dietary patterns of Hispanics in America, it is important to have a true understanding of the person’s country of origin, their level of acculturation to their
new environment and the dominant culture, the food resources available to them, and any government aid programs that they may use. Hispanics in the US eat differently than Hispanics in their native country and non-Hispanics in the US, and dietary patterns change with length of time in the US and from generation to generation.

Rates of childhood overweight are higher in the Hispanic population than any other ethnic group. Programs to help prevent and treat childhood obesity rely on increasing the knowledge of parents and the perceived self-efficacy of those parents in being able to make an effective change in their child’s diet. Some studies have shown that Hispanics are not as satisfied with traditional obesity counseling in primary care settings compared to Whites. Common complaints included that parents did not receive enough nutrition information or that the quality of the information was not adequate. In the study by Taveras et al, 23% said that the clinician did not spend enough time discussing nutrition. Phan et al used a Lifestyle Behavior Checklist to assess parental confidence in managing weight-related behaviors in their children. They found that Hispanic parents scored much lower on this scale, indicated that traditional weight management techniques are less effective in this group. This is an area where access to a culturally competent RD would be beneficial. Further, Koniak-Griffin et al showed significant improvements with a culturally competent intervention for adult weight loss, however their control group did not receive any nutrition education.

A study by Joshi et al looked at targeted diabetes interventions using ethnically concordant nurses and found that there was a significant improvement in biochemical markers, including hemoglobin A1c, microalbuminuria, lipid levels, and weight. This study had 124 Hispanics in the intervention group and 50 in the control group. It should be noted that having a culturally competent provider was not the only difference between the intervention and control groups. The control group was seen by their primary care physician every 3-6 months, while the intervention group had either four group classes or one-on-one counseling and telephone follow-ups. The increased intensity of the intervention compared to the control group may account for some of the health improvements seen in the intervention group, especially in light of the dissatisfaction with standard treatments among minorities that other researchers have documented.
Dietary patterns differ from country to country and words used to describe foods can vary from region to region. Therefore, an effective RD serving the Hispanic community must be well versed in more than just “typical” Hispanic foods. As one RD who is a native of Panama is quoted in an article about cultural competency, “Even as a bilingual Latina RD, I had to learn all of the different ethnic dishes that are traditional of other countries. Mixed dishes are common and names of foods vary from country to country.” Hispanics in California are often immigrants to this country and that affects dietary patterns and health beliefs. Having a Spanish-speaking dietitian, even when the RD is not perfectly fluent, has been associated with improved client satisfaction; however having a healthcare provider with limited language skills can lead to miscommunication and lack of progress toward nutritional goals. To address this need, some universities have implemented innovative programs to increase Spanish language competency among undergraduate dietetics students. Unfortunately, graduating more minority DPD students does not guarantee an increase in minority RDs, because of the supervised practice requirement to become an RD.

The AND is the professional organization of nutrition and dietetics professionals and advocates for the promotion of the RD as “the nutrition expert”. The AND conducts periodic surveys to predict future impacts on the field of dietetics. In this capacity, the AND has identified a need to increase the total number of RDs in the future, and increase the number of minority RDs. Studies assessing the future of healthcare forecast a need for more RDs than the current education pipeline is producing to address the aging of the population, increases in obesity and chronic disease, and the renewed emphasis on nutrition’s role in the prevention of disease. A significant obstacle to increasing the number of RDs is the shortfall of DI opportunities. In the past ten years the increase in number of students applying for internship has outstripped the increase in number of internship openings. In 2004, nation-wide, 3,112 students graduated from accredited DPD, which qualified them for internships. That year 2,782 students applied for 2,599 internship positions. In 2013, the number of students graduating from DPD programs had increased to 6,184. In that year 5,444 applied for 2,963 possible internship openings. That is greater than a 90% increase in graduates and internship applicants, but only a 14% increase in internship positions. In the spring internship matching of 2014 at least 45% of students applying to internships were not accepted to any DI program as demonstrated in Figure 3.1.
The level of competition for DI programs is fierce and the possibility of not getting a DI is a main reason why students may not pursue a career in dietetics. Even though the DI can be seen as a barrier to increasing the number of RDs in the field, there is no plan to decrease the number of hours of required supervised practice or decrease the standards needed to become an RD. In fact, the AND is planning on increasing the qualifications of entry-level RDs by requiring a master’s degree starting in 2024. Currently the DI is seen as an important and necessary step in the education of RDs. Barr et al in an article published in 2002 studied the value of the DI to the education of new RDs. They surveyed RDs who had passed the RD exam within the past 3 years about how they perceived the value of the supervised practice component of their education. They sent surveys by mail to 1987 RDs and had a 45% response rate. Respondents reported that the DI was needed to increase skill development and to increase didactic knowledge, and that it increased their confidence for work experience. The authors of this study concluded that the DI was essential to preparing RDs for entry-level practice, which is a general consensus among RDs.
Dietetics students living in southern California may be at a disadvantage in applying to a DI if they are not able or willing to leave the geographic area because they live in an area that gets a large number of out-of-state and out-of-region applicants competing with them for a limited number of internship openings. As an example, CPP received 159 DI applications last year and accepted 13 interns, or only 8% of applicants. More than half of the applicants to CPP’s DI were not from southern California. More specifically, 33% were from other states and 20% were from northern California (unpublished data from CPP internship files). In comparison, there are three DI programs in Idaho. All three of these programs combined accepted 36 total interns and received only 141 applications which reflects an acceptance rate of 26% (unpublished data of the Nutrition and Dietetics Educators and Preceptors Practice Group). CPP received 12 applications for every DI position available this past year, but Idaho received only four applications for every DI position, which makes it far less competitive. This appears to indicate that southern California is a more attractive location for students applying to DIs than other states with the effect of increasing the number of applicants and making it harder for local students, including Hispanic students, to be accepted.

The possible disadvantage to southern California students is speculation at this point as a review of the current literature revealed that there are no available published studies or papers examining what students consider when applying for DIs, or specifics of who applies to which DIs. There are studies that examine what Hispanic students consider when applying to college in general, and there are studies specifically focused on Hispanic students applying to college at the bachelor’s level and the graduate level that can provide background information and possibly extrapolate to what Hispanic dietetics students consider. This literature will be discussed in the next section.

Studies on dietetic interns, internship applications and acceptance to internships are sparse and tend to be small. The only study we identified specifically about minorities and a DI was based on in-person and telephone interviews of minority interns from 1999. The study was very small (11 participants), most participants were African American and only one subject was Hispanic. According to this small study the two factors that most influenced DI choice were geographic location of the program and economics. Some study participants also stated that they specifically applied to less competitive
internships to ensure acceptance, however the significance of this study is limited because of the very small sample size and the open-ended questions that limit the ability to compare data among different groups.65

In the past 20 years, the AND has attempted to increase the number of minorities in the field of dietetics with limited success. Past strategies have included expanding scholarships, increasing non-traditional educational models and improving mentorship of minorities.60,62 However, none of this has had a significant effect in increasing the number of minority RDs. In the next section we examine literature about how students choose universities to see if there is information that can be used to help explain the lack of increase of Hispanic RDs.

Studies on Education Choice

We conducted a search of the literature; however we were unable to find any published studies investigating what factors influence dietetics students to choose to apply to certain DI programs over others. As a surrogate for data on dietetics students, we identified studies that examined factors that influence high school students as to which universities or colleges they consider attending, apply to, and accept entrance. There are also studies that review university and graduate school choice specifically among Hispanics. Studies of education patterns often rely on National Education Longitudinal Survey (NELS) data.87 The NELS was conducted from 1988 through 2000. Students were surveyed in the eighth grade and then every two years after until two years after high school graduation. They were also surveyed six years after that. This survey collected data on family structure and support of education, students’ educational goals, and health habits such as smoking. The data also included tests in reading, math, science, and social studies.21 While this study provided a large amount of data and followed students for a significant period of time, there are limitations to studies that rely on previously collected data. When researchers are doing a secondary analysis of previously collected data they do not have the ability to write questions exactly as they would like and may have to interpret responses by re-categorizing responses or collapsing data into dichotomous variables, which can limit the statistical analyses available, or influence results.87 Wells et al, in a study investigating educational research, found that these secondary data analysis
studies tended to overstate non-significant results, or are more likely to assume that something does not have an effect when it may just have not had an effect because of how they parsed the data.\textsuperscript{87}

Overall, studies examining NELS data show that Hispanics are more likely to apply to community college than other ethnic groups (60\% compared to 38.8\% of Whites and 37.4\% of African Americans), and are less likely to transfer to four-year institutions from community college than Whites.\textsuperscript{13, 85-87} Several studies have looked into possible reasons to explain this phenomenon. Influences that have been theorized to affect college choice may come from family, friends, universities, economics, and geography.\textsuperscript{13, 14, 90-92} Family influences include parental education levels and parental support of education (financial and non-financial). Students may choose universities that their friends are attending for the peer support, or because those are the universities they are familiar with that are located near their home. Universities themselves have distinct cultures and images that may be more attractive to some potential students than others, such as an emphasis on research, or may feature a large, multi-ethnic faculty and student body. Even the availability of child care or bars on campus may have an influence on student applications.\textsuperscript{92} Cost, including financial aid and scholarships may allow students to attend universities that would otherwise be out of their reach, or conversely may make some universities impossible dreams.\textsuperscript{87} In a study by Coccari and Jovalgi, based on personal interviews of college students (n=1534, Hispanic n=43) cost was rated as the number one consideration for university choice by African Americans, the second most important consideration by Hispanics (behind quality of faculty) and the third most important among Whites (behind quality of faculty and classroom instruction).\textsuperscript{93} Lastly, geography can be as important in college choice as the previous factors, as some students may be more willing to relocate away from home for education than others.\textsuperscript{14} In the same study by Coccari and Jovalgi, Hispanics rated location of the university as the third most important consideration, while it was ranked 7\textsuperscript{th} by Whites and 9\textsuperscript{th} by African Americans.\textsuperscript{93} In the following portion of the literature review, we will again focus on Hispanics as we discuss factors affecting college choice.

Social scientists have developed a number of theories or models to explain the process of college choice. One that has been used to explain Hispanic college choices is the model of chain migration. The premise of chain migration is that immigrants are more likely to go places where they already have a social
connection, that they tend to move in groups, and that the social support system already in place can be used to help the newcomer.\textsuperscript{13} Chain migration might explain why Hispanic students are more likely to attend community colleges, even if they are qualified to attend four-year universities. The availability of friends on the community college campus can help make new students feel more welcome. Having friends attending the same university may allow for assistance with transportation or materials like books.\textsuperscript{13}

A second theory that has been espoused in explaining the propensity of Hispanic students to attend community colleges in a higher percentage than other ethnicities is the cultural influence of family in Hispanic life. Hispanic culture is more collectivistic than White culture and the term \textit{familismo} is used to describe the tendency for Hispanics to put the good of the family above the good of the individual.\textsuperscript{13-16} Under this construct, the Hispanic student is more likely to choose a community college because it is local and will allow him or her to live at home and support, and receive support from, the family.\textsuperscript{13} Community colleges are also generally more flexible with class offerings which may allow for students to work and help support the family financially, or with childcare or other duties.\textsuperscript{13-16}

A third theory for the tendency for Hispanics to attend community college could be described as a factor of institutional racism. Lack of economic opportunity, neighborhood segregation, and poor performance on standardized tests that are designed for White America have been blamed for the lack of educational progress and social mobility of many minorities, including Hispanics and African Americans.\textsuperscript{94} We will examine the studies which may or may not give credence to these theories.

While not specifically addressing the theories of chain migration, \textit{familismo}, or effects of socio-economic status, Ong et al, in a longitudinal survey of students at California State University, Los Angeles, found that increased ethnic identity (identified by questions about talking to others to learn more about their ethnic group and having a strong sense of their own ethnicity) was strongly associated with improved academic achievement, which they measured by GPA. They found that family support (measured by questions about family understanding that student have to study and contribute less at home, family providing encouragement, and family willing to sacrifice and help student out financially) was strongly predictive of academic achievement. The effect of family support was stronger for lower socio-economic students than for higher income students.\textsuperscript{95} This was a small study with an initial enrollment of 123
students and a 46% drop out rate and, although they were able to include data from the students who dropped out of the study using multilevel random coefficient modelling, they did not report on differences in GPA, ethnic identity, or socio-economic data between students who completed the study and those who dropped out (45% of whom also dropped out of the university). \(^9^5\)

Studies of high school students indicate that Hispanic students are more likely to have lower socio-economic status and lower GPAs than White students, which may limit their college choices. \(^8^6\), \(^8^7\) Researchers have also found that Hispanics have a particularly high pressure to live at home during college. When asked about the importance of living at home during college, only 46% of Hispanic students reported it was “not important”, compared to 68.8% of Whites and 67.9% of African Americans. \(^8^6\) It should be noted that these studies were from analyses of previously collected data. The authors were not able to design questions to specifically test hypotheses; they had to use the data that was available to them. Therefore, we cannot determine whether the pressure to remain home during education was internal (chain migration), external (institutional racism) or a mixture of the two (familismo). These studies of secondary data are limited in their use to determine the motivation behind the reasons why Hispanics feel it is important to live at home for college. The impetus may be economic with Hispanics wanting to live at home to reduce education costs. The cause may be social, that there is less family support to move away from home, or there may be a desire on the students’ part to remain close to home and close to friends.

Tornatzky et al reviewed of data from the National Survey of Recent College Graduates and found that Hispanics were more likely to attend local universities, which limited their enrollment at universities that were research based or offered doctorates. They also found that the decision on where to attend college had an impact on post-graduate income. Among both Hispanics and Whites those students who chose to leave home to attend college made more money than those who chose to stay home, which may reflect students leaving home from more prestigious universities than those that were local. The data that Tornatsky et al used did not have a specific measure for distance between a students’ home and college, so they based their categories of “stayer” as a student who attended college in the same state they live, and those who were “leavers” as those who attended college in a different state. This is a crude measure, as several western states are very large and could require a student to move to attend an in-state university,
and some New England states are quite small and students could live in one state and commute to a college in a different state.96

Studies have also found evidence that Hispanic culture influences whether a student will apply to a local university or one that requires him or her to move away from home to attend it, although other factors such as socio-economic status, lack of parental savings for college, lack of parental higher education, and GPA may also be contributing factors.14, 15, 90, 97 Part of the pressure may be from family, specifically parents. In a survey of parents the two strongest predictors of the parents encouraging their children to apply only to local universities or colleges were lack of higher education themselves, and Hispanic ethnicity.16 This is a very strong influence, as many Hispanic college students are the first in their family to attend college, so there may be even less support to attend a college away from home.85 As we have mentioned, familismo is a strong factor in Mexican American culture, however familial responsibility is not distributed evenly among genders.13, 91 Mexican American women, in particular, are often expected to help care for siblings and older family members, while men are often expected to work hard and support the family financially.13, 91

Some Mexican American parents have indicated concern that their children will lose their culture if they move away from home for college.98 Castellanos et al surveyed parents of Hispanic high school students in the western US from a school district characterized by low income families. They had 94 participants, 94% of whom were identified as Mexican descent, 3% were from El Salvador, and one parent did not respond to the question. The non-Mexican parents were not included in the analysis. In this study, parental support for attending college was strengthened by having a greater knowledge of college and positive expectations for their child's success in college. Parents indicated that, while they may not have much financial or specific educational advice that they can provide for their children as they attend a university, they can provide emotional support and motivation.98 This emotional support has been cited by other researchers as a reason why Hispanic students have a tendency to live at or near home while attending college.15

As we have seen, Hispanics face cultural pressure to remain close to home during education. This cultural pressure can be both internal and external. Internal pressure would be the desire of the students
themselves to remain home with friends and family for economic and social support. External pressure would be pressure from parents to remain home for college, or not attend college and work to support the family. These pressures to dissuade leaving the family may prevent Hispanic dietetics students from relocating for the minimum eight months (and typically ten months) of supervised practice that is required to complete a DI. There may be a difference between the selection process of high school students and that of post-baccalaureate students. Students who already have a bachelors’ degree are older and can be expected to be more comfortable in the academic setting than students just graduating from high school. This may be a factor that could increase the willingness of Hispanic students to relocate for a DI.

Ramirez reviewed data collected from a larger study of Hispanics’ experiences in applying to and studying in doctoral programs at a university in the southwest. Participants were recruited by snowball sampling techniques and were interviewed after filling out a questionnaire. This was a small study (n = 24), the majority of respondents were Mexican American, and only two identified as not having at least one Mexican American parent. Participants were evenly divided between men and women. In this study, 38% of participants stated that they chose their doctoral university based on location, i.e., to be close to their family (although for some that meant parents and for others that meant children). Twenty-five percent stated that they chose the university because of the faculty. Seventeen percent stated that they chose the university (a public institution) over private universities because it was less expensive. Thirteen percent chose the university because the climate of the campus appeared to be friendly to Hispanics, whereas other universities were not as integrated. Twenty-nine percent of respondents were only accepted into one university, so 71% actually had no choice in attending a different university. 91 This study, because it only involved post-graduate students may be more applicable to the population of students applying to DI programs. However, it should be noted that this was a very small study, and that the students in this study already have masters’ degrees, which is not the case for the majority of DPD graduates.

A caveat to these studies and their findings is that Hispanic Americans are not a completely homogenous group within the US, and both the country of origin as well as geographical location in the US can affect culture. 99
In 2011 the AND published a practice paper titled “Addressing Racial and Ethnic Health Disparities”, which provided recommendations on how the dietetics field and individual dietitians can improve health care to minorities. Some of the recommendations they espoused were to (1) mentor minorities in academic settings, and (2) prioritize recruiting minorities into the field of dietetics who are currently underrepresented. Based on the current statistics for DI placement, it appears that this is one area of education where prioritizing minorities and mentoring them could increase their chances of being matched to a DI and being able to become an RD. However, there needs to be more data available about the characteristics of students who apply to a DI, who are accepted to a DI, and who are not accepted to a DI, in order to determine how best to prioritize and mentor underrepresented minorities.

Because there is no qualitative published literature examining the factors that dietetics students consider when applying to a DI, we undertook a survey of students who were applying to DI this year of next year. We targeted states that had higher populations of Hispanics in an effort to see if there is a difference in decision making criteria between Whites and Hispanics. The findings should be of interest to dietetics educators and policy makers across the nation and may change how DI programs in highly Hispanic areas review internship applications and rank applicants who are fluent in Spanish.
We surveyed nutrition and dietetics students who were within 12 months of graduation from a DPD program and/or were applying to a DI in order to examine the factors that they consider when applying to DI programs. The California State Polytechnic University, Pomona Institutional Review Board approved the study protocol (see Appendix A) and all participants were provided written informed consent prior to participating in the study (see Appendix B). Study participants who did not give informed consent or were under 18 years of age were not allowed to take the survey. No survey respondents clicked “No” on the question about informed consent and all survey respondents indicated that they were at least 18 years of age.

Procedure

This study was aimed at students who were within 12 months of graduation from DPD programs in the states of California, Oregon, Washington, Arizona, New Mexico, and Texas. Students from other states or other majors were not recruited. In order to reach this population, the principle investigator (PI) contacted each of the 40 DPD directors in those states via email using contact information available on the ACEND website. Emails were sent out on March 10th, March 19th, and April 7th of 2015. The emails explained the purpose of the survey and included the survey link. The DPD directors were asked to distribute the link to their students who were within 12 months of graduation and the students could complete the survey independently. Students at CPP were given the survey link via Blackboard and asked to complete the survey. Some students were given the survey link in person at the California Dietetic Association Annual Conference in Riverside, CA on April 9th and 10th of 2015.

We selected states in the southwest, more specifically Arizona and Texas; because there is a large population of Hispanics, including Mexican Americans and recent immigrants, in those states who have similar cultural backgrounds and face similar cultural pressures that may translate to geographical limitations on DI selection. New Mexico was included because it has a large population of Hispanics, but a
lower percentage of recent immigrants. We also included students from two states with smaller Hispanic populations to provide a contrast to the largely Mexican American/Hispanic student concentrations in the southwest. Inclusion of students from Oregon and Washington was intended to allow us to determine if the factors are intrinsic to the Hispanic culture, or are more related to the economics of southern California, or just the appeal of the geography, weather, and lifestyle of southern California that influence intern application decisions.

SurveyMonkey.com was used to create and distribute the survey tool. We chose a web-based survey tool because of the anticipated faster response time and because it was less expensive than mail-based surveys. It was also determined to be less time-consuming than a phone survey. Lastly, it was easy to distribute the survey link via email and we would not need to have access to students’ physical addresses or phone numbers. Electronic surveys are a fast, economical way of retrieving data, as long as the population being surveyed is familiar with the technology. A comparison of fax, mail, and electronic surveys in a university setting indicated that electronic survey are fast and get a higher response rate than the other two methods. The population that was studied was assumed to be young and accustomed to using computers because they are in undergraduate university programs. Studies indicate that White females are more likely to respond to surveys than males or persons of color, but that effect is attenuated by student engagement and perceived importance of the topic being studied. This approach was predicted to help increase the response to the survey because most of the DPD students can be assumed to be White females, but may yield a decreased response rate from minorities and males. Recruiting program directors was thought to be beneficial to help increase the response rates for those universities who participated, but the DPD program directors may also have acted as a gatekeeper because if they did not provide the survey link to their students we had no other method of reaching those students. It is postulated that some DPD directors did not forward the link to their students which could explain why there was no response any students from some universities.
Instrument Development

The survey was created on SurveyMonkey.com after a literature review. Please see Appendix B for a copy of the survey. Questions were written to obtain basic demographic information as well as socio-economic status. Because other studies have shown that students who are the first in their family to attend a university are more likely to attend universities close to home, we asked if other family members had graduated from a university.\textsuperscript{90} Other researchers indicated that parents who have immigrated from other countries are less likely to encourage their children to attend universities that are far away from home, therefore we asked if one or both parents were born in the US. GPA was assessed to determine if there is a difference in GPA between ethnicities. Likert scales of agreement/disagreement on a 7 point scale were developed to examine the following: if students were more willing to stay close to their family or move to get an education or DI; if their parents were supportive of education in general; attending any university regardless of location; if they would risk not being matched to a DI rather than move; and if the students felt they needed to consider their parents’ needs when making decisions.\textsuperscript{105} The survey tool was piloted to the current class of CPP’s DI to assess face validity after initial IRB approval.

Variables

Independent variables included race, number of parents born outside of the US, DPD university attended, and current living arrangements (with parents, spouse, significant other, or children). Dependent variables included individual questions on willingness to relocate and a scale created from some of the individual questions on willingness to relocate. The number of family members who have graduated from university was compare to ethnicity as the dependent variable, but also compared to willingness to relocate at the independent variable.
Sample Size Determination

According to the ACEND website, there are 4,429 students enrolled in 40 DPD programs in California, Arizona, New Mexico, Texas, Oregon and Washington.\textsuperscript{106} If we assume that 25\% of them are within 12 months of graduation (seniors), the total population of possible participants in the study is 1,107.\textsuperscript{(4429/4=1107).} Our target sample size was 270 respondents, which would provide for a confidence interval (CI) of 5 and a confidence level of 90\% which were determined to be reasonable parameters to interpret the results as being reflective of the larger untested population.

Using a CI of 5 and a confidence level of 90\%:

\[
\text{Sample size} = \frac{Z^2 \cdot (p) \cdot (1-p)}{c^2} = \frac{1.645^2 \cdot (0.5) \cdot (0.5)}{0.05^2} = 270
\]

To help increase the response rate, subjects were offered the opportunity to submit their email address to be eligible for a drawing for one of four gift cards; however this was completely optional. Email addresses were not connected to the survey data in any way.

Statistics

IBM SPSS (Statistical Package for Social Sciences) version 22 was used for data analysis. Data was analyzed using Chi-square to determine if results were statistically significant. The student’s \textit{t-test} was used to compare independent variables such as ethnicity and willingness to relocate. ANOVA was used to compare DPD university location and willingness to relocate. Multiple regression analysis was used to determine the effectiveness of a model of the following factors and their ability to predict willingness to relocate for DI:

1. Geographic area of residence as represented by DPD school
2. Ethnicity, including responses to speaking a second language at home and being first generation American
3. Socio-economic status as determined by stated income and if other family members had graduated from university
4. Living arrangements: living with parents, significant other, or own children

5. GPA

Participants

We used a convenience sample of DPD students in the states of Washington, Oregon, California, Arizona, New Mexico, and Texas, with a modified snowball sampling technique using DPD directors to reach out to the students. The total number of respondents who initiated the survey was 214. Of those respondents, 18 (8.41%) were excluded from the analysis because they completed less than one half of the survey, leaving 196 participants. This translated into a 90% confidence level and CI of 6.

Our respondents were primarily White females (60.7% of respondents), which is in accordance with the current statistics for demographics of the field. The second largest ethnic group was Hispanics (n=37, 19.3% of respondents), and the third largest group was Asian/Pacific Islander (n=19, 9.9% of respondents). Because we had only 7 African American respondents (3.6% of respondents), 1 Native American (0.5% of respondents), and 9 mixed ethnicities (4.7% of respondents), we collapsed those ethnicities into an “other” category for the analysis. Additionally, we collapsed all ethnicities into two variables (Hispanic and non-Hispanic) for some of the statistical analysis. We were unable to separate the responses from the males, because there were only 9 total males who finished the survey, which does not allow for statistical analysis. Participants’ ages varied from 19 years to 57 years. The mean age was 25.55 years and the median age was 24.0 years. Two participants declined to provide their age.
Table 3

*Characteristics of Survey Respondents*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Valid Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>9</td>
<td>4.6%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Female</td>
<td>184</td>
<td>93.9%</td>
<td>95.3%</td>
</tr>
<tr>
<td>Not specified</td>
<td>3</td>
<td>1.5%</td>
<td>0%</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>121</td>
<td>61.7%</td>
<td>62.4%</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>19</td>
<td>9.7%</td>
<td>9.8%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>37</td>
<td>18.9%</td>
<td>19.1%</td>
</tr>
<tr>
<td>Black</td>
<td>7</td>
<td>3.6%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Native American</td>
<td>1</td>
<td>0.5%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Multiple</td>
<td>9</td>
<td>4.6%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Not specified</td>
<td>2</td>
<td>1.0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

The majority of our respondents were from universities in California. Only two universities, CPP and California State University, San Bernardino (CSUSB) had responses large enough to analyze separately. Because of the small number of responses from outside of CPP and CSUSB we grouped the other DPD universities by their geographic location. Southern California universities included Point Loma Nazarene University in San Diego (n = 8), CSU Long Beach (n = 2), Loma Linda University (n = 1), Pepperdine University (n = 1), and CSU Northridge (n = 9). We grouped CSU Fresno (n = 2), CSU Cal Poly San Luis Obispo (n = 12), UC Berkeley (n = 2), and CSU Chico (n = 11) as Northern California Universities. All other universities were grouped by state initially, and then by region for statistical analysis. Eleven students did not provide the name of the university they attended, or the response was not clear.
### Table 4

*Frequencies and Percentages of Participants’ DPD Universities by Geographic Area*

<table>
<thead>
<tr>
<th>University</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cal Poly Pomona</td>
<td>41</td>
<td>22.16%</td>
</tr>
<tr>
<td>CSU San Bernardino</td>
<td>27</td>
<td>14.59%</td>
</tr>
<tr>
<td>All other Southern California</td>
<td>21</td>
<td>11.35%</td>
</tr>
<tr>
<td>All Northern California</td>
<td>29</td>
<td>15.70%</td>
</tr>
<tr>
<td>Washington and Oregon</td>
<td>18</td>
<td>9.73%</td>
</tr>
<tr>
<td>Arizona, New Mexico &amp; Texas</td>
<td>49</td>
<td>26.49%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>185</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
CHAPTER IV

RESULTS

Analysis of Respondents

We compared data from schools by location, and when possible we separated CPP and CSUSB from the other Southern California universities to analyze the differences within the Southern California region. Over 50% of the survey respondents from CPP and CSUSB are first generation American, or have parents that are immigrants to this country. In comparison, the percentages of students from other regions to have non-native-born parents were much smaller, 11-35%. This includes other universities in Southern California (35%). The results are shown in Table 5, and are statistically significant as demonstrated by Chi-square.

Table 5

<table>
<thead>
<tr>
<th>University</th>
<th>n</th>
<th>Parents born in US</th>
<th>Parent(s) immigrants</th>
<th>X²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPP</td>
<td>41</td>
<td>20</td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSUSB</td>
<td>27</td>
<td>12</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All other Southern California</td>
<td>20</td>
<td>13</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern California</td>
<td>29</td>
<td>23</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pacific Northwest</td>
<td>18</td>
<td>16</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southwest</td>
<td>47</td>
<td>37</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>182</td>
<td>121</td>
<td>61</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

21.028  0.001
When we examined students’ parents’ birthplace by ethnicity it was evident that Hispanics accounted for a large percentage of students born to immigrants (43.9%), but that other ethnicities, especially Asians and Pacific Islanders were also contributing to the effect (see Table 6). When we excluded all other ethnic groups except Whites and Hispanics, we found that Hispanics accounted for 70.7% of first generation students. These results were statistically significant as indicated by Chi-square. Students whose parents were immigrants to this country were more likely to be the first in their family to attend college (39.4%, compared to 21.1% for students with native-born parents) and this was statistically significant (Chi-square = 7.178, p-value = 0.007)

Table 6

Chi-Square Analysis of Having Immigrant Parents by Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>n</th>
<th>Parents born in US</th>
<th>Parent(s) immigrants</th>
<th>X²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>&lt;0.001</strong></td>
</tr>
<tr>
<td>White</td>
<td>119</td>
<td>107</td>
<td>12</td>
<td>95.991</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>37</td>
<td>8</td>
<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>19</td>
<td>1</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Native American</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Ethnicity</td>
<td>9</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>192</td>
<td>126</td>
<td>66</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Only 8.3% of respondents indicated that they lived alone (3 respondents did not answer questions about living arrangements). Of those who lived with others, 36.8% lived with parents, 23.8% lived with siblings, 20.2% lived with a spouse, 11.9% lived with a significant other, 6.2% lived with their children, 3.1% with grandparents and 21.8% with non-related relatives. Table 7 describes the responses to the survey question on living arrangements. According to the Chi-square results, the only statistically significant differences in living arrangements between students in Southern California and the other geographical regions surveyed
Table 7

*Chi-square Analysis of Living Arrangements by University Geographical Area*

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Southern California</th>
<th>All other Regions</th>
<th>X²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live with Parents</td>
<td></td>
<td></td>
<td></td>
<td>28.334</td>
<td>0.009</td>
</tr>
<tr>
<td>Yes</td>
<td>69</td>
<td>51</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>114</td>
<td>38</td>
<td>76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Live with Spouse</td>
<td></td>
<td></td>
<td></td>
<td>0.871</td>
<td>0.351</td>
</tr>
<tr>
<td>Yes</td>
<td>36</td>
<td>15</td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>147</td>
<td>74</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Live with Significant Other</td>
<td></td>
<td></td>
<td></td>
<td>3.822</td>
<td>0.051</td>
</tr>
<tr>
<td>Yes</td>
<td>21</td>
<td>6</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>162</td>
<td>83</td>
<td>79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Live with Children</td>
<td></td>
<td></td>
<td></td>
<td>0.316</td>
<td>0.574</td>
</tr>
<tr>
<td>Yes</td>
<td>10</td>
<td>4</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>173</td>
<td>85</td>
<td>88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Live with Grandparents</td>
<td></td>
<td></td>
<td></td>
<td>2.990</td>
<td>0.084</td>
</tr>
<tr>
<td>Yes</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>177</td>
<td>84</td>
<td>93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Live with non-related roommate</td>
<td></td>
<td></td>
<td></td>
<td>13.247</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Yes</td>
<td>39</td>
<td>9</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>143</td>
<td>80</td>
<td>63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Live alone</td>
<td></td>
<td></td>
<td></td>
<td>2.121</td>
<td>0.145</td>
</tr>
<tr>
<td>Yes</td>
<td>16</td>
<td>5</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>167</td>
<td>84</td>
<td>83</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
were that students in southern California universities were more likely to report living with parents than students in northern California or other states surveyed (57.3% vs. 19.1%), and students in Southern California were also less likely to live with non-related roommates than students in other areas surveyed (23.1% vs 76.9%). When comparing the results of living arrangements against ethnicity, fewer Hispanic students (5.4%) were married compared to non-Hispanic students (23.9%), Chi-square = 6.292, p-value = 0.12.

Comparison of respondent ages and living arrangements are provided in Table 8. Students who were married were older than those who were not married (p-value <0.001). Respondents who reported living with children were also older than those who did not (p-value <0.001). Respondents who lived with parents were younger than those who did not (p-value <0.05). There was no statistical difference in ages of respondents when comparing if they lived with significant others or not.

Table 8

*Respondent Age and Living Arrangements (means and standard deviations)*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Meet Criteria</th>
<th>Do Not Meet Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Live with Parents</td>
<td>71</td>
<td>24.28 (3.979)</td>
</tr>
<tr>
<td>Live with Spouse</td>
<td>37</td>
<td>29.54 (7.770)</td>
</tr>
<tr>
<td>Live with Significant Other</td>
<td>23</td>
<td>27.52 (7.483)</td>
</tr>
<tr>
<td>Live with children</td>
<td>12</td>
<td>31.83 (8.310)</td>
</tr>
</tbody>
</table>

_t-test_ range -2.483 to 5.058. * p-value < 0.05, ** p-value <0.001

Willingness to Relocate Scale

Informed by the literature about factors that influence student choices in higher education\textsuperscript{13, 14, 85-98}, we chose nine items to combine to create a factor scale indicating willingness to relocate. The questions we included were part of a section of a seven point Likert agree/disagree scales on the survey. We chose the following items initially for our willingness to relocate scale:
• It is important that the DI be close to my parents
• It is important that the DI be close to my significant other
• It is important that I am able to live at home during the DI
• I can only apply to DIs that allow me to remain where I currently live
• I cannot leave my family for the nine to ten months that a DI would last
• I am willing to risk not getting matched to a DI than to relocate

The following questions were also included in the scale, after the scores were inverted:
• It is important that I am able to move away from home
• I am willing to move anywhere to get an internship
• My family would support my decision to relocate to further my career

Table 9

Final Component Matrix for Willingness to Relocate Scale

<table>
<thead>
<tr>
<th>Component</th>
<th>Loading</th>
<th>( \alpha )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Willingness to Relocate Scale</td>
<td></td>
<td>0.810</td>
</tr>
<tr>
<td>DI must be close to my spouse/significant other</td>
<td>0.625</td>
<td></td>
</tr>
<tr>
<td>Can only apply to DI that allows me to live at home</td>
<td>0.726</td>
<td></td>
</tr>
<tr>
<td>It is important that I live at home during DI</td>
<td>0.879</td>
<td></td>
</tr>
<tr>
<td>Cannot leave family for 10 months</td>
<td>0.804</td>
<td></td>
</tr>
<tr>
<td>Risk not getting DI rather than relocate</td>
<td>0.813</td>
<td></td>
</tr>
<tr>
<td>Willing to move anywhere for DI (inverted)</td>
<td>0.772</td>
<td></td>
</tr>
<tr>
<td>Family would support my relocation for DI (inverted)</td>
<td>0.611</td>
<td></td>
</tr>
</tbody>
</table>

The result was a scale with a minimum possible score of 9 and a maximum score of 63. The higher the score the less likely the student was to relocate for internship. Confirmatory factor analysis with varimax rotation indicated that the questions about remaining close to parents or being able to move away from
home were not significant contributors to the scale and they were removed. The resultant seven item validated relocation scale was confirmed by factor analysis and principal component analysis and found to be reliable with a Cronbach’s Alpha score of 0.81. The final scale score range was a minimum of seven and a maximum of 49, with a higher score continuing to indicate decreased likelihood of relocation for DI (See Table 9).

Comparisons of Means

We initially compared the means of GPA between Hispanic respondents and other ethnicities to determine if there was a difference. The mean GPA for non-Hispanic students was 3.53 (SD 0.352) and the GPA for Hispanic students was 3.33 (SD 0.416). Students t-test indicated that this difference was statistically significant (p-value <0.011).

Table 10

Effect of Participant Characteristics on Validated Willingness to Relocate Scale (means and standard deviations)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Meet Criteria</th>
<th>Do Not Meet Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Live with Parents</td>
<td>71</td>
<td>27.20 (10.646)</td>
</tr>
<tr>
<td>Live with Spouse</td>
<td>37</td>
<td>33.70 (11.093)</td>
</tr>
<tr>
<td>Live with Significant Other</td>
<td>21</td>
<td>29.19 (12.254)</td>
</tr>
<tr>
<td>Live with children</td>
<td>11</td>
<td>40.64 (8.394)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>37</td>
<td>26.05 (10.472)</td>
</tr>
<tr>
<td>Parents immigrated to US</td>
<td>65</td>
<td>27.88 (10.281)</td>
</tr>
<tr>
<td>First in family to attend college</td>
<td>52</td>
<td>25.43 (11.480)</td>
</tr>
<tr>
<td>Speak Spanish at home</td>
<td>30</td>
<td>25.77 (10.865)</td>
</tr>
</tbody>
</table>

*t-test* range -1.023 to -5.796 and 0.003 to 1.360. *** p-value <0.001
To compare the effects of the independent variables on the willingness to relocate, we created dichotomous variables for Hispanic ethnicity, parent immigrating to the US, being first in the family to graduate from college, living with parent, spouse, significant other, and children, and speaking Spanish at home. Using this statistical analysis, only living with a spouse or children was significant for decreased willingness to relocate for a DI. The results from the t-tests comparing means of the willingness to relocate scale we created and the independent variables are seen in Table 10.

To compare student location on willingness to relocate we used univariate ANOVA after grouping DPD universities by location: Southern California (San Diego and greater Los Angeles area), Northern California, Pacific Northwest (Oregon and Washington) and the Southwest (Arizona, New Mexico, and Texas). In this analysis students who lived in Southern California were significantly less likely to relocate for DI. Results are shown in Table 11.

| Table 11  |
|-----------------|-----------------|-----------------|-----------------|
| **DPD Location and Willingness to Relocate Scale (ANOVA)** | | | |
| **DPD Location** | **n** | **Mean** | **SD** |
| Southern California | 87 | 30.07 | 10.738 |
| Northern California | 29 | 20.66 | 10.164 |
| Pacific Northwest | 17 | 22.88 | 10.799 |
| Southwest | 47 | 23.30 | 12.561 |

Note: F Score (3, 176) = 7.424  p <0.001.

**Prediction Factors for Willingness to Relocate**

The validated relocation scale was used as a dependent variable in a model to determine the significant predictors of willingness to relocate for DI. Predictive variables were grouped in themes as follows:

Step 1: Ethnicity (Hispanic or not), age, second language, parents born in US.
Step 2: Income, first in family to attend university.

Step 3: GPA

Step 4: DPD university location

Step 5: Living situation (parents, spouse, significant other, and children)

Results from the hierarchical multiple regression analysis are in Table 12. The most significant predictors of willingness to relocate were younger age, having other family members who had graduated from college, living in Northern California, and not living with a spouse or significant other or children. Of these factors, living with a spouse had the highest $\beta$ score ($\beta=0.318$). The second highest $\beta$ score was for age ($\beta=0.270$). Both of these factors were statistically significant with a $p$-value <0.001. The third highest $\beta$ score was for living with children ($\beta=0.212$) and the fourth highest was living with a significant other ($\beta=0.206$). The results for the third and fourth factors were statistically significant with a $p$-value <0.05, however this $p$-value is less strong than the $p$-value seen with the previous two factors. All four of these factors predicted a higher score on the willingness to relocate score, which can be interpreted as less willingness to apply to DI located out of the student’s present geographical area. We see smaller effects with a lower $\beta$, but still a significant $p$-value <0.05 for being the first in the family to graduate from college ($\beta=0.053$) and for living in Northern California ($\beta=0.183$). Each of these factors had a smaller effect on willingness to relocate; however, these factors increased the participants’ willingness to relocate for DI. Lastly, attending university in the Pacific Northwest increased willingness to relocate, but the results were not significant at the $p<0.05$ level. The final model predicting relocation for DI accounted for 36.5% of the variation in willingness to relocate ($F$ score 17, 127 = 5.877).
### Table 12

*Separate Regression Equations by Variables on Willingness to Relocate*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SEB</th>
<th>β</th>
<th>ΔR^2_{adj}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td>0.199***</td>
</tr>
<tr>
<td>Hispanic Ethnicity</td>
<td>-2.330</td>
<td>2.959</td>
<td>-0.081</td>
<td></td>
</tr>
<tr>
<td>Parents born outside of US</td>
<td>1.997</td>
<td>2.582</td>
<td>0.079</td>
<td></td>
</tr>
<tr>
<td>Speak Spanish at home</td>
<td>-2.268</td>
<td>3.112</td>
<td>-0.073</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.548</td>
<td>0.162</td>
<td>0.270***</td>
<td></td>
</tr>
<tr>
<td>Speak language other than Spanish at home</td>
<td>2.780</td>
<td>3.727</td>
<td>0.062</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td>0.028***</td>
</tr>
<tr>
<td>Income</td>
<td>-0.181</td>
<td>0.267</td>
<td>-0.053</td>
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</tr>
<tr>
<td>First in family to graduate college</td>
<td>-3.831</td>
<td>1.834</td>
<td>-0.053**</td>
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</tr>
<tr>
<td>Step 3</td>
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<td></td>
<td></td>
<td>-0.006***</td>
</tr>
<tr>
<td>GPA</td>
<td>1.666</td>
<td>2.272</td>
<td>0.054</td>
<td></td>
</tr>
<tr>
<td>Step 4</td>
<td></td>
<td></td>
<td></td>
<td>0.019***</td>
</tr>
<tr>
<td>Attend CSUSB</td>
<td>1.338</td>
<td>2.743</td>
<td>0.040</td>
<td></td>
</tr>
<tr>
<td>Attend DPD in So Cal (Not CPP or CSUSB)</td>
<td>0.690</td>
<td>3.323</td>
<td>0.016</td>
<td></td>
</tr>
<tr>
<td>Attend DPD in No Cal</td>
<td>-5.640</td>
<td>2.687</td>
<td>-0.183**</td>
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</tr>
<tr>
<td>Attend DPD in Pacific Northwest</td>
<td>-6.080</td>
<td>3.275</td>
<td>-0.154*</td>
<td></td>
</tr>
<tr>
<td>Attend DPD in Southwest (not CA)</td>
<td>-3.216</td>
<td>2.325</td>
<td>-0.122</td>
<td></td>
</tr>
<tr>
<td>Step 5</td>
<td></td>
<td></td>
<td></td>
<td>0.125***</td>
</tr>
<tr>
<td>Live with Parents</td>
<td>3.310</td>
<td>2.168</td>
<td>0.137</td>
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<tr>
<td>Live with Spouse</td>
<td>9.165</td>
<td>2.495</td>
<td>0.318***</td>
<td></td>
</tr>
<tr>
<td>Live with Significant Other</td>
<td>7.119</td>
<td>2.706</td>
<td>0.206**</td>
<td></td>
</tr>
<tr>
<td>Live with Children</td>
<td>10.230</td>
<td>3.693</td>
<td>0.212**</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* Adjusted R^2 = 0.365; F (17, 127) = 5.877, p < 0.001. *p<0.1, **p<0.05, ***p<0.001
CHAPTER V

DISCUSSION

The lack of diversity in the field of dietetics has been a point of concern for decades within the AND, however efforts to increase the number of minorities have not shown significant results. Expert opinion in the field had identified the competition for DIs and the shortage of DIs as possible explanations for this situation, however no study had directly examined whether minorities approached the DI application process differently than Caucasians.

Our survey consisted of mostly Caucasian females, which is consistent with the current ethnicity of the field of dietetics and also consistent with expectations for survey response. This was not unexpected, but the small number of responses from non-Caucasians limits our statistical power for some analyses and we were unable to analyze males or ethnic groups outside of Whites and Hispanics separately. The low number of responses from Hispanics may limit the ability to derive generalizable conclusions from our data. Response rates from the Pacific Northwest (Oregon and Washington) were also low and may not be representative of the population of dietetics students in those states. We did receive a good response from southern California universities as 48% of responses were from southern California, however the results may be skewed because of the very high response rates of CPP (22.2% of total respondents and 46.1% of southern California respondents) and CSUSB (14.6% of total respondents and 30.3% of southern California respondents).

Research comparing Hispanic students to Whites generally indicated that Hispanic students had lower GPAs. Our results showed a significantly lower GPA among Hispanics compared to other ethnicities as the literature would suggest. The total difference in GPA was only 0.2 points, or only 5% of the possible variance in GPA. The results of our survey may be affected by the small sample of Hispanics, self-selection of respondents, or it is possible that students with lower GPAs changed majors in anticipation of not getting an internship.

Other studies had shown that Hispanic students were less likely to relocate for education. We did not see these results in the present study; however the results may have been confounded by
other factors, including the low response rate of Hispanics in our survey. The mean age of Hispanic respondents was the same as non-Hispanic respondents, and there was no significant difference in the percentage of Hispanics living with significant others or children compared to non-Hispanics; however, there may be an effect from marital status. Hispanic students were far less likely to be married than non-Hispanic students which may have negated the effect of ethnicity on willingness to relocate. Additionally, living with a spouse was a significant predictor of an unwillingness to relocate for a DI, and since Hispanic respondents were less likely to be married, this could explain why we saw no impact of ethnicity on the willingness to relocate for a DI.

Another possible explanation for the difference in our results from the literature is that most of the studies we found were examining college choice among high school students\textsuperscript{14, 85, 86, 90}, whereas our study was targeted to students who had already completed at least three years of university studies. There may be a difference in a student’s level of comfort with relocation after a period of time at the university level. There are also fewer options for local DI programs compared to local college choices, which may increase a student’s acceptance of relocation for education.

Our results differed from the literature in that having parents who were immigrants to this country had no effect on the willingness to relocate.\textsuperscript{14, 15, 90, 97} This could be explained by self-selection. Students whose parents were less supportive of education would possibly not made it beyond community college, or have chosen a major and profession that did not require additional training beyond a four-year degree.\textsuperscript{86, 90, 97} Also, although among our survey respondents having one or more parent immigrate to the US increased the possibility of being the first in the family to attend college, it should be noted that 60.6\% of survey respondents who had one or more immigrant parent were not the first to graduate from college, and this may also have affected our results. Again, these parents may have been more supportive of education, or the other family members who had already attended university may have provided the support. It makes sense that parents who have one child or family member graduate from college are going to be more willing to make sacrifices for their other children to attend college. It seems reasonable that students that have made it this far in a competitive major such as dietetics would have parents who are supportive of their efforts and understand the importance of the DI portion of their education. Martinez found in her
survey of Hispanic parents that they were willing to support their children moving for education if they saw
the need.\textsuperscript{15}

Although we were not able to find literature to support the hypothesis that students living in
southern California would be less likely to move for a DI, this was an observation that we and other
educators in the region had informally noted. This survey was an opportunity to investigate the effect of
living in southern California on the willingness to relocate for a DI and we were able to find statistical
support for this belief. Survey respondents who lived in southern California scored much higher on the
willingness to relocate scale, which indicated a stronger preference to remain in southern California for a
DI. This is despite the fact that southern California students were more likely to agree that California DIs
were more competitive. Further research should be done to validate these results and examine if this
phenomenon is also observed in other regions of the country.

We were able to identify strong predictors of the willingness and unwillingness to relocate for a
DI. While Hispanic ethnicity did not have the anticipated effect, we did see a significant effect for age,
marital status, and living with children. As potential DI applicant age increased, the willingness to relocate
decreased. This may be a result of being more settled in a community. Being married also significantly
decreased the willingness to relocate for a DI. This makes sense as a married couple would either have to
live apart for the nine to ten months that most DI programs last or the couple would have to move together,
requiring the spouse to change jobs. As most DI programs are not paid, and DI programs that are housed in
university settings require interns to pay tuition, this can be a financial hardship. We did see a predictive
effect of living with a romantic partner but not being married on decreased willingness to relocate for a DI,
but the effect was not as strong as it was for married survey respondents. This may reflect that couples who
are not married are less settled and more able to relocate together, or that the relationship is not as strong
and that one partner may feel more willing to leave the relationship to improve their own professional
future. The effect of having children was that those respondents who did have children were less likely to
want to relocate for a DI. This may also suggest that students with children are more settled into homes
with partners who cannot leave their jobs, limiting the geographical range of DI programs to which these
students are able to apply. We did not identify literature about the role of marital status or having children

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in college selection, because the majority of the studies we found were based on high school students. Ramirez’s in depth interviews with Hispanics enrolled in doctoral programs quoted only one respondent who mention the impact that moving would have on her children, but that respondent also mentioned an extended family in the quote.91

**Limitations and Delimitations**

The survey design of the study leads to several possible limitations. One limitation is that all information was self-reported, and data such as ethnicity, income, geographic location, and parental birthplace was not able to be verified. Because the survey was self-administered, there was no way for respondents to clarify any unclear questions. We did pilot the survey to a small group of interns currently completing their DIs to assess face validity, however the survey tool has not been validated. Because the study was a survey and not an interview, we could not delve deeper into motivations behind the question responses.

We relied on a convenience sampling method for this survey, which introduces the potential for selection bias. The recruitment method was a modified snowball technique using DPD directors to contact students. If a DPD director did not publicize the study we did not get responses. In fact, we did not get responses from 37.5% of the DPD programs we contacted. Because we do not have a true sampling frame there is no way to characterize the non-respondents. It is possible that students who responded to the survey may not be representative of those who did not respond. Students who responded may be more motivated to go above and beyond, to apply for DIs out of their geographical area, or may be stronger students who feel they do not need to apply to multiple DIs because they have better chances of being accepted into a DI close to their homes.

A last limitation of the current survey is that we did not achieve the desired response rate. Our goal was for 270 completed surveys, and we only received 196 surveys that had enough information to include them in our statistical analysis. Our final response rate was 73% of our desired response rate.
While we ended with a confidence level of 90% and CI of 6, the smaller than desired response rate limits the strength of the statistical analyses we were able to run, especially for non-Caucasian respondents.

Delimitations to the study include the limited geographical area we surveyed. We included only students in the states of Washington, Oregon, California, Arizona, New Mexico, and Texas. Survey results may not be generalizable to other regions of the country. We can assume that the majority of the Hispanic respondents to our survey were Mexican American, although we did not collect that data, so results also may not be generalizable to other groups of Hispanics such as Hispanics of Puerto Rican descent, Cuban descent, or other Latin American countries.
CHAPTER VI

CONCLUSION

The present study examined the factors DPD students consider when considering or applying to a DI. Based on our statistical analysis we came to the following conclusions:

1. We were unable to reject the null hypothesis which stated that there is no difference between ethnicities in willingness to relocate for a DI.

2. We were able to reject the null hypothesis which stated that there was no difference in willingness to relocate for a DI between students in southern California and students in northern California, the Pacific Northwest, and the Southwest. Students in southern California were less likely to be willing to relocate for a DI than students in the other geographical regions.

3. We were unable to reject the null hypothesis which stated that there was no difference in willingness to relocate for DI between Hispanic students whose parents had immigrated to the US and Hispanic students who had been born in this country.

4. We were able to reject the null hypothesis that there were no significant predictors of willingness to relocate for a DI, and identified the following factors as significant predictors: age, living with a spouse or significant other, living with one’s children, and geographical location, specifically living in southern California.

Suggestions for further research include a larger study involving more students with a larger geographical range to improve the statistical power and generalizability of the data. A second study would also help to validate the survey tool. Partnering with an organization that has access to student email addresses may increase the response rate, as investigators would be able to contact the potential respondents directly instead of relying DPD directors to publicize the study to the students in their programs. If possible a study in conjunction with the Dietetics Internship Centralized Application Process (DICAS), a website that allows DPD students to apply to multiple DI programs at the same time, would be ideal. Currently almost every DI program uses DICAS to receive DI applications, so a partnership with DICAS should allow access to all students applying to DI in a given year. If researchers have a sampling
frame via DICAS, they could randomize DI applicants to receive the survey which could also increase the validity of our results.

Additional avenues for further study include qualitative research involving students applying to DIs. A research study involving one-on-one, in-person or telephone interviews would allow for greater exploration of the thought process that DPD students use when deciding on which DI programs to which they will apply, although the in depth interview requirement limits the sample size of most qualitative studies which limits their generalizability. Qualitative studies are less able to provide numerical data that allow statistical analysis which can limit the findings, although with a large enough sample size a researcher could code data by themes and quantify it in that manner. As a follow up to this study, focus groups could also be used to generate the type of qualitative data needed to explain some of the findings.
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APPENDIX A

IRB APPROVAL MEMORANDUM

Date: 04-Mar-2015
To: Rachel S. Flores, BS, RD
    College of Agriculture, Human Nutrition and Food Science
From: Dr. Jeffrey S. Mio
    Chair, IRB (Human Subjects Protection Committee)
cc: IRB file
    Bonnie Burns-Whitmore, MPH DrPH RD
Subject: Protocol number 14-0435

Your new protocol entitled "Factors Affecting Internship Choice among Dietetics Students" has been reviewed by the Cal Poly Pomona Institutional Review Board (IRB) by the Expedited process. It was found to be in compliance with applicable federal and state regulations and Cal Poly Pomona policies regarding the protection of human subjects used in research. Thus, the Cal Poly Pomona IRB grants you approval to conduct the research. On its behalf, I thank you for your adherence to established policies meant to ensure the safety and privacy of your study participants. You may wish to keep a copy of this memo with you while conducting your research project.

You may initiate the project as of 04-Mar-2015 and it must be completed by 03-Mar-2016. Federal regulations limit the IRB approval of studies for up to one year. If you find the need to renew your protocol, please remember to submit a request to the IRB at least a couple of weeks before this end date to ensure continuous human subjects protection and IRB approval. It would be appreciated that you advise the IRB upon the completion of your project involving the interaction with human subjects.

Applicable notes:

Approval is conditional upon your willingness to carry out your responsibilities as the principal investigator under University policy. Your research project must be conducted according to the methods described in the final approved protocol. Should there be any changes to your research plan as described, please advise the IRB, because you may be required to submit an amendment. Additionally, should you as the investigator or any of your subjects experience any "problems which involve an undue risk of harm or death, an acute adverse event, or an intervention which seems to be ineffective", you must immediately inform the IRB of the circumstances.

If you need further assistance, you are encouraged to contact the IRB administrator, Bruce W. Kennedy, MS RATG CMAR CPA at 909-865-4215.

The committee wishes you success in your research endeavors.

Jeffrey S. Mio PhD
Professor, Psychology
College of Letters, Arts, and Social Sciences
Online Survey Consent Form

Before taking part in this study, please read the information below.

This study is designed to gather information on what factors dietetics students consider when applying to internship programs. The study is being conducted by Rachel S. Flores, RD at California State Polytechnic University, Pomona. Participation or non-participation in this study will not influence the dietetic internship selection process at Cal Poly Pomona or any other internship in any way.

This study consists of a survey. Completing the survey will take approximately 10 minutes. The survey will ask basic demographic information, household financial information, and ask you to rank the importance of different aspects of internship programs and university choice.

Possible Risks and Benefits:
It is believed that participation in this survey will provide you with no more than minimal risk or discomfort, which means you should not experience any more difficulty than what would occur in your normal daily life. However, there is always the chance of an unexpected risk. The foreseeable risks in this study include an accidental disclosure of your information, or discomfort by answering questions that you were not expecting. We will minimize the risk of disclosure by not asking your name or any other personal information. Please note that you may skip any question or withdraw from the survey at any time without penalty. You will not receive any direct benefits from participating in this study, however your participation is intended to add to the knowledge about why some people choose some internship programs over others.

Confidentiality and Consent:
The investigator and staff involved with the study will not reveal the personal information which they collect about you. Any information that is obtained in connection with this study will be kept private and will be disclosed only with your permission or as required by law. Your identity will be kept confidential by removing all identifiers. You do not provide your name and we are not collecting IP addresses. You may provide your email address if you wish to be included in a drawing, but this is not required. Please be aware that the results, in either an anonymous or a summarized format, will likely be published or presented at conferences.

Results from the survey will be made available through published literature or by requesting it from the investigator Rachel S. Flores. The study has been approved by the California State Polytechnic University, Pomona Institutional Review Board (Protocol # 14-0435).

If you have further questions about this study or your rights, or if you wish to lodge a complaint or concern, you may contact Rachel S. Flores at rsfuton@cpp.edu or (909) 869-3801, Dr. Bonnie Burns-Whitmore at bburnswhitmo@cpp.edu; or the California State Polytechnic University, Pomona Institutional Review Board, at (909) 869-3713.

Consent:
I consent to participate in this study. I understand that my participation in this study is entirely voluntary and that I may refuse to participate or withdraw from the study at any time without penalty. Clicking on the survey link certifies that you are 18 years of age or older, that you understand the statements above, and that you freely consent to participate in the study.

1. I consent to participate in this survey.
   - Yes
   - No
APPENDIX B

SURVEY TOOL (Continued)

2. Which race/ethnicity best describes you? (Please choose only one.)
   ○ American Indian or Alaskan Native
   ○ Asian / Pacific Islander
   ○ Black or African American
   ○ Hispanic American
   ○ White / Caucasian
   ○ Multiple ethnicity / Other (please specify)

3. What is your age?

4. With which gender do you identify?
   ○ Female
   ○ Male
   ○ Other

5. What is the Zip Code of your permanent address?

6. How many adults (aged 18 years and over) live with you?

7. How many children (under 18 years of age) live with you?
8. I live in a:
   - House/Condo (own)
   - House/Condo (rent)
   - Apartment
   - Student Housing
   - Other (please specify)

9. Do you live alone?
   - Yes
   - No

10. Who do you live with?
    - Parents
    - Siblings
    - Spouse
    - Significant Other
    - Children
    - Grandparents
    - Non-related room mates

11. I speak a language other than English at home.
    - No
    - Yes. Please specify language.

12. My parents were born in the United States.
    - Yes
    - No - Mother
    - No - Father
    - No - Both parents
APPENDIX B.

SURVEY TOOL (Continued)

13. My main source of income is
   □ Job
   □ Savings
   □ Family support
   □ Financial Aid
   □ Scholarship
   □ Other (please specify)

14. My total household income is:
   □ <$10,000/year
   □ $10,001-$30,000/year
   □ $30,001-$60,000/year
   □ $60,001-$90,000/year
   □ $90,001-$100,000/year
   □ $100,001-$150,000/year
   □ $150,001-$200,000/year
   □ $200,001-$500,000/year
   □ >$500,000/year
   □ I don’t know

15. Has anyone else in your immediate family graduated from a college or university?
   □ No
   □ Yes. Please specify how many.

16. What university are you currently attending, or did you attend to complete your DPD courses?
   □ [Enter University Name]

17. What is your GPA? (Please specify to 2 decimal places, if possible).
   □ [Enter GPA]
18. On a scale of 1-7, with 1 being not important at all and 7 being extremely important, rank the importance of the following characteristics in deciding which internship to apply to.

<table>
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<th>6</th>
<th>Extremely Important</th>
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<td>Close to my family (parents)</td>
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<td></td>
<td></td>
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<tr>
<td>Close to my family (spouse or significant other)</td>
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<tr>
<td>Ability to live at home</td>
<td></td>
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<tr>
<td>Ability to move away from home</td>
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</tr>
</tbody>
</table>

19. On a scale of 1-7, with 1 being strongly disagree and 7 being strongly agree, please mark your agreement with the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>1</th>
<th>3</th>
<th>Neither agree nor disagree</th>
<th>5</th>
<th>6</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>My parents feel that education is important</td>
<td></td>
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</tr>
<tr>
<td>My parents encouraged me to attend the university of my choice, no matter where it was</td>
<td></td>
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<tr>
<td>My parents encouraged me to apply only to local universities</td>
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</tr>
<tr>
<td>I am willing to move anywhere to get an internship</td>
<td></td>
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</tr>
<tr>
<td>I can only apply to internships that allow me to live where I currently live</td>
<td></td>
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<tr>
<td>I would choose an internship that required me to move if it were financially possible</td>
<td></td>
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</tr>
<tr>
<td>I cannot leave my family for the 1-10 months that an internship lasts</td>
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</tbody>
</table>
**APPENDIX B**

**SURVEY TOOL (Continued)**

### 20. On a scale of 1-7, with 1 being strongly disagree and 7 being strongly agree, please mark your agreement with the following statements.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>2</th>
<th>3</th>
<th>Neither agree nor disagree</th>
<th>5</th>
<th>6</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The internships in California are more competitive than in other states.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I would rather commute for 1-4 hours a day than relocate.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>My family would support my decision to relocate to further my career.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Receiving for an internship would be an adventure.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Receiving for an internship would be stressful.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I am willing to risk not getting an internship rather than relocate.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>When making decisions it is important to take my parents' needs into account.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

### 21. How many internships did you (or are you planning to) apply to?

- [ ]

### 22. Thank you for your participation. If you would like to be entered into a drawing for a $25 gift card to Starbucks, you may enter your email here. Your email will not be connected with your survey responses.

- [ ]

---

Thank you for participating in our survey.

If you wish, you may print this page and keep it for your records.

__________________________________________________________ participated in a research survey investigating the decision-making process of students when applying to internal internships administered by Rachel D. Moore, MD via surveymonkey.com.

---

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APPENDIX C

SUMMARY OF ARTICLES ON HISPANIC HEALTH, DIET, AND HEALTHCARE ACCESS

DISPARITIES

<table>
<thead>
<tr>
<th>Authors, Title, Journal</th>
<th>Objectives</th>
<th>Methods</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Alegria et al. The Role of Patient Activation on Patient-Provider Communication and Quality of Care for US and Foreign Born Latino Patients. J Gen Intern Med.</td>
<td>Examine differences in patient activation between Hispanics born in US and those born in other countries. Higher scores on a Patient Activation Measure should have better communication with their health care provider and better care</td>
<td>Stratified random phone survey targeting Latinos. Acculturation determined by language of interview, agreement or disagreement for statements about control of health and relationship with healthcare provider.</td>
<td>N= 884. US natives had higher SES and education and were more likely to have insurance. Higher fluency in English was associated with lower satisfaction with healthcare provider and perceiving lower quality of care.</td>
</tr>
<tr>
<td>Beck et al. Trends in Sugar-Sweetened Beverage and 100% Fruit Juice Consumption Among California Children. Acad Pediatr..</td>
<td>Examine trends on consumption of juice and sugar-sweetened beverages in California children.</td>
<td>Data from CA Health Interview Survey (2003, 2005, 2007, and 2009). Parental reporting of children’s consumption.</td>
<td>N varied from 7150-9359 through the years. Latinos had higher consumption of SSB. SSB decreased among all groups, but juice consumption increased among Hispanics over time. Juice and SSB consumption inversely related to SES.</td>
</tr>
<tr>
<td>Bogart et al. Parental and Home Environmental Facilitators of Sugar-Sweetened Beverage Consumption Among Overweight and Obese Latino Youth. Acad Pediatr.</td>
<td>Explore factors in Hispanic homes that encourage juice and SSB intake in overweight and obese children</td>
<td>Participants recruited from LAUSD clinic (identified by nurse) and middle school (already in an obesity study). Semi-structured interviews. Report of beverages in a typical week.</td>
<td>N = 110 (50 parent-child dyads). Children reported they drank SSB because it was available at home, parents said because they were inexpensive.</td>
</tr>
<tr>
<td>Call et al. Barriers to Care in an Ethnically Diverse Publicly Insured Population: Is Health Care Reform Enough? Medical Care.</td>
<td>Examine barriers to care among various ethnic groups in Minnesota.</td>
<td>Mail and telephone survey from random sample of adults enrolled in Minnesota Health Care Plans. Asked about types of barriers: logistical, provider-related, and informational. Provide-related included lack of trust, language, and MD not understanding culture.</td>
<td>Main ethnicities were white, black, Native American, Hispanic, Somali and Hmong. Hispanics scored higher than White, black and Native American on provider-related barriers, especially language and culture, but not as high as Hmong and Somali.</td>
</tr>
</tbody>
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## APPENDIX C

### SUMMARY OF ARTICLES ON HISPANIC HEALTH, DIET, AND HEALTHCARE ACCESS

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<tr>
<td>Dirk de Heer et al. Barriers to Care and Comorbidities Along the US-Mexico Border. Pub Health Reports.</td>
<td>Compare barriers to healthcare between people with and without comorbid conditions.</td>
<td>Stratified probability sample of households in El Paso, TX.</td>
<td>N = 1002. People with comorbidities were older, more likely to report transportation, financial, and language barriers.</td>
</tr>
<tr>
<td>Gerchow et al. Latina Food Patterns in the United States. Nursing Res.</td>
<td>Identify common and unique food patterns in Latinas and how they may affect health. Identify where more research needs to be done.</td>
<td>Qualitative metasynthesis of studies of food changes with immigration. Reviewed 1220 articles, included only 15 (1991 excluded after abstract screen). Coded for obesity, food patterns, population, migration, acculturation, barriers and facilitators to healthy eating.</td>
<td>Most studies were focus groups, also interviews. Food in US seen as not healthy, full of chemicals, cheaper to get unhealthy food, not enough time to eat real meals, some participants avoided government assistance programs because of documentation status. Eating in restaurants was a luxury in home country. Finances an issues. Lack of nutrition information, don’t understand food labels. Family food preferences take precedence over healthy food choices. (other studies show that acculturation makes diet less healthy).</td>
</tr>
<tr>
<td>Hubert et al. Health Status, Health Behaviors, and Acculturation Factors Associated with Overweight and Obesity in Latinos from a Community and Agricultural Labor Camp Survey. Prevent Med.</td>
<td>Examine relationship between acculturation and health/obesity, identify acculturation and SES factors that contribute to poor health and obesity.</td>
<td>Cross-sectional survey aimed at comparing cancer risk factors and screening practices. Self-reported data from phone interviews in community. In person interviews for agricultural labor camps.</td>
<td>N = 1005, majority born in Mexico. Second generation were 1.6 times more likely to be obese compared to immigrants. Also significant relationship between speaking English at home and being obese. Among women BMI increased as SES decreased. BMI increased with number of years living in US. Dietary changes noted with increased acculturation.</td>
</tr>
</tbody>
</table>
## APPENDIX C

### SUMMARY OF ARTICLES ON HISPANIC HEALTH, DIET, AND HEALTHCARE ACCESS

#### DISPARITIES (Continued)

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<tbody>
<tr>
<td>Koniak-Griffin et al. Community Health Worker-led Lifestyle Behavior Intervention for Latina (Hispanic) Women: Feasibility and Outcomes of a Randomized Controlled Trial. Int J Nurs Stud.</td>
<td>Understand effectiveness of lifestyle intervention when using <strong>promotoras</strong>.</td>
<td>6 month intervention. Participants randomized to lifestyle intervention program or education on non-lifestyle topics such as earthquake preparedness.</td>
<td>Intervention group had weight loss and better knowledge of heart disease and diet. Intervention was not closely matched to control.</td>
</tr>
<tr>
<td>Mainous et al. Acculturation and Healthy Lifestyle among Latinos with Diabetes. Ann Fam Med.</td>
<td>Examine relationship between acculturation and healthy lifestyle among Hispanics with diabetes in US.</td>
<td>1999-2004 NHANES data. Looked only at DM and Hispanic. Acculturation determined by questions on language (what language do you think in, what language do you speak at home) and country of birth. Categorized as acculturated or not.</td>
<td>N = 467. Acculturation associated with more health insurance, having a PCP, exercising more in leisure time. Less acculturated had lower SFA intake and higher fiber. Results differed depending on how they categorized acculturated.</td>
</tr>
<tr>
<td>McGarry et al. Lower Hispanic Participation in Medicare Part D may Reflect Program Barriers. Health Affairs.</td>
<td>Determine potential disparities in accessing medications via prescription drug coverage in Medicare.</td>
<td>Data from National Health and Aging Trends Study. (Medicare beneficiaries 65 yrs+). Bivariate and multivariate analysis, logistic regression to estimate effect of race and ethnicity on having Part D.</td>
<td>N = 7257 (excluded “other” race and responses with missing info). Hispanics were more likely to not have insurance, despite being qualified for subsidies (69% vs 30% of Whites.) Whites were more likely to have secondary insurance from previous employment. (Hispanic 53% less likely). Hispanics 30% less likely to have Part D.</td>
</tr>
</tbody>
</table>
APPENDIX C

SUMMARY OF ARTICLES ON HISPANIC HEALTH, DIET, AND HEALTHCARE ACCESS

DISPARITIES (Continued)

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Pardasani and Bandyopadhyay. Ethnicity Matters: The Experiences of Minority Groups in Public Health Programs. J Cultur Diversity.</td>
<td>Assess experiences and concerns of low income and minority patients in publicly funded healthcare locations.</td>
<td>Survey of patients (White, Black, or Hispanic) at publicly-funded community health centers in Northern Indiana. (paper survey mailed out).</td>
<td>N=137, but no report of how many surveys were sent, so the response rate is unknown. They also don’t state if the survey was available in Spanish. 37% white, 23% Hispanic. Hispanic participants stated that there were no culturally relevant handouts, pictures did not represent their ethnicity and materials were not available in their preferred language. They felt that staff were less welcoming and didn’t listen to them. And they reported a lack of trust and respect.</td>
</tr>
<tr>
<td>Sharkey et al. Child Hunger and the Protective Effects of Supplemental Nutrition Assistance Program (SNAP) and Alternative Food Sources Among Mexican-Origin Families in Texas Border Colonias. BMC Pediat.</td>
<td>Examine risk of hunger and protective factors preventing hunger in children.</td>
<td>N = 470. 51% reported child hunger. Households experiencing hunger were more likely to shop at dollar stores and supercenters. 64% of respondents received SNAP, but those reporting hunger were more likely to state that the benefits were inadequate.</td>
<td></td>
</tr>
<tr>
<td>Shi et al. Racial and Socioeconomic Disparities in Access to Primary Care Among People with Chronic Conditions. J Am Board Fam Med.</td>
<td>Examine racial and SES disparities in access to medical care (specifically primary care) among people with chronic illness</td>
<td>Examined data from 2010 Medical Expenditure Panel Survey, which collected information on demographics, health conditions, use of medical services, medical expenses, insurance, and satisfaction with care.</td>
<td>Hispanics had less access to regular primary care compared to other ethnicities and were more likely to use hospitals as a usual source of care even for non-emergency situations.</td>
</tr>
</tbody>
</table>
## APPENDIX C

### SUMMARY OF ARTICLES ON HISPANIC HEALTH, DIET, AND HEALTHCARE ACCESS

#### DISPARITIES (Continued)

<table>
<thead>
<tr>
<th>Authors, Title, Journal</th>
<th>Objectives</th>
<th>Methods</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zeh et al. The Impact of Culturally Competent Diabetes Care Interventions for Improving Diabetes-Related Outcomes in Ethnic Minority Groups: A Systematic Review. Diabet Med.</td>
<td>Determine what components and implementation process are part of culturally competent interventions</td>
<td>Review of 11 studies. Only one included Hispanics.</td>
<td>Hispanics had a benefit in the study reviewed (decrease in A1c, lipids, and weight. Also fewer hospital admissions and ER visits). Length of intervention is important, as well as having highly educated, culturally competent staff.</td>
</tr>
<tr>
<td>Zhang et al. Racial/Ethnic Disparities in Health-Related Quality of Life among Participants with Self-Reported Diabetes from NHANES 2001-2010. Diabet Educator.</td>
<td>Investigate if there are racial and ethnic disparities in health-related quality of life (HRQOL) among diabetics</td>
<td>NHANES 2001-2010 data from those with self-reported diabetes, including 4 questions on HRQOL developed by the CDC. ANOVA and Chi-square tests run comparing HRQOL to demographic data.</td>
<td>Hispanics with DM had less education, higher levels of poverty, fewer had health insurance, described themselves as being less healthy, even though they were younger.</td>
</tr>
<tr>
<td>Ziemer et al. Mexican Immigrants’ Attitudes and Interest in Health Insurance: A Qualitative Descriptive Survey. J Immigrant Minority Health.</td>
<td>Assess interest in insurance coverage and preferences among Mexican Americans in North Carolina.</td>
<td>Focus group discussions with a 15 item topic guide to help standardize between groups. Questions about experiences with health care in US, perceived barriers,</td>
<td>N = 81, divided between 9 focus groups. Health insurance was seen as desirable to protect finances against catastrophic illness and the high cost of health care in the US, however cost, immigration status, and language were considerable barriers.</td>
</tr>
</tbody>
</table>
### APPENDIX D

**SUMMARY OF ARTICLES ON DIETETICS EDUCATION**

<table>
<thead>
<tr>
<th>Authors, Title, Journal</th>
<th>Objectives</th>
<th>Methods</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barr AB, Walters MA, Hagan DW. The Value of Experiential Education in Dietetics. J Am Diet Assoc. 2002;102:1458-1460.</td>
<td>Determine perceived value of internship to new RDs.</td>
<td>Mailed survey to dietitians who had passed exam in past 3 years.</td>
<td>45% response rate. N = 882. Most reported that the internship developed skills and confidence that they needed to be successful.</td>
</tr>
<tr>
<td>Greenwald HP, Davis RA. Minority Recruitment and Retention in Dietetics: Issues and Interventions. J Am Diet Assoc. 2000;100:961-966.</td>
<td>Examine why men and minorities are underrepresented in profession and identify how to recruit and retain</td>
<td>Phone survey of 83 minority and male new DTRs and RDs and 20 educators (directors of programs). All were initially recruited by ADA (no discussion of how – potential bias?)</td>
<td>Students: perseverance and study skills most important to success, as well as having mentors and support from family and peers. Educators: minorities hurt by lower grades (but good enough to get into DI if less competition) and reluctance to relocate for internship.</td>
</tr>
<tr>
<td>Olivares L, Burns-Whitmore B, Kessler L. Retaining Hispanic Dietetic Undergraduate Students through Mentoring and Professional Development. J Acad Nutr Diet. 2014;114:189-195.</td>
<td>Describe a program of mentorship to improve retention of Hispanic students</td>
<td>Pilot program with coordinator Students in program had increase social support, additional opportunities for work experience and mentorship.</td>
<td>Participants were highly satisfied with program and stated that it increased their competency and self-confidence.</td>
</tr>
<tr>
<td>Suarez VV, Shanklin CW. Minority Interns’ Experiences during their Dietetics Education and their Recommendations for Increasing Diversity in Dietetics: Findings from Structured Interviews. J Am Diet Assoc. 2002;102:1674-1677.</td>
<td>Assess experiences of minority students in undergraduate and internship, and their perception of the profession.</td>
<td>Recruited via Dietetics Educators or Practitioners practice group of the ADA at the national meeting in 1999. Interviewed 11 students in person or by phone.</td>
<td>Data doesn’t allow for comparison. 7 African Americans, 1 Hispanic. Main factors influencing DI application were location and cost. Some also noted that the strategy of applying to less competitive internships was helpful.</td>
</tr>
<tr>
<td>Authors, Title, Journal</td>
<td>Objectives</td>
<td>Methods</td>
<td>Results</td>
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<tr>
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</tr>
<tr>
<td>Castellanos et al. ¡Apoyamos la educación de nuestros hijas/os! How Mexican Parents’ College Knowledge, Perceptions, and Concerns Influence the Emotional and Behavioral Support of their Children to Pursue Higher Education. J Latin/Latin Am Studies.</td>
<td>Review factors that contribute to the parental support of higher education when parents are immigrants including: Does parental support differ for sons vs. daughters</td>
<td>Parents recruited from low performing high school and encouraged to participate by getting a college &amp; financial aid workshop afterward. Collected demographic data, SES, and info on their role in their children’s education. Also asked open-ended questions.</td>
<td>N=64, mostly mothers. All but 4 Mexican American, all but 5 born in Mexico. Parents indicated that money and scholarships were needed to help with college. Parents who thought their children were ready for college were more supportive. Parents often felt like they didn’t have much they could offer except emotional support.</td>
</tr>
<tr>
<td>Coccari and Javalgi. Analysis of Students’ Needs in Selecting a College or University in a Changing Environment. J Market High Ed.</td>
<td>How does university choice vary among ethnicities Focus on business students (compare them to other students)</td>
<td>Questionnaire administered by interview from population of university students in the Midwest.</td>
<td>N=1534, Hispanic n=43. Hispanic rated quality of faculty first, but then cost and location 2 and 3. No other ethnic group rated location above 7.</td>
</tr>
<tr>
<td>Gonzalez. College-Level Choice of Latino High School Students: A Social-Cognitive Approach. J Multicult Counsel Dev.</td>
<td>Examine and control for variables like SES, language spoken at home, and test scores on actual college enrollment.</td>
<td>NELS data. Students took survey at 10th grade and every 2 years after. Concentrated on 24 variables including demographics, learning experience, academic self-efficacy, education goals, test scores and factors influencing college choice (cost, location, etc.).</td>
<td>N=685. Factors associated with enrolling in a 4 year college included taking SAT/ACT, expectation to go to university, highest level of math taken, and frequency of discussing college with parents. Students chose community college because of easy admission standards and ability to live at home.</td>
</tr>
<tr>
<td>Kelpe Kern. College Choice Influences: Urban High School Students Respond. Community College J Res Pract.</td>
<td>Examine why minority students chose the schools they chose.</td>
<td>Descriptive survey of high school juniors in southwestern urban area. They used the “College Choice Influences Scale”, modified for high school. 20 high schools participated.</td>
<td>N = 1179. 21% Hispanic. 381 didn't provide income info. ½ gave income as &lt;40,000. Students disagreed with idea of attending college to get away from home (66.6%) or family (72.8%). Many indicated that they would be the first in their family to go to college. This study merely reported responses, not any relationship between responses.</td>
</tr>
<tr>
<td>Authors, Title, Journal</td>
<td>Objectives</td>
<td>Methods</td>
<td>Results</td>
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<tr>
<td>Lopez Turley. When Parents want Children to stay Home for College. Res High Educ.</td>
<td>Examine how parental preferences toward where children attend school affect the children’s educational outcomes.</td>
<td>Used data from National Education Longitudinal Survey. Compares number of colleges students applied to with parental information on if they wanted their children to stay at home</td>
<td>Parents who wanted their children to stay at home were more likely to have partial or no college education (no degree) and be Hispanic. The students from these parents were more likely to contribute to family finances and help with childcare. Foreign-born parents were also in this group.</td>
</tr>
<tr>
<td>Lopez Turley. College Proximity: Mapping Access to Opportunity. Sociol Educ.</td>
<td>Identify reasons why researchers should include “geography of opportunity” when looking at college choice.</td>
<td>Reviewed number of colleges within commuting distance and compared that to college choice for high school seniors. Also collected data on commuting time, gender, race, parental education, and household income.</td>
<td>Proximity of college increased the likelihood of applying to ANY college, not just the local ones, and more colleges increased application to 4 year institutions. Low income students benefit more from having local institutions. Test scores, ethnicity and parental education have a greater impact on application than proximity.</td>
</tr>
<tr>
<td>Martinez . (Re)considering the Role Familismo Plays in Latina/o High School Students’ College Choices. High School J.</td>
<td>Examine role familismo plays in Hispanic university choice. How do Hispanic students reconcile tension between familismo and college choice.</td>
<td>Semi-structured interviews with 20 Mexican American students in Texas, and 4 high school counselors.</td>
<td>Staying home for college gives student family support. Giving up a more prestigious college for a less valued school closer to home is a sacrifice the student makes for the family. If attending a school far away is seen as a sacrifice the student makes for the family, there may be parental support of the choice.</td>
</tr>
</tbody>
</table>
### APPENDIX E

#### SUMMARY OF ARTICLES ON HISPANIC SCHOOL CHOICE  (Continued)

<table>
<thead>
<tr>
<th>Authors, Title, Journal</th>
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</tr>
</thead>
<tbody>
<tr>
<td>O’Connor et al. Social Capital, Financial Knowledge, and Hispanic Student College Choices. Res High Educ.</td>
<td>Examine the role of social capital (obligations, information channels, and norms and sanctions in the community) in explaining the reasons why Hispanic students are over-represented at community college.</td>
<td>NELS data from White and Hispanic students who attended college at any point before 2000 and wanted to get bachelor’s degree. Study looked at geography, SES, and Social capital, including actions to investigate financial aid.</td>
<td>White students = 4213, Hispanic = 436 (236 Mexican American. Mexican American students were analyzed with other Hispanics and also separately, but no difference was seen, possibly because of small population size. Hispanics are more likely to enter community college and less likely to transfer to 4 year institutions. Graduation rate for Whites are 40% higher. Hispanics have lower SES and GPA. Hispanic parents were less likely to have savings for college, but students were more likely to seek financial aid information. Hispanics in populations with high Hispanic concentration were better at attending 4 year intuitions than those who lived in states with lower populations of Hispanics.</td>
</tr>
<tr>
<td>Ong et al. Competence Under Challenge: Exploring the Protective Influence of Parental Support and Ethnic Identity in Latino College Students. J Adolescence.</td>
<td>Explore if family support, ethnic identity and parental support allow students to do well even if they are of low SES.</td>
<td>“Ethnically diverse urban So Cal university”. Survey administered to freshman, and from there were recruited to a longitudinal study. Ethnic identity measured by questions about having a clear sense of ethnic background and talking to others to learn more about their ethnicity.</td>
<td>N=123, mostly Mexican American. Most lived with their parents as least when they started college. None of their parents had completed university. 56 students dropped out of the study, 45% because they were no longer enrolled in university. Students who indicated greater parental support have better GPAs regardless of SES. Also student with a stronger ethnic identity</td>
</tr>
</tbody>
</table>
## APPENDIX E

**SUMMARY OF ARTICLES ON HISPANIC SCHOOL CHOICE** (Continued)

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<tr>
<td>Ramirez. Examining Latinos/as’ Graduate School Choice Process: An Intersectionality perspective. J Hispanic High Educ.</td>
<td>Analyze school choice for doctoral students</td>
<td>In-depth interviews with 24 Hispanics who were in a doctorate program or had completed a program. 50% were female. 67% were in the social sciences, only 12% were in the “natural sciences”. Age 23-54.</td>
<td>38% chose a program that allowed them to stay close to home, often because of family (spouse/child or parents) or work restrictions. Other factors included faculty (25%), Finances (17%), campus ethnic climate (12%). 29% stated that they were only accepted to one program, possibly because of their GRE scores.</td>
</tr>
<tr>
<td>Rudolph et al. Filial Responsibility Expectations Among Mexican American Undergraduates: Gender and Biculturalism. J Hispanic High Educ.</td>
<td>Examine the impact of acculturation on family roles and expectations using gender and number of generations in America as proxy measures.</td>
<td>Surveyed undergraduates in a Texas university of Mexican descent only. Students identified as immigrants, first generation, or second generation plus. N=286. They also conducted 2 focus groups (n=20) to further develop topics from the survey. Sample questions: Children should live close to their parents, Children should monitor the quality of care given their parents, Children should familiarize parents with health services.</td>
<td>Respondents: 18% were immigrants and 38% were first generation. Women were more likely to identify with family obligations than men, but both were strongly positive. This is in a border town and may not apply to other areas.</td>
</tr>
<tr>
<td>Tornatzky et al. College Choice Among Latinos: Issues of Leaving Home. 2003. The Tomas Rivera Policy Institute.</td>
<td>Do Hispanics choose colleges using different criteria? Are they less likely to move out of state? Does gender affect the willingness to attend school?</td>
<td>Analysis of existing database (National Survey of Recent College Graduates) students in science and engineering.</td>
<td>Whites more likely to graduate from research universities and universities that offer PhD. Latinos more at universities the have only bachelor’s or master’s degrees. People who went to research universities were more likely to relocate. Students who were willing to relocate earned 12% more after graduation than those who were not.</td>
</tr>
</tbody>
</table>
### APPENDIX E

#### SUMMARY OF ARTICLES ON HISPANIC SCHOOL CHOICE  (Continued)

<table>
<thead>
<tr>
<th>Authors, Title, Journal</th>
<th>Objectives</th>
<th>Methods</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wells et al. Methodological Options and their Implications: An Example Using Secondary Data to Analyze Latino Educational Expectations. Res High Educ.</td>
<td>What are current common methods of analyzing data in educational research? How do results vary based on statistical method? What does this mean for research?</td>
<td>Review of studies of aspiration/expectations from secondary data.</td>
<td>Need to make clear why you chose your stats methods (binary, continuous, categorized) and what are the possible limitations of that method. When possible, analyze data in multiple ways to avoid simplistic conclusions.</td>
</tr>
<tr>
<td>Zebrak et al. Predictors of Intent to Pursue a College Health Science Education among High Achieving Minority 10th Graders.</td>
<td>Examine role of parental education and immigration status on educational outcomes. Examine role of self-efficacy as predictor of intent to study health science major after controlling for other factors.</td>
<td>Data from larger study: CURB. 8 high schools near Washington DC. Survey. Schools were high minority and low income areas.</td>
<td>Many participants didn’t know parental level of education (35%). Participants who did know parental level of education were more likely to state intention to enroll in health sciences (possibly parents are talking to them about the importance of education). Perceived parental support was significant predictor.</td>
</tr>
</tbody>
</table>
APPENDIX F

JOURNAL ARTICLE MANUSCRIPT SUBMISSION

Factors University Students Consider when Applying to a Dietetic Internship

Authors: Rachel S. Flores, RD, Bonny Burns-Whitmore, DrPH, RD, David R. Edens, PhD, and Michelle A. Wien, DrPH, RD.

Abstract word count: 247

Manuscript word count: 3664

Abstract

Background: There is no prior research that describes the factors that students enrolled in a Didactic Program in Dietetics (DPD) consider when applying to dietetic internships (DI). Research from high school students suggests that Hispanics may be less likely to apply to a DI that requires them to relocate.

Objective: To identify the influence of ethnicity, geographic location, and socioeconomic status on DPD student decisions for applying to a DI.

Methods: Internet-based survey using a convenience sample of DPD students (n=196) in the states of Washington, Oregon, California, Arizona, New Mexico, and Texas. Students within 12 months of applying to a DI were eligible to participate and were recruited via their DPD director.

Results: Hispanic ethnicity was not associated with a decreased willingness to relocate for a DI, but living with a spouse (p<0.001), child (p<0.05), or significant other (p<0.05) was, as was increasing age (p<0.001). Students who were the first in their family to graduate or those attending school in northern California were more willing to relocate for a DI (both p<0.05).

Conclusions: DPD students who are older, married, or have children are less likely to be willing to relocate for a DI. Older, married students who live in southern California may be less likely to be matched to a DI because of increased competition for DI openings. A larger study involving more DPD students with a larger geographical range or with a larger number of Hispanics is warranted to determine if they face similar pressures.

Keywords: Dietetic Internship, Hispanic, Education, Southern California, Geography
Introduction

Hispanics are underrepresented in the field of dietetics, as well as other medical professions.\textsuperscript{1-7} The Hispanic population in the United States has a higher prevalence of overweight and obesity, as well as chronic illnesses such as diabetes, heart disease, stroke, and hypertension compared to non-Hispanic Caucasians.\textsuperscript{8-12} The lack of practitioners with similar ethnic and cultural backgrounds to chronically ill Hispanics may be limiting the success of interventions to improve their health. Studies have shown that minorities are more satisfied with their health care when there is ethnic and language concordance with their healthcare practitioner.\textsuperscript{13-20} Culturally competent dietary interventions may be especially important for Hispanics, as there is not one monolithic Hispanic culture, but rather culture, lifestyle and foods eaten can vary depending on the country of origin and the degree of acculturation to the typical American lifestyle.\textsuperscript{21-24}

The Academy of Nutrition and Dietetics (AND) has been aware of the shortage of minorities in the profession for years and has advocated for an increase in the recruitment and retention of minorities, including Hispanics, in didactic programs in dietetics (DPD) and dietetic internships (DI), but with limited success.\textsuperscript{24-32} In 1997 Bryk and Soto reported that Hispanics represented only 1.7\% of Registered Dietitians (RDs).\textsuperscript{25} As of 2014 this percentage had increased only to 3\%, despite a nation-wide increase of Hispanics from 10.8\% to 17.1\% during that time frame.\textsuperscript{1-3} A few articles have suggested that the DI shortage may be adversely affecting the success of minorities in the field of dietetics.\textsuperscript{26, 27} For example, the number of Hispanic students graduating from a DPD in 2008 compared to 2002 increased by 74\%, but the number of Hispanic students accepted into a DI increased by only 8\%, reflecting an 86\% increase in Hispanic DPD graduates who did not continue on to a DI.\textsuperscript{27}

There are no published studies that have examined Hispanic students that are not accepted into a DI or became a RD at a rate comparable to their Caucasian counterparts. However a possible explanation could involve where the large concentrations of Hispanic students reside and the competition for DIs in those geographic regions. Hispanics make up 38.4\% of the ethnic diversity of California, which is significantly higher than the 17.1\% seen in the total United States (US) population.\textsuperscript{1} While there is a large number of DIs in California, there are insufficient numbers of DIs, preceptors, and internship openings to
meet the demand of California based DPD graduates. Also, the DIs in California receive a significant amount of applicants from outside the state, which increases the competition for California DIs.33

A review of the literature suggests that Hispanic students have fewer educational role models, have lower grade point averages (GPA) and are less likely to relocate away from their families for education.34-42 However, only two studies have directly examined the factors that influence the success of minority students in dietetics.26, 32 Suarez and Shanklin interviewed 11 minority interns (only one of whom was Hispanic) and asked them what they felt had contributed to their success. The dietetic interns identified that geographical and financial limitations were the two most important factors they faced when applying to a DI, and some participants specifically noted that they utilized a strategy of applying to less competitive DIs to increase their chances of acceptance.32 Greenwald and Davis surveyed 83 new RDs and Dietetic Technicians, Registered (DTRs) who were minorities, as well as 20 educators who were directors of Accreditation Council for Education in Nutrition and Dietetics (ACEND) accredited programs.26 The students identified persistence and study skills as necessary to their success, as well as having mentors and support from friends and family. The educators noted that minority students tended to have lower GPAs which could affect their acceptance into highly competitive DIs, and that minority students were reluctant to relocate for less competitive DIs.26

The purpose of this study was to examine the factors that DPD students in the western and southwestern states consider when deciding on the DI programs they will apply to in an effort to explain possible factors that might be preventing Hispanics who reside in high minority areas (e.g. southern California) from becoming RDs.

Methods

Participants

Students who were within 12 months of graduation from a DPD and/or were applying to DIs were recruited via a modified snowball sampling procedure. Forty DPD directors in Washington (n=4), Oregon (n=1), California (n=16), Arizona (n=2), New Mexico (n=2), and Texas (n=15) were contacted by the Principal Investigator by email and asked to publicize and distribute the electronic survey link to their
respective DPD students. These states were chosen to represent states with high and low percentages of Hispanic populations, and included states with higher percentages of recent immigrants and Hispanics who have multiple generations of residency in the US. The California State Polytechnic University, Pomona (CPP), Institutional Review Board approved the study protocol and all participants were provided written informed consent prior to initiating the survey.

**Survey Tool**

The survey was administered by SurveyMonkey.com and students accessed the survey link independently. Survey questions were written after a literature review and hypothesis creation. Questions were designed to collect demographic data including self-reported data on socioeconomic status and GPA. Respondents were given a series of questions on a seven-point Likert scale of liking/disliking or agreeing/disagreeing to determine their willingness to relocate for a DI, family support of education, willingness to risk not being matched to a DI rather than relocate, and the need to consider their parents’ needs when making DI application decisions. The survey tool was piloted to 13 current CPP interns to assess the survey tool’s face validity before the study began.

**Statistics**

Independent variables included race, number of parents born outside of the US, DPD university attended, and current living arrangements (with parents, spouse, significant other, or children). Dependent variables included individual questions on the willingness to relocate and a scale created from questions on the willingness to relocate.

Statistical Package for Social Sciences (SPSS) version 22 was used for data analysis. Qualitative data was analyzed using Chi-square and the student’s t-test was used to compare the difference between independent variables and dependent variables testing at α=0.05. ANOVA was used to compare DPD university geographical location and willingness to relocate. Multiple regression analysis was used to determine the effectiveness of a model of factors and their ability to predict the willingness to relocate for a DI.
Validation of Willingness to Relocate Scale

Based on a review of the literature\textsuperscript{34-41} we chose the following nine items from the Likert portion of the survey to combine to create a factor scale indicating the willingness to relocate.

- *It is important that the DI program be close to my parents*
- It is important that the DI be close to my significant other
- It is important that I am able to live at home during the DI
- I can only apply to DIs that allow me to remain where I currently live
- I cannot leave my family for the nine to ten months that a DI would last
- I am willing to risk not getting matched to a DI rather than relocate
- *It is important that I am able to move away from home*
- I am willing to move anywhere to get a DI
- My family would support my decision to relocate to further my career

The result was a scale with a minimum possible score of nine and a maximum score of 63. The higher the score the less likely the student was to relocate for a DI. Confirmatory factor analysis with varimax rotation indicated that the questions about remaining close to parents or moving away from home (in italics above) were not significant contributors to the scale and they were removed. The resultant seven item validated relocation scale with a minimum of seven and a maximum of 49, with higher score indicating less willingness to relocate, was confirmed by factor analysis and principal component analysis and found to be reliable with a Cronbach’s Alpha score of 0.81 (Table 1).

**Results**

Of the 214 DPD students who initiated the survey, 18 (8.4\%) completed less than half of the questions and were excluded from the analysis, leaving a final count of 196 participants, which translated into a 90\% confidence level and CI of 6. Respondents were primarily Caucasian (61.7\%) and female (95.3\%), and Hispanics were the second largest ethnic group (19.1\%). Participants’ ages ranged from 19 to 57 years (mean 25.6 years, median 24.0 years). The majority of respondents were from southern California
CPP (22.2%) and California State University, San Bernardino (CSUSB) (14.6%) were the two universities with the largest individual response rates which allowed for them to be analyzed separately. Other universities were grouped together geographically, initially by state and then by region. California universities were divided by north and south, with the dividing line between California State University, Northridge and California State Polytechnic University, San Luis Obispo. Eleven students did not respond to the question about their DPD university. Participant characteristics broken down by geographic area based on DPD university are shown in Table 2.

Over 50% of the survey respondents from CPP and CSUSB had at least one parent who was not born in the US, which is much larger than the other DPD regions surveyed (11-35%). The majority of Asian/Pacific Islander respondents (94.7%), and Hispanics (78.4%) had at least one parent who was not born in the US. (Chi-square = 95.991, p <0.001).

The mean GPA for the non-Hispanic DPD students was 3.53 (SD 0.352) and higher than the mean GPA for the Hispanic DPD students which was 3.33 (SD 0.416) (p <0.011).

DPD students in southern California universities were more likely to report living with parents than students in northern California or the other states surveyed (57.3% vs. 19.1%), (χ² = 28.334, p <0.009), and students in Southern California were also less likely to live with non-related roommates than students in other areas surveyed (23.1% vs 76.9%), (χ² = 13.247, p <0.001). When comparing the results of living arrangements against ethnicity, fewer Hispanic students (5.4%) were married compared to non-Hispanic students (23.9%), but this did not reach significance, (χ² = 6.292, p= 0.12).

To compare the effects of the independent variables on the willingness to relocate, we created dichotomous variables for Hispanic ethnicity, parent immigrating to the US, being first in the family to graduate from college, living with parent, spouse, significant other, and children, and speaking Spanish at home. Respondents that were living with a spouse or children had a decreased willingness to relocate for a DI (p<0.001). The results from the *t-tests* comparing the means of the willingness to relocate scale that we created are described in the next section and the independent variables are shown in Table 3.
Prediction Factors for Willingness to Relocate

The validated relocation scale was used as a dependent variable in a model to determine the significant predictors of the willingness to relocate for a DI. Predictive variables were grouped in themes as follows:

Step 1: Ethnicity (Hispanic or not), age, second language, parents born in US.

Step 2: Income, first in family to attend university.

Step 3: GPA

Step 4: DPD university location

Step 5: Living situation (parents, spouse, significant other, and children)

Results from the hierarchical multiple regression analysis are shown in Table 4. The most significant predictors of the willingness to relocate were younger age, having other family members who had graduated from college, living in northern California, and not living with a spouse or significant other or children. Of these factors, living with a spouse had the highest β score (β=0.318), followed by age (β=0.270) (both p<0.001), living with children (β=0.212, p<0.05) living with a significant other (β=0.206, p<0.05). All four of these factors predicted a higher score on the willingness to relocate score, which can be interpreted as less willingness to apply to DI located out of the student’s present geographical area. Being the first in the family to graduate from college (β=-0.053) and living in northern California (β=-0.183) (both p<0.05) predicted lower scores on the willingness to relocate scale, which is to say they increased the willingness of the respondent to relocate for a DI. The final model predicting relocation for DI accounted for 36.5% of the variation in willingness to relocate (F score 17, 127 = 5.877).

Discussion

Efforts to increase the number of minorities in the field of dietetics have not been effective over the past few decades and experts in the field have identified the shortage of DIs as a possible explanation.26
However, no prior study has directly examined whether minorities enrolled in a DPD approach the DI application process differently than Caucasians.

Our web-based survey respondents consisted of mostly Caucasian females, which was expected and is consistent with the current ethnicity in the field of dietetics and with our survey response expectations; however, it limits the statistical power for some analyses.\textsuperscript{2,43,44} Forty-eight percent of the responses were from DPD students in southern California, however the findings may be skewed because of the very high response rates of CPP and CSUSB.

Research suggests that Hispanic students have lower GPAs compared to Caucasians, which was consistent with the findings in this current study.\textsuperscript{36,40} The total difference in GPA was only 0.2 points, or only 5% of the possible variance in GPA. These results may be influenced by the small sample size of Hispanics (n=37), self-selection of respondents, or it is possible that students with lower GPAs changed majors in anticipation of not getting a DI.\textsuperscript{45}

Previous studies have shown that Hispanic high school students were less likely to relocate for education.\textsuperscript{34-42} We did not see these results in the present study; however the results may have been confounded by other factors, including the low response rate (19.1%) of Hispanics in our survey, or there may be an effect from marital status. Hispanic students were far less likely to be married (5.4%) than non-Hispanic students (29.3%) which may have negated the effect of ethnicity on the willingness to relocate. Further, our study was targeted to students who had already completed at least 3 years of university studies. There may be a difference in a student’s level of comfort with relocation after a period of time at the university level. There are also fewer options for local DI programs compared to local college choices, which may increase a student’s acceptance of relocation for education.

Having parents who were immigrants to this country had no effect on the willingness to relocate, which is inconsistent with the findings of Lopez Turley.\textsuperscript{35} This could be explained by self-selection. Students whose parents were less supportive of education would possibly seek a terminal degree from a community college or have chosen a major and/or profession that did not require additional training beyond a four-year degree. A second possible explanation could be that 60.6% of survey respondents who had one
or more immigrant parent and were not the first in their family to graduate from college, and this may also have affected our results.

Although there is no literature to support the hypothesis that students living in southern California would be less likely to move for a DI, this was an observation that educators in the region had informally noted anectdotaly. This survey was an opportunity to investigate the effect of living in southern California on the willingness to relocate for a DI. Survey respondents who lived in southern California scored much higher on the willingness to relocate scale, which indicated a stronger preference to remain in southern California for a DI, even though they were more likely to agree that California DIs were more competitive. Further research should be done to validate these results and to examine if this phenomenon is also observed in other regions in the US.

We were able to identify strong predictors of the willingness and unwillingness to relocate for a DI. While Hispanic ethnicity did not have the anticipated effect, we did see a significant effect for age, marital status, and living with children. As age increased, the willingness to relocate decreased, which may be a result of being more settled in a community. As expected, being married also significantly decreased the willingness to relocate for a DI. A married couple would either have to live apart for the nine to ten month DI duration or the couple would have to relocate together and, the spouse may need to seek other employment opportunities. There was a predictive effect of living with a romantic partner but not being married on decreased willingness to relocate for a DI, but the effect was not as strong as it was for married survey respondents. This may reflect that couples who are not married are less settled and more able to relocate together, or that the relationship is not as strong and that one partner may feel more willing to leave the relationship to improve their own professional future. The respondents who had children were less likely to want to relocate for a DI, which also suggests that students with children are more settled into their homes with partners who cannot leave their jobs, limiting the geographical range of DI programs to which these students are able to apply. We did not identify any previous studies about the role of marital status or having children in the college selection process, because the majority of the studies we found were based on high school students.
Limitations and Delimitations

The web-based survey design of the study leads to several possible limitations. One limitation is that all of the information was self-reported, and data such as ethnicity, income, geographic location, and parental birthplace was not able to be verified. Because the survey was self-administered, there was no way for respondents to clarify questions they found to be unclear. We did pilot the survey to 13 current CPP interns to assess face validity, however the survey tool has not been validated. Because the study was a survey and not an interview, there was no method to probe deeper into motivations behind responses to the questions.

We relied on a convenience sampling method for this survey, which introduces the potential for selection bias. The recruitment method was a modified snowball technique using DPD directors to contact their DPD students. If a DPD director did not publicize and distribute the study we did not get responses. In fact, we did not get responses from 15 of the 40 DPD programs we contacted (37.5%). Because we do not have a true sampling frame there is no way to characterize the non-respondents. It is possible that students who responded to the survey may not be representative of those who did not respond.

Delimitations to the study include the limited geographical area we surveyed and therefore the results may not be generalizable to other regions of the US. One can assume that the majority of the Hispanic respondents to this survey were Mexican American, although that data was not collected, so results also may not be generalizable to Hispanics of Puerto Rican descent, Cuban descent, or from other Latin American countries.

We did not ask if the DPD students were attending a university as a US resident or on a student visa, which may have impacted the results of having a parent not born in the US on their willingness to relocate. A student who has traveled to the US for education is more likely to have parents who will support them relocating again for a DI.
Conclusions

As DPD graduate numbers increase and outpace DI acceptance rates, students will continue to face increased competition for placement into a DI. While some students may be able to apply to less competitive DI programs to improve their chances of matching, this study illustrates that not every student will be able to use that strategy.

Suggestions for further research include a larger study involving more students with a larger geographical range to improve the statistical power and generalizability of the data. A study that includes a larger number of Hispanics would be ideal to increase the statistical strength of the observations. A second study would also help to validate the survey tool. Partnering with an organization that has access to student email addresses may increase the response rate, as investigators would be able to contact the potential respondents directly instead of relying upon DPD directors to publicize the study to the students in their programs. If possible a study in conjunction with the Dietetics Internship Centralized Application Process (DICAS) would be ideal. Currently almost every DI program uses DICAS to receive DI applications, so a partnership with DICAS should allow access to all students applying to DI in a given year. If researchers have a sampling frame via DICAS, they could randomize DI applicants to receive the survey which could also increase the validity of our results.

Additional avenues for further study include qualitative research involving students applying to DIs. A research study involving one-on-one, in-person or telephone interviews would allow for greater exploration of the thought process that DPD students use when deciding on which DI programs to which they will apply, although the in depth interview requirement limits the sample size of most qualitative studies which limits their generalizability. Alternatively, focus groups could also be used to generate the type of data, and reach a larger sample size. However, qualitative studies are less able to provide numerical data that allow statistical analysis which can limit the findings.

The results of this study can be used to help support and mentor DPD students who are less likely to be able to relocate for a DI program. Students who are married, older, or have children could be counseled on strategies to increase their chances of being matched with local DI programs, such as
improving their GPA or increasing their work and volunteer experience. These strategies could also be offered to minority DPD students to help increase their chances of matching to a DI program.

**Conflict of Interest:** None

**Funding Disclosure:** None
References


### Table 1

**Final Component Matrix for Willingness to Relocate Scale from survey questions**

<table>
<thead>
<tr>
<th>Component</th>
<th>Loading</th>
<th>$\alpha^*$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Willingness to Relocate Scale</td>
<td></td>
<td>0.810</td>
</tr>
<tr>
<td>DI must be close to my spouse/significant other</td>
<td>0.625</td>
<td></td>
</tr>
<tr>
<td>Can only apply to DI that allows me to live at home</td>
<td>0.726</td>
<td></td>
</tr>
<tr>
<td>It is important that I live at home during DI</td>
<td>0.879</td>
<td></td>
</tr>
<tr>
<td>Cannot leave family for 10 months</td>
<td>0.804</td>
<td></td>
</tr>
<tr>
<td>Risk not getting DI rather than relocate</td>
<td>0.813</td>
<td></td>
</tr>
<tr>
<td>Willing to move anywhere for DI (inverted)</td>
<td>0.772</td>
<td></td>
</tr>
<tr>
<td>Family would support my relocation for DI (inverted)</td>
<td>0.611</td>
<td></td>
</tr>
</tbody>
</table>

* Factor analysis and principle component analysis were used to compute the Cronbach’s alpha
Table 2

*Respondent Ethnicity, Gender, and Living Arrangements Organized by DPD Region*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Southern California</th>
<th>Northern California</th>
<th>Pacific Northwest</th>
<th>Southwest</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>40</td>
<td>45.5%</td>
<td>25</td>
<td>86.2%</td>
<td>15</td>
</tr>
<tr>
<td>Hispanic</td>
<td>24</td>
<td>27.3%</td>
<td>2</td>
<td>6.9%</td>
<td>0</td>
</tr>
<tr>
<td>Asian</td>
<td>14</td>
<td>15.9%</td>
<td>1</td>
<td>3.4%</td>
<td>1</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>6</td>
<td>6.9%</td>
<td>0</td>
<td>0%</td>
<td>18</td>
</tr>
<tr>
<td>Female</td>
<td>81</td>
<td>93.1%</td>
<td>29</td>
<td>100%</td>
<td>0</td>
</tr>
<tr>
<td>Living Arrangements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>51</td>
<td>57.3%</td>
<td>5</td>
<td>17.9%</td>
<td>2</td>
</tr>
<tr>
<td>Spouse</td>
<td>15</td>
<td>16.9%</td>
<td>6</td>
<td>21.4%</td>
<td>5</td>
</tr>
<tr>
<td>Significant other</td>
<td>6</td>
<td>6.7%</td>
<td>3</td>
<td>10.7%</td>
<td>4</td>
</tr>
<tr>
<td>Children</td>
<td>4</td>
<td>4.5%</td>
<td>1</td>
<td>3.6%</td>
<td>0</td>
</tr>
<tr>
<td>Roommate</td>
<td>9</td>
<td>10.1%</td>
<td>10</td>
<td>37.0%</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>89</td>
<td>100%</td>
<td>29</td>
<td>100%</td>
<td>18</td>
</tr>
</tbody>
</table>
Table 3

Effect of Participant Characteristics from Survey of DPD Students on Validated Willingness to Relocate for DI Scale (means and standard deviations)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Meet Criteria</th>
<th>Do Not Meet Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Live with Parents</td>
<td>71</td>
<td>27.20 (10.646)</td>
</tr>
<tr>
<td>Live with Spouse</td>
<td>37</td>
<td>33.70 (11.093)</td>
</tr>
<tr>
<td>Live with Significant Other</td>
<td>21</td>
<td>29.19 (12.254)</td>
</tr>
<tr>
<td>Live with children</td>
<td>11</td>
<td>40.64 (8.394)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>37</td>
<td>26.05 (10.472)</td>
</tr>
<tr>
<td>Parents immigrated to US</td>
<td>65</td>
<td>27.88 (10.281)</td>
</tr>
<tr>
<td>First in family to attend college</td>
<td>52</td>
<td>25.43 (11.480)</td>
</tr>
<tr>
<td>Speak Spanish at home</td>
<td>30</td>
<td>25.77 (10.865)</td>
</tr>
</tbody>
</table>

$t$-test range -1.023 to -5.796 and 0.003 to 1.360. *** p-value <0.001
Table 4

*Separate Regression Equations by Demographic, Socioeconomic and Geographic Variables on Willingness to Relocate*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SEB</th>
<th>β</th>
<th>ΔR² adj</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td>0.199**</td>
</tr>
<tr>
<td>Hispanic Ethnicity</td>
<td>-2.330</td>
<td>2.959</td>
<td>-0.081</td>
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</tr>
<tr>
<td>Parents born outside of US</td>
<td>1.997</td>
<td>2.582</td>
<td>0.079</td>
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</tr>
<tr>
<td>Speak Spanish at home</td>
<td>-2.268</td>
<td>3.112</td>
<td>-0.073</td>
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<tr>
<td>Age</td>
<td>0.548</td>
<td>0.162</td>
<td>0.270**</td>
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</tr>
<tr>
<td>Speak language other than Spanish at home</td>
<td>2.780</td>
<td>3.727</td>
<td>0.062</td>
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<tr>
<td><strong>Step 2</strong></td>
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<td></td>
<td>0.028**</td>
</tr>
<tr>
<td>Income</td>
<td>-0.181</td>
<td>0.267</td>
<td>-0.053</td>
<td></td>
</tr>
<tr>
<td>First in family to graduate college</td>
<td>-3.831</td>
<td>1.834</td>
<td>-0.053*</td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
<td></td>
<td>-0.006**</td>
</tr>
<tr>
<td>GPA</td>
<td>1.666</td>
<td>2.272</td>
<td>0.054</td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
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<td></td>
<td>0.019**</td>
</tr>
<tr>
<td>Attend CSUSB</td>
<td>1.338</td>
<td>2.743</td>
<td>0.040</td>
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</tr>
<tr>
<td>Attend DPD in So Cal (Not CPP or CSUSB)</td>
<td>0.690</td>
<td>3.323</td>
<td>0.016</td>
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</tr>
<tr>
<td>Attend DPD in No Cal</td>
<td>-5.640</td>
<td>2.687</td>
<td>-0.183*</td>
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</tr>
<tr>
<td>Attend DPD in Pacific Northwest</td>
<td>-6.080</td>
<td>3.275</td>
<td>-0.154</td>
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</tr>
<tr>
<td>Attend DPD in Southwest (not CA)</td>
<td>-3.216</td>
<td>2.325</td>
<td>-0.122</td>
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</tr>
<tr>
<td><strong>Step 5</strong></td>
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<td>0.125**</td>
</tr>
<tr>
<td>Live with Parents</td>
<td>3.310</td>
<td>2.168</td>
<td>0.137</td>
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<td>Live with Spouse</td>
<td>9.165</td>
<td>2.495</td>
<td>0.318**</td>
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</tr>
<tr>
<td>Live with Significant Other</td>
<td>7.119</td>
<td>2.706</td>
<td>0.206*</td>
<td></td>
</tr>
<tr>
<td>Live with Children</td>
<td>10.230</td>
<td>3.693</td>
<td>0.212*</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Adjusted R² = 0.365; F (17, 127) = 5.877, p < 0.001. *p<0.05, **p<0.001*