

## DOCUMENT RESUME

ED 465 918

CG 031 813

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TITLE Using Holland's Theory To Analyze Labor Market Data.  
PUB DATE 2002-07-00  
NOTE 9p.; In: Careers across America 2002: Best Practices & Ideas in Career Development Conference Proceedings (Chicago, IL, July 7-10, 2002); see CG 031 801.  
PUB TYPE Information Analyses (070) -- Speeches/Meeting Papers (150)  
EDRS PRICE MF01/PC01 Plus Postage.  
DESCRIPTORS \*Career Counseling; \*Counseling Theories; \*Data Interpretation; \*Labor Market; Theory Practice Relationship; \*Trend Analysis  
IDENTIFIERS \*Holland (John L)

## ABSTRACT

Some career theorists and other professionals have warned about dramatic shifts in the economy and implications for changes needed in career services and theory. This paper proposes that Hollands person-environment model (1997) is a valuable frame of reference for career counselors and instructors to use with clients and students in interpreting labor market data. Hollands model is used to present labor market census data from 1960 to 1990 followed by implications for career counseling and teaching. It is proposed that career counselors and instructors could use these labor market data to show the relationships between kinds of work, cognitive skill development, gender, and financial income and to help students develop more complex, yet practical schemas regarding the world of work. The information could also be used to highlight important issues such as occupational stereotypes, gender, work-family life balance, availability of types of work, and applications of Hollands theory. (GCP)

# Using Holland's Theory To Analyze Labor Market Data

by

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# Using Holland's Theory To Analyze Labor Market Data

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## Introduction

Some career theorists and other professionals have warned about dramatic shifts in the economy and the implications for changes needed in career services and theory (e.g., Bridges, 1994). Writers have discussed changeability in the workforce and the increasing obsolescence of using occupations to describe work. Such views appear to question workforce stability with respect to interests and work activities and to challenge the effectiveness of an approach to career guidance that seeks to match personal characteristics and occupations.

Another area of concern to career services professionals involves gender and kinds of work, especially the impact of occupational stereotypes (Betz & Fitzgerald, 1987). Many occupations remain segregated by gender, e.g., social work, nursing, and elementary school teaching, and differences in income continue to exist for men and women in the same kinds of work (Reardon, Vernick, & Reed, 2001).

Given the complexity of the changing economy and the continuing influence of occupational stereotypes, what theory and materials might be useful to career services professionals? How might counselors work with clients in a way to help them understand the labor market and their role in it? The author proposes that Holland's (1997) person-environment model (1997) is a valuable frame of reference for career counselors and instructors to use with clients and students in interpreting labor market data.

In this chapter, Holland's model will be used to present labor market census data from 1960 to 1990 followed by implications for career counseling and teaching. A more detailed report with tabular data and implications for public policy is available in Reardon, Vernick, and Reed (2001).

## The Research Project

This research builds upon prior work conducted by G. D. Gottfredson, Holland, and L.S. Gottfredson (1975) and others. These researchers analyzed U. S. employment using data provided by the decennial census between 1960 and 1980. The studies investigated variables using Holland's theory as a system for classification, including gender, ethnicity, salaries, educational and training levels associated with occupations, and complexity ratings for occupations. The current researchers classified occupations by Holland's classification schema and examined gender and income in terms of 1990 census data.

Holland's typological theory (Holland, 1997) specifies a theoretical connection between vocational personalities and work environments that makes it possible to use the same RIASEC (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional)

classification system for both persons and jobs. Many inventories and career assessment tools use the typology to enable individuals to categorize their interests and personal characteristics in terms of the six types and combinations of the types.

Realistic (R) types are found in occupations such as auto mechanic, aircraft controller, surveyor, electrician, and farmer. The R type usually has mechanical and athletic abilities, and likes to work outdoors and with tools and machines, and might be described as conforming, frank, hardheaded, honest, humble, materialistic, natural, normal, persistent, practical, shy, and thrifty.

Investigative (I) types like occupations such as biologist, chemist, physicist, geologist, anthropologist, laboratory assistant, and medical technician. The I type usually has math and science abilities, and likes to work alone and to solve problems. They might be described as analytical, complex, critical, curious, independent, intellectual, introverted, pessimistic, precise, and rational.

Artistic (A) types are found in occupations such as composer, musician, stage director, dancer, interior decorator, actor, and writer. The A type usually has artistic skills, enjoys creating original work, and has a good imagination. They may be described as complicated, disorderly, emotional, idealistic, imaginative, impulsive, independent, introspective, nonconforming, and original.

Social (S) types like occupations such as teacher, speech therapist, religious worker, counselor, clinical psychologist, and nurse. The S type generally likes to help, teach, and counsel people, and may be described as cooperative, friendly, generous, helpful, idealistic, kind, responsible, sympathetic, tactful, understanding, and warm.

Enterprising (E) types like occupations such as buyer, sports promoter, television producer, business executive, salesperson, travel agent, supervisor, and manager. The E type usually has leadership and public speaking abilities, is interested in money and politics, and likes to influence people. The E type may be described as acquisitive, agreeable, ambitious, attention-getting, domineering, energetic, extroverted, impulsive, optimistic, self-confident, and sociable.

Finally, Conventional (C) types are found in occupations such as bookkeeper, financial analyst, banker, tax expert, and secretary. The C type has clerical and math abilities, likes to work indoors and to organize things. The C type might be described as conforming, careful, efficient, obedient, orderly, persistent, practical, thrifty, and unimaginative.

Occupations were coded according to the RIASEC typology (Gottfredson & Holland, 1996) and then numerous variables were examined. It is important to note that data in this study regarding employment were based on a sampling procedure and when classifying these occupations, the current researchers used the Holland codes assigned to occupations by different researchers at the time the original research was completed. The areas of inquiry were:

1. What were the numbers and percentages of census occupational titles listed in 1960, 1970, 1980, and 1990 in relation to six different kinds of work (Holland RIASEC categories)?
2. What were the numbers and percentages of occupational employment from 1960-1990 in relation to six different kinds of work?
3. What were the employment percentages of men and women in 1990 in relation to six kinds of work by gender?

4. What were the incomes for different kinds of work for men, women, and the total population in 1990?

### **Occupational Titles**

In analyzing the numbers and percentages of census occupational titles listed in 1960, 1970, 1980, and 1990 in relation to Holland RIASEC categories we noted that the distribution was skewed in each decade. The Realistic area included many more named occupations in the census than the other areas, at around half of all occupations included over the 40-year period. Only 10 occupations (2%) were identified in the Artistic area. Over the 4 decades, the number of occupations in the Realistic, Investigative, Artistic, and Conventional areas remained relatively stable, while the Social area decreased slightly and the Enterprising area increased.

### **Employment**

We also examined the numbers and percentages of occupational employment from 1960-1990 by six kinds of work. The total estimated employment increased from 64.1 million in 1960 to 115.7 million in 1990. The Realistic area had the most occupational titles and the largest number of individuals employed and Artistic had the fewest occupational titles and number employed. The profile of kinds of work for occupational titles from highest to lowest in 1990 was REISCA while the profile of kinds of employment was RECSIA.

Realistic employment declined 18% relative to the other five kinds of work from 1960-1990, but increased in real numbers. Employment in the Enterprising area increased by 8% between 1970 and 1980, and the percentage of individuals employed in the Investigative area doubled between 1960 and 1990. Employment in the other four areas remained more stable.

### **Men and Women**

There were noticeable differences in employment between men and women across the six areas from 1960-1990. For men, most employment was in the Realistic area, followed by the Enterprising area. During the four decades, between 79% and 85% of male workers were in these two areas.

The Conventional area of work remained the most common for women across the decades. Compared to men, women were employed in more varied kinds of work. The percentage of women in the Enterprising area almost doubled over the four decades, from 13% to 24%. Investigative and Artistic work consistently showed the smallest percentage of employment for women.

There was an increase of male employment in the Investigative area from 4% to 8% and a corresponding increase for women from 1% to 4% in the Investigative area.

## Gender and Income

Income levels were examined for different kinds of work for men, women, and the total population in 1990. The average income profile for six kinds of work ranging from lowest to highest was CRASEI. The average Investigative income was more than two times larger than the average Conventional income. With respect to income, the Conventional and Realistic areas were lowest. The income for women was lower than for men in all six categories, and the discrepancy was greater at higher income levels. In general, Investigative and Enterprising areas of work were characterized by the highest incomes.

## Implications

An important task of the career service professional is to help clients make optimal use of information about themselves and their options. These findings and the use of Holland's framework to organize labor market data are of special interest to career counselors and career course instructors because it may help clients to develop more complex schemas about the world of work. Helping a client to develop these schemas can be beneficial because clients' skills in drawing relationships between their self-knowledge and occupational knowledge are largely related to the complexity and organization of knowledge schemata (Peterson, Sampson, Reardon, & Lenz, in press).

Using Holland's theory as a way to describe different types of work makes it possible for the student to understand the relationship between kinds of work, gender, income, and prestige. It can also provide a forum for the discussion of issues such as occupational stereotypes and the availability of different types of work.

Viewing employment data through the lens of Holland's typology provides the student to with a practical organizational system from which to understand the complex world of work. Using this framework can allow the student to consider his or her values, such as prestige, income, and a willingness to delay entry into a chosen field because of the link between educational level and these values.

Students often affirm that they value job security. While the reality of work makes it difficult to help a student choose an occupation that is secure, students may appreciate that Holland typology can also be used in employment projections. Reardon, Lenz, Sampson, and Peterson (2000) analyzed labor market projections from 1996-2006. They discovered that occupations in the S, E, and I areas tended to have higher projected employment and growth than the other Holland areas.

Viewing occupational data and trends through Holland's six types of work may also help students to examine myths and realities related to occupational stereotypes. A frequently heard theme from students is "I want to help people but if I choose a Social type of occupation, I will earn very little." Many students seem to be under the impression that the income for Social types of occupations is relatively low. It may be useful for students to learn that Social kinds of occupations as a group are in the mid-range regarding income level when compared to the other types.

It also may be valuable for students to note that Investigative occupations top the list

for income level. In high school, students may hesitate at planning a career in the sciences or other Investigative areas for different reasons, including negative stereotypes (e.g., fear of being seen as a “nerd”). Seeing the relatively high income may encourage students to consider and respect this area of work.

Another myth that students may buy into is the idea that the information revolution has rid our society of Realistic jobs. While 2002 census data will add valuable current information regarding the occupational employment in the Realistic area, students may note that this type of work remained the largest area of employment through 1990 and actually increased in real numbers. Reports of the changing economy may also intimidate students. Students may hesitate at making educational and occupational choices or undervalue their education due to a concern that the labor market is shifting. It may be helpful for students to see how in Holland terms there seems to be some degree of stability.

Occupational stereotyping by gender seems to be a recurring concern for counselors and teachers. Sharing this kind of labor market data with students might promote valuable, interesting discussions in a career development class, e.g., why is it that men seem to have been slower to move into nontraditional areas of work than women, why have women moved more into Enterprising areas recently, or why do women dominate employment in the Conventional area, which tends to be of lower income? Sharing numbers with students and engaging in discussions of broad areas of work may promote a greater understanding of these issues.

Another topic of interest to counselors and teachers is work-family life balance. Considering employment through Holland typology can also be a springboard for this discussion, e.g., how do types relate to characteristics that might be desirable for someone trying to gain work flexibility? While students may associate Conventional and Realistic areas with numerous part-time opportunities, Investigative and Enterprising activities may ultimately offer some autonomy while providing a higher income.

Using Holland’s framework with labor data also helps students to think outside the box of named occupations. Students might consider what skill sets are worth developing and how to incorporate different elements into their occupation or work environment. The census data suggest that even a second or third letter in an occupational code may alter the impact of the first letter with respect to income. Thus, counselors might help clients understand that adding Investigative or Enterprising elements to their occupational pursuits may increase their future level of income.

Approximately 2% of occupations were in the Artistic area. Those with Artistic aspirations sometimes struggle with the question of whether to pursue their passions because of their fear of not finding a job. For those students who are not willing to risk pursuing an occupation which is primarily Artistic, understanding the Holland typology and the idea of incorporating Artistic elements at a secondary level may be appealing.

Some students or clients may feel overwhelmed by detailed occupational labor market data. Using the Holland typology in conjunction with labor market data may assist the student to understand occupational data in a way that has the ease of categories, but which still retains some complexity, especially when considering the second and third letters of codes.



Some students have Holland codes which are uncommon or have low consistency. At times, these students may not fully understand how uncommon codes or low consistency relates to their aspirations. By showing students that the economy has typically not provided opportunities in certain codes (e.g., no occupations in the 1990 census were coded with the first two letters of RA, IC, AC, and CA), students may have a better grasp of this concept. Showing students this information may also help them to focus on the external reality of the labor market, rather than feeling concerned that their Holland code is unusual.

Instructors of graduate career courses in counseling programs may also find this extension of Holland's theory significant. It can help the graduate counseling student to understand the complexity of Holland's theory and its potential use with future clientele. In addition, graduate students may appreciate how certain elements of Holland's theory are supported by this data, e.g., that low consistency scorers on the SDS (where the first two letters are opposite on the hexagon, e.g., Investigative/Enterprising) may have more difficulty in locating occupational alternatives which match that particular code.

### Summary

In summary, the researchers found considerable stability in the world of work across the decades; the percentages of employment across the six kinds of work were fairly stable, the Realistic area continued to dominate employment and occupational categories, and the Artistic area remained very small. There were marked employment differences between men and women across the six areas from 1960-1990. In examining income and gender by kinds of work, we found the average income profile for six kinds of work ranging from lowest to highest was CRASEI.

Career counselors and instructors could use these labor market data to show the relationships between kinds of work, cognitive skill development, gender, and financial income and to help students develop more complex, yet practical schemas regarding the world of work. The information could also be used to highlight important issues such as occupational stereotypes, gender, work-family life balance, availability of types of work, and applications of Holland's theory.

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