IPUMS INTERNATIONAL

Building the Wealth Indices

Index 2 has fewer levels of factor detail than index 1.

Index 1 | Index 2

Note: Each graph in this poster was constructed using data from Zambia's 2010 Census. We chose this sample for variable availability and data set size.

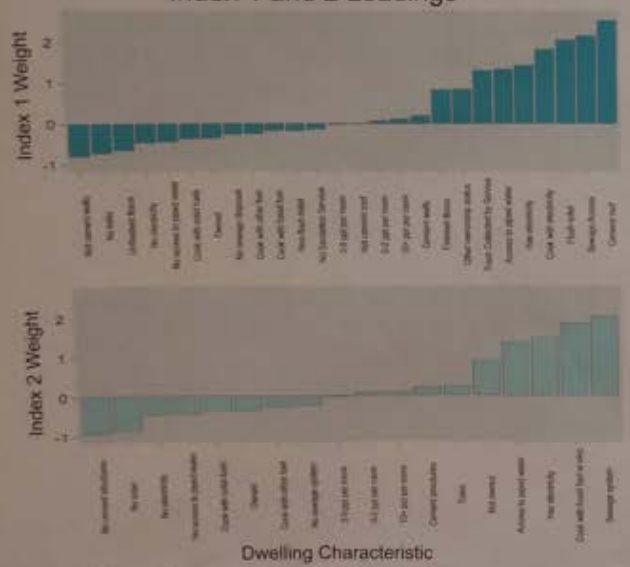
By collapsing the levels of detail, we increase the likelihood that the variable is available across many years and countries.

Machine Learning Recommendations

Multiple Component Analysis

We built the indices using Multiple Component Analysis (M.C.A.), a variant of Principal Component Analysis designed for use with categorical data. While Index 1 has more levels for each factor than Index 2, we see that M.C.A. gives similar weight to comparable factors across both indices. Levels representing the number of people per room in the household receive negligible weights, while access to sewage has a high positive weight and lack of access to electricity has a high negative weight. This M.C.A. behavior makes sense given what we know about wealth.

Index 1 and 2 Loadings



Overview

The International Public Use Microdata Series – International (IPUMS-I) database stores individual person records from 305 Censuses conducted in 85 countries over the last 70 years. In areas with limited economic data, can these Census records be used to create a reliable tool to measure household wealth? Further, given the irregularity in available data from Census to Census, can we intelligently choose factor combinations that allow for comparisons between years and countries? Building on the work of Minnesota Population Center (M.P.C.) researchers, we constructed a set of wealth indices using Multiple Component Analysis. Each wealth index employs a different number of factor levels. We then compared the wealth index rankings with other generally accepted measures of wealth to assess the performance of each index both in predicting wealth and matching the performance of other indices we constructed.

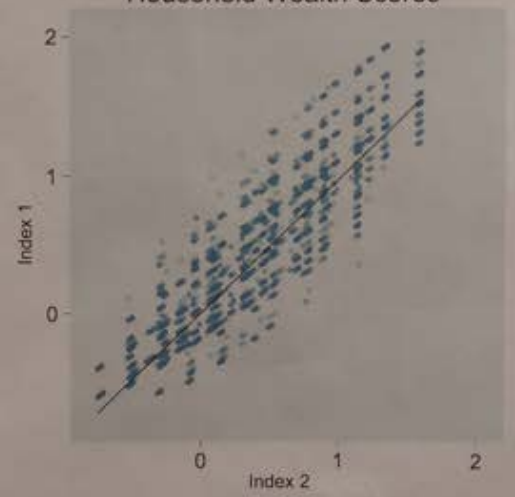
Conclusion

After assessment, we found our least detailed and most detailed wealth indices tend to rank houses similarly. Further, each wealth index compares favorably to other accepted measures of wealth. Given the wide variance in characteristics between households with the same wealth index score, we found the wealth indices unreliable when ranking individual houses. However, the wealth indices consistently identify larger group and population trends. Future research in this area may seek to apply these indices to many countries in the IPUMS-I database to identify global and regional trends.

Comparing Wealth Scores Between Indices

As the plot below demonstrates, Index 1 and Index 2 scores of household wealth are strongly correlated. Yet, the plot also shows what Index 2 loses in the pursuit of comparability across many data sets. The heavy clustering of households around the same score in Index 2 (vertical striations) where Index 1 has wider variance demonstrates the loss of household level detail caused by combining factor levels for Index 2.

Household Wealth Scores



Index Performance Compared to Accepted Wealth Indicators

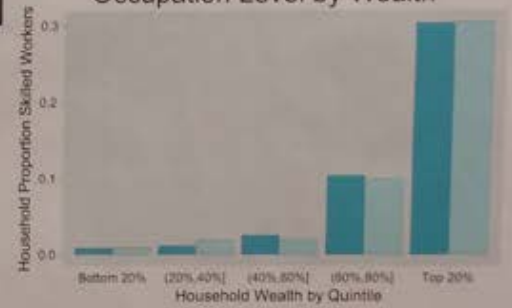
To validate the indices' efficacy in predicting wealth, we compared the wealth index scores to 4 accepted indicators of economic status:

- Educational attainment
- Current school attendance
- Fertility rates
- Occupation by industry and by skill level[1]

The plots below assess how our 2 wealth indices' scores compare to occupation data from the same Census. Index 1 and Index 2 ranked houses similarly by occupation level. Yet, we see the average trends between indices match our expectations more closely than some of the individual household ranks. For example, many individuals with low-level occupations were placed in high wealth households by both indices. This supports our conclusion: both indices are better suited for identifying population trends than for ranking individual households.

[1] We used M.P.C.'s interpretation of the International Standard Classification of Occupations (ISCO) to define highly skilled occupations.

Occupation Level by Wealth



Wealth Score by Occupation

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WINONA STATE UNIVERSITY

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Incumbency Advantage:
The Relationship Between Months Served and Percentage of Vote Attained for Appointed U.S. Senators

Research question:

Is there a relationship between the the amount of months served by an appointed U.S. Senator, and the percentage of vote that appointee received in his or her election?

Abstract

Incumbency is one of the most researched and debated topics within the realm of political science. However, the research regarding appointed U.S. Senators and the incumbency advantage is not nearly as vast. In this research, the relationship between the number of months served as an appointed U.S. Senator and the percentage of vote that appointed senator received in their initial election is studied. It is hypothesized that the longer an appointee has served before an election, the higher percentage of vote that appointee will receive. To study this, data were compiled from the United States congressional archives consisting of appointed U.S. Senators, the percentage of vote those appointed senators won in their election after their appointment, as well as the number of months served between their appointment and election. Discovering a relationship between months served and the vote percentages received will add to the scholarship of incumbency, and more specifically, how the discipline of political science views appointed U.S. Senators.

Methodology

I started my research by compiling the data of all U.S. Senators that were appointed. Luckily, the United States Senate website listed all the appointed U.S. Senators dating back to 1913, and was instrumental to my research. After collecting the data, I removed the appointed U.S. Senators that chose not to seek election after their appointment. I then researched each appointed U.S. Senator to determine the day they were appointed, the year they ran for their initial election, and how much of the vote they received in that election. To do this, I researched data collected on U.S. Senate elections by the Office of the Clerk of the U.S. House of Representatives, which has compiled all U.S. House and Senate election data dating back to 1920. After removing Senators that perished during their appointed term, the sample size of the test was 90.

While recording the months served, I rounded to the nearest month from the date of the appointee's appointment. Additionally, if an appointee served less than one month, that sample was given a value of one (1), whether the appointee served one day or 29 days. This was necessary, as appointments of U.S. Senators are sudden by nature. After the data were collected, my research consisted of one independent variable and one dependent variable, which allowed me to perform a bivariate analysis.

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
V3 * V2	90	100.0%	0	.0%	90	100.0%

Hypothesis

h0=There is no relationship between the amount of time served and the percentage of vote won in an appointed U.S. Senator's initial election.
h1=The more time served as an appointee, the higher percentage of vote won in an appointed U.S. Senator's initial election.

Variables

V1 (Independent Variable)=Months served
V2(Dependent Variable)=Percentage of vote won

To test the null hypothesis, I performed a Chi-Square test. The Chi-Square test will allow me to test if a relationship exists between the independent and dependent variables.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3176.250[a]	3096	.154
Likelihood Ratio	595.953	3096	1.000
N of Valid Cases	90		

a. 3219 cells (100.0%) have expected count less than 5. The minimum expected count is .01.

Results

After entering the data into SPSS and establishing both my null and alternative hypotheses, I ran a Chi Squared test to determine whether there was a relationship between the months an appointed U.S. Senator served and the percentage of vote that appointee received in their election.

The Chi-Square test found a significance of .154, which is over the .05 needed to claim the relationship statistically significant, and subsequently, reject the null hypothesis.

The null hypothesis then is not rejected, because the amount of months served is *not* statistically significant from zero. Additionally, I was unable to support my alternative hypothesis, as there existed no positive relationship between the independent and dependent variable.

Conclusions

While the data showed no significance between the number of months served and the percentage of votes won, that does not conclusively determine that there is no kind of incumbency advantage for appointed U.S. Senators. The incumbency advantage consists of many characteristics ranging from fundraising advantages to name recognition, or even a Senator's enterprise of staff to assist constituents. Many of these characteristics would be difficult to get empirical data for, however if done, might shine more light on the incumbency advantage for appointed United States Senators.

Sources

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WINSTATS REU Researchers

Purpose

- Provide an interactive dashboard to observe the development status of all countries for all years in which data is available
- Visualize population trends for countries all over the world
- Visualize changes in educational attainment and employment

Data

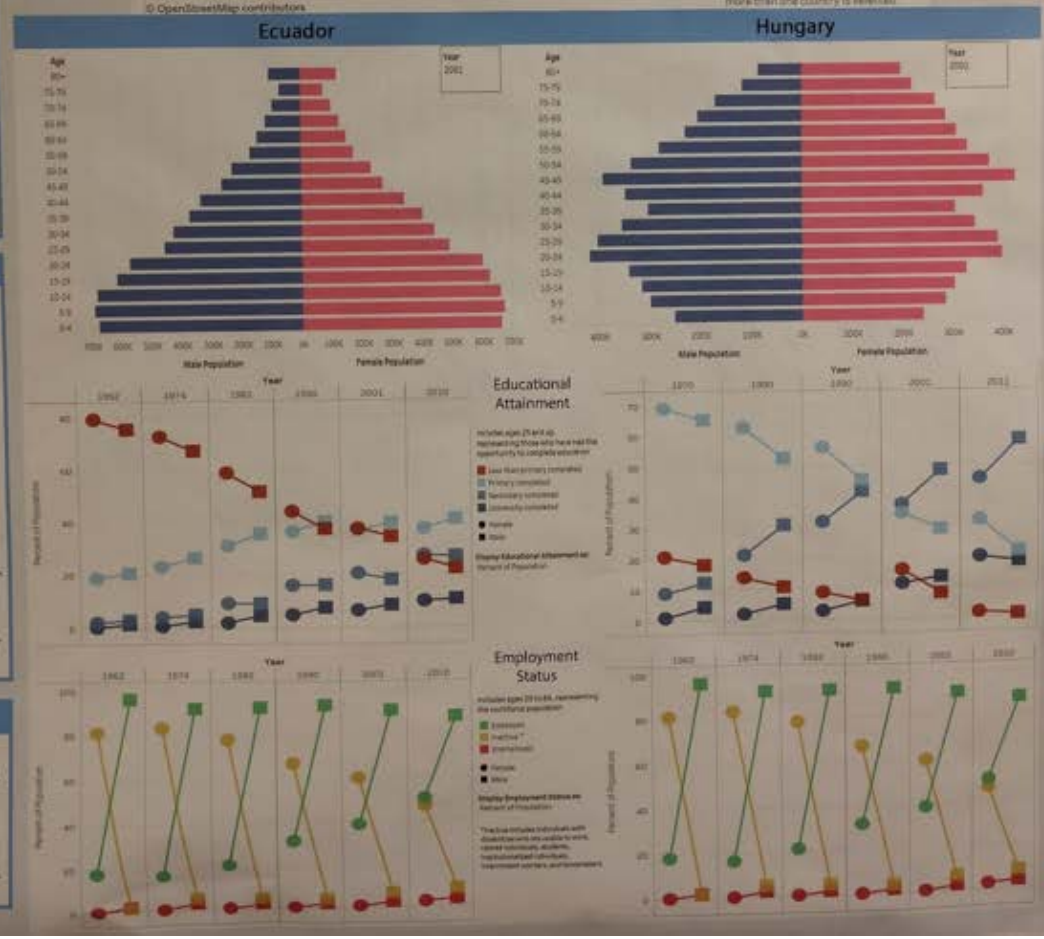
- Data comes from Integrated Public Use Microdata Series- International (IPUMS-I)
  - a project to collect, systematize, and distribute census data from countries all over the world
- An IPUMS-I coding process makes the data comparable across countries
- Data is kept at individual response level
- Researchers can subset the data by extracting microdata for selected variables and samples
- Widely available variables used: age, sex, employment status, and educational attainment

Methods

- Extract data from the IPUMS-I website in the form of SPSS files
  - Limit the number of samples in each extract to keep data at a manageable size
  - Unzip the downloaded file and open the file in a software package that can interpret labels associated with data codes, save as a CSV file
- Read the data into R
- Aggregate the data for each unique visualization
  - Use the dplyr package to group the data by country, year, sex, and the variable being analyzed in the visualization
  - Summarize the grouped data
- Write each aggregated data set to a CSV file
- After completing the above process for all extracts, concatenate the CSV files for each visualization
- Read the data into Tableau
  - Create each visualization in a separate sheet
  - Create an interactive dashboard featuring all of the sheets

Future Development

- Adding future census data:
  - Go through the process to aggregate the data
  - Append data to the concatenated file
  - Refresh data source in Tableau
- Visualization could be expanded by analyzing more variables
- Dashboard could be edited to allow comparisons between countries or regions simultaneously



Summary

- Final visualization allows users to select a country from the world map and the following are displayed for that country:
  - an age-sex pyramid highlighting population trends in which the user can select the year
  - a graph to investigate differences in educational attainment by sex over time
  - a graph to analyze differences in employment status by sex over time
- Visualization allows for easy interpretation of the qualities of a country's development over time

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Introduction

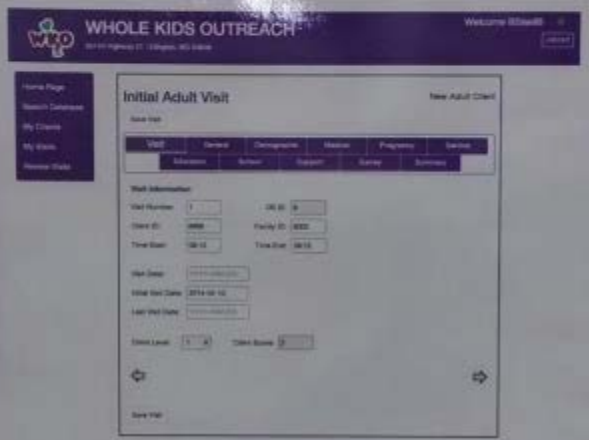
Whole Kids Outreach (WKO) is a non-for-profit organization that provides over 200-300 low-income pregnant women and families with education and guidance for raising children. The Outreach Specialists who are trained to treat and educate these families currently track their client's information using paper forms, which is very time consuming and a waste of resources. A customized web-based application was created for the WKO staff to educate and treat their clients more efficiently.

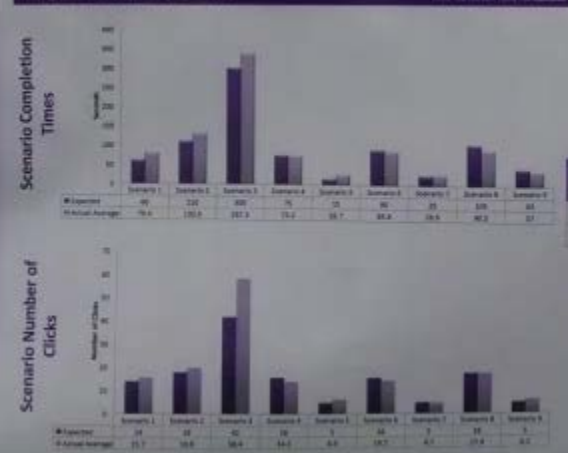
A formal usability study consisting of tasks/scenarios and a pre- and post-questionnaire to test for predictability, synthesizability, familiarity, and observability was administered to ten participants; five WKO staff members completed the post-questionnaire as well. This data was compared and analyzed to determine the usability and efficiency of the application, in addition to finding any improvements to increase the usability.

Method

The formal usability study consisted of four females and six males between the ages of 19 to 58. Each participant filled out a pre-questionnaire and waiver that gave background information and permission to use their results. There was a total of nine scenarios for each participant that were derived from the Outreach Specialists two main functions: tracking and recording the client visit results and tracking a client's overall progress. Each scenario tested for one or more of the listed usability principles. The WKO web application beta edition being tested was run on a Macbook Pro running Xampp Apache Web Server.

The Participants were read each scenario and told to let us know when they believed to have completed the scenario. The user's interactions and results (success rate(0-2), time, number of clicks, errors) from the scenarios were recorded. After each participant completed the nine scenarios, they filled out the post-questionnaire evaluating the application. These evaluations were compared with those from the WKO staff.





Hypothesis

The assessment of a formal usability study on the Whole Kids Outreach Web Application will show that, with minimal training, the custom user interface is easy to use and more efficient than the current paper-based system.

Results

The time and number of clicks of each user were compared to an expected time and number of clicks determined for each scenario. We found that the users' time and number of clicks went down, on average, in comparison to the expected outcome. After the first three scenarios, the times and number of clicks decreased. Scenario 3 had a longer average time and click count due to the amount of information being entered, and the various ways the user entered in data. Scenario 5 had a longer average time and click count as well due to an alternate path that half of the participants used to complete the scenario. There was a total of 90 scenarios tested, where 89 of them were completed. 80 out of the 89 were easily completed with no help.

We compared the participants' and WKO staff's ratings for ease of use and experience. Even with minimal training compared to the WKO staff members training, the participants found the application easy to use.

	Participants from study	WKO Members
Ease of Use	4.4	5
Experience	4.6	4.6

Conclusion

The quantitative and qualitative results from the questionnaire's and test scenarios showed that, with minimal training, users found the WKO application easy to use and more efficient than a similar paper based system.

WINONA STATE UNIVERSITY

NURSING — WINONA STATE UNIVERSITY — 18 60 — BACHELOR OF SCIENCE DEGREE

Background

- Nursing students enrolled in a gerontological nursing course completed a supplemental practicum experience.
- Older adult residents of independent living and assisted living facilities took part in numerous student guided conversations.
- Students and older adults discussed various topics including end-of-life (EOL) care and loss.
- Following the discussions, students were asked to write reflective journals on their experience.

To facilitate conversation between residents and student nurses, students were given discussion questions regarding EOL care and loss. These questions included:

- How has your older adult dealt with loss in his or her life?
- Does your older adult have any specific spiritual beliefs that have helped him or her cope with loss (think broadly about this)?
- Does your older adult have an advance directive and/or living will?
- Overall, what do you think you and your older adult have learned during your discussions?

Method

The researchers analyzed students' reflective journals to establish common themes among student nurses regarding attitudes towards loss and EOL care. Secondary analysis of student reflective journals identified themes regarding EOL. The researchers analyzed the student reflective journals though framework analysis and illuminative evaluation (Partlett & Hamilton, 1972).

The following research questions were identified to evaluate the students' personal journal reflections:

- Following conversations with older adults, what can students' personal reflections tell us about the students' attitudes regarding EOL care, loss, and death?
- Can analysis of students' personal reflections add anything to the body of knowledge regarding older adults' experiences with EOL care, loss, and death?
- Does personal reflective journaling by students provide an effective tool to enhance student learning regarding their attitudes and knowledge about EOL care, loss, and death?

Review of Literature

Perspectives surrounding EOL

- In the United States, many individuals consider death an uncomfortable topic of discussion. Researchers found that individuals who had more anxiety toward aging had higher levels of death anxiety (DePaola, Griffin, Young, & Neimeyer, 2003).
- Student nurses may have negative stereotypes and misconceptions of older adults, which can deter them from interacting with older adults (Rodgers & Gilmour, 2011).
- Licensed nurses and nursing students tend to have negative attitudes toward older adults, largely in part to global death anxiety (DePaola et al., 2003).

Nursing education surrounding EOL

- EOL content is important for basic nursing education, but within nursing schools, EOL education is inadequate (Ferrell, Virani, Grant, Coyne, & Uman, 2000).
- Student nurses develop their attitudes toward aging, older adults, death and dying throughout their student nursing experience, as well as within their life experiences (Rodgers & Gilmour, 2011)
- Student nurses who are educated on aging and have more experiences with older adults are more likely to have positive attitudes toward aging and older adults (Cozort, 2008).
- Nurses with more work experience had increasingly positive attitudes regarding death, along with increased flexibility and a greater ability to cope with death (Gama, Barbosa, & Vleira, 2012).

Results

Themes and Subthemes Discovered Within Students' Reflective Journals

Spirituality in Coping With Loss	Attitudes Regarding Death and Loss	EOL Planning	Older Adults' Hopes Regarding Death
•Spirituality and religion •Spirituality and faith •Unspiritual	•Acceptance of death as a part of life •Acceptance that death is certain •Difficulty in coping with death	•Advanced directives •No advanced directives	•Live a long, full life •Die peacefully •Be reunited with loved ones after death

Support in Grieving	Older Adults' Concerns Regarding Death	Students' Fears Regarding Conversing About Death	Students' Experiences Bring Them a New Perspective
•Support through spirituality and family •Support through family •Support through friends •Support through social activities	•Fear of being forgetful •Fear of losing independence •Fear of debilitating illness •Fear of leaving loved ones behind •Unafraid of dying	•An entirely difficult conversation •A difficult, but important conversation •A surprisingly effortless conversation	•An experience that assisted the older adult in expressing their thoughts on EOL, loss, and death •An eye-opening experience •A rewarding experience •A confidence-boosting experience

Students' Fears Regarding Conversing About Death

"Discussing end of life care with my client was very difficult for me. I was not sure of how to phrase questions in a way that would be appropriate...I felt bad asking her questions about death because I could tell it made her sad."

"To be completely honest, I was quite taken aback, yet humbled that she felt comfortable enough to share such personal insight with me. Yet I was beyond pleasantly surprised at how smoothly our conversation flowed right from the start and her wholehearted willingness to share intimate details of her life. I anticipated the discussion of death, dying, religion, spirituality, and the afterlife to be one that was awkwardly brought up at then end of our series of visits; however, this was not the case in the slightest. [My older adult] relieved me of my worries without even knowing it, for flattering around subjects was not her style."

Students' Experiences Bring Them a New Perspective

"In my opinion, I never thought death could be described as a good thing. I always thought that death was the most horrible thing to happen to individuals. However, after my experience with older adults, what I have learnt (sic) in school, and my beliefs and spirituality, I realize that death is part of the cycle of life and as we are born, we must one day die. Now, I look at the good aspects of leaving the world with dignity and peace, and enjoying that memories with my loved ones."

"This journal taught me that talking about death and dying is often the most important and useful conversation to have with a person or patient. It gives great insight into the care that patient needs and wants. Talking with my older adult about death and dying has shown that the hard conversations can sometimes not be as difficult as we thought."

Older Adults' Attitudes Regarding Death and Loss

My older adult "has told me many times throughout our conversation that she believed that when it was time for her to go, God would let her go peacefully, and she was extremely happy and content with that."

"My client realizes that everyone on Earth has a day of birth and a day of death. She consults herself in the faith she has and copes with life by praying a lot and ensuring that her family stays in harmony. Grieving will not bring back the dead, so it is good for one to pick up the pieces and move ahead. Being old, she also knows that her days are numbered and death is something that is unpredictable but certain."

Nursing Implications

This research identified new student perspectives on EOL conversations with older adults.

Nursing competence and confidence in caring for older adults can improve by increasing the level of exposure to this population.

EOL discussions help student nurses to become better patient advocates by understanding what patients desire in their EOL care.

Reflective journaling is an effective teaching method to assist students in self-reflection of their growth.

Student nurses who experience EOL discussions within nursing school may be able to improve their future patient outcomes.

Although EOL conversations may seem uncomfortable, the discussions are rewarding for the student and the older adult.