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Frank F. Urbancic
University of South Alabama

Ko Hsu
University of South Alabama

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THE READABILITY OF INSTRUCTIONS FOR INCOME TAXATION IN THE WESTERN STATES

FRANK R. URBANCIC AND KO HSU
UNIVERSITY OF SOUTH ALABAMA

ABSTRACT

The taxation of individual income represents an important revenue source for many states. The taxes are determined by a self-assessed tax system from information that is the declaration of the taxpayer in an annual return. State taxation agencies facilitate compliance by furnishing individuals with the necessary forms and instruction materials needed to prepare the self-assessed tax return. This study reports on a readability assessment of the income tax instructions for states in the West. The results find improvements in the readability averages for tax instructions between 1990 and 2005, but in absolute terms the instructions for Western states are difficult to read. State income tax instructions have a readability level that currently exceeds the educational attainment level of nearly half the adult population in the West.

I. INTRODUCTION

One of the most important sources of tax revenue for many state governments is the tax on individual income. Prior to 1920 state income taxation existed in only 12 states according to Penniman (1980), but by 1958, 28 states had established an individual income tax. Today, 41 states impose an individual income tax. The increase in the number of states that have individual income tax laws highlights the significance of this revenue source for government budgets, and accordingly underscores the importance of taxpayer compliance with the laws.

The laws for state income taxation are based on a self-assessment tax reporting system, and it is this system of self-assessment on which the fiscal health of state governments is largely dependent. Revenue in a self-assessed tax system is determined from the information declared by the taxpayer on an annual return. State taxation agencies facilitate taxpayer compliance by furnishing individuals with the necessary forms and instructions booklets needed to prepare the self-assessed tax return. However, the degree of taxpayer compliance with the self-assessment process is in part a function of whether the tax instructions are readable. The purpose of this study is to measure the readability of income tax instructions for states in the West. The study presents individual comparisons of the readability levels between states

within the West and a longitudinal comparison of the readability for state tax instructions between 1990 and 2005.

The remainder of this paper is organized in four sections as follows, related research, methodology, results, and concluding comments. For this study the delineation of regions (Midwest, Northeast, South and West) corresponds to the classifications of the U.S. Census Bureau. Therefore, the West region includes Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. However, individual income is not taxed by Alaska, Nevada, Washington and Wyoming and for that reason these states are excluded from the study.

II. RELATED RESEARCH

Readability is a prerequisite element for understandability. Assessments of readability are often accomplished through the use of formulas. A formula consists of factors that influence the ease of comprehending a written communication, and as such a formula provides a quantitative approach to the measurement of reading difficulty. Readability has been extensively studied in a number of different disciplines, including accounting. An accounting literature review of readability research by Jones and Shoemaker (1994) identified and compared 32 studies and included an observation that computer software had been incorporated to facilitate the analysis of data in only 4 of the studies. In years since the study by Jones and Shoemaker (1994), accounting readability research continues but has made increasingly greater use of specialized software, and, in particular, according to Montondon and Marsh (2005) and Reinstein and Houston (2004), the studies rely on the Readability Calculations Plus program developed by Micro Power & Light. Readability Calculations Plus is a Windows/Macintosh based reading assessment program that can be applied to analyze text and indicate the reading level(s) of material using up to nine different readability formulas.

Several of the formulas provided by Readability Calculations Plus are appropriate for an assessment of elementary or secondary school materials, but these formulas would not be suitable for an analysis of tax instruction readability. Therefore, in Readability Calculations Plus the two most relevant formulas for determining the readability of income tax material intended for adults are the Fog Index and the Flesch Reading Ease Score. In particular, the Fog Index is suited for assessments of business publications and is widely used in the health care and insurance industries. An alternative approach, the Flesch Reading Ease formula is designed for an assessment of adult materials and shows scores on a 100-point scale as a relative representation of reading difficulty.

Although an abundance of previously published studies have applied readability assessments to various areas of accounting, rarely has the research concerned the readability of state tax instruction materials. A study by Urbancic (1994) reports the results of an analysis of state tax instruction readability for individual income taxes based on a comparison of the 1990 instruction booklets used by states in the Midwest. The study incorporates a manual application of the Fog Index and Flesch Reading Ease formulas. Based on the results, Urbancic (1994) observed that the readability of individual tax instruction materials ranged from difficult to very difficult, and as such, there were no instructions at the standard level of reading difficulty for adult taxpayers. More than a decade has passed since the analysis of 1990 instructions by Urbancic (1994) and changes in state income tax laws have likely occurred since then. Therefore, the purpose of the current study as presented within this article is to expand upon the work of Urbancic (1994) by providing an assessment measure for the readability of tax instructions used by states in the West for 2005.

III. METHODOLOGY

Readability assessments made in this study are based on the Fog Index and Flesch Reading Ease formula. Both of these measurement methods are suited to an assessment of text materials that are intended for adults to read, such as income tax instruction booklets. The Fog Index number represents a grade level for reading. The educational level corresponds to material about which people at that level can give nine out of ten correct answers on questions from the tested material. For example, a Fog of 16 indicates that a reader would need a baccalaureate college degree to comprehend the material (see Exhibit 1). The Fog Index is based on average sentence length, in terms of the number of words per sentence, and the percentage of polysyllabic words (i.e. words having three or more syllables) as follows: $\text{Fog Index} = .40 \times \text{sentence length} + \text{percentage of polysyllabic words}$. When preparing adult text material on the basis of Fog it is generally recommended that a technical publication should not score higher than 14, nor should a general business publication score higher than 12.

A second measurement, the Flesch formula is based on a combination of average sentence length and word length (i.e. the average number of syllables per word). These factors are used in a formula to determine a score for readability as follows: $\text{Reading Ease} = 206.835 - .846 \times \text{word length} - 1.015 \times \text{sentence length}$. Flesch Reading Ease formula is designed for an assessment of adult materials and shows scores on a scale between 100 and 0 as representation for very easy to very difficult to read (see Exhibit 1). It is generally regarded that a Flesch score of 65 corresponds with a 'Plain English' style of writing.

Data for the study consists of the 2005 individual income tax instructions which were obtained for Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Oregon and Utah in PDF file format. Three test samples of text instructions (excluding forms, schedules, charts and tables) were analyzed for each state and reported results are based on averages for the samples. All of the readability measurements were made by processing the data with Readability Calculations Plus software in order to determine the Fog Index and the Flesch Reading Ease scores by state.

IV. RESULTS

Assessments of the readability of income tax instructions based on the Fog Index are presented in Exhibit 2. As discussed in the section on methodology, the Fog Index represents the educational level required for comprehension of the material tested. Therefore, to provide a framework for comparison of the Fog scores, exhibit 2 includes information about the actual education attainment levels for adults in the nine Western states as reported by the Census Bureau (2003). As presented by Exhibit 2, Oregon has the most readable income tax instructions among states in the West, and its Fog grade level of 10.2 compares favorably to the education attainment level of the adult population

EXHIBIT 1 SCALES FOR THE INTERPRETATION OF READABILITY SCORES

Fog Index

<u>Readability Scores</u>	<u>Equivalent Education Level</u>
17	College, graduate
16	College senior
15	College junior
14	College sophomore
13	College freshman
12	12 th grade
11	11 th grade
10	10 th grade

9	9 th grade
8	8 th grade
7	7 th grade
6	6 th grade

Flesch

<u>Readability Scores</u>	<u>Description of Readability</u>
0 to 30	Very difficult
30 to 50	Difficult
50 to 60	Fairly difficult
60 to 70	Standard
70 to 80	Fairly easy
80 to 90	Easy
90 to 100	Very easy

in Oregon since 85.1 percent of those aged 25 years and over have a high school diploma or higher. Most adults residing in Oregon should be capable of reading income tax booklets with a reasonable understanding of the instructions. After the state of Oregon the most readable tax instructions are provided by New Mexico, Arizona, Colorado and Utah with Fog readability scores of 11.2, 12.3, 13.4 and 13.6 respectively. By contrast, the instructions for Idaho are the least readable and its high Fog grade level of 19.7 does not compare favorably to the education attainment level of the adult population in Idaho since only 6.8 percent of those aged 25 years have a graduate degree. In addition to Idaho, other states with difficult to read tax instructions include Montana (15.8) and Hawaii (14.9). As discussed earlier, adult technical publications should not have a Fog score higher than 14. The necessary reading levels for Montana and Idaho do not compare favorably with the educational attainment levels since nearly half of adults in these states, 44.1 and 43.9 percent respectively, have not gone beyond a high school education.

EXHIBIT 2
COMPARISON OF EDUCATIONAL ATTAINMENT AND THE
READABILITY OF INCOME TAX INSTRUCTIONS FOR STATES IN
THE WEST

Percentage of Population Aged 25 and Over Per U. S. Census

<u>State</u>	<u>Fog</u> <u>Readability</u> <u>Score</u>	<u>Graduate</u> <u>Degree</u>	<u>Bachelor's</u> <u>Degree</u>	<u>Some</u> <u>College</u>	<u>High School</u> <u>Diploma</u>	<u>Less Than</u> <u>High School</u> <u>Diploma</u>
Arizona	12.3	8.4	15.1	33.2	24.3	19.0
California	14.0	9.5	17.1	30.1	20.1	23.2
Colorado	13.4	11.1	21.6	31.0	23.2	13.1
Hawaii	14.9	8.4	17.8	29.9	28.5	15.4
Idaho	19.7	6.8	14.9	34.5	28.5	15.3
Montana	15.8	7.2	17.2	31.5	31.3	12.8
New Mexico	11.2	9.8	13.7	28.8	26.6	21.1
Oregon	10.2	8.7	16.4	33.8	26.2	14.9
Utah	13.6	8.3	17.8	37.0	24.6	12.3

Readability assessments of income tax instructions based on the Flesch Reading Ease Formula are presented in Exhibit 3. Similar to the Fog results, the exhibit indicates that the instructions for Oregon are rated the most readable among Western states as indicated by a Flesch score of 67.0. Other states with readable instructions are New Mexico (63.7) and Arizona (60.0). By contrast the least readable are the instructions of Idaho (26.3) and to a lesser extent Hawaii (48.0). Based on the interpretation scales applicable for Flesch Reading Ease, the tax instructions for four states are rated fairly difficult and the score interpretations reported in Exhibit 3 taken jointly indicate that most of the Western states' income tax instruction booklets are challenging to read. In other words, the finding is not a matter of whether or not the instructions are difficult to read, but rather a matter of the level or degree of difficulty encountered by a reader of the instructions.

EXHIBIT 3
READABILITY ASSESSMENTS OF INCOME TAX
INSTRUCTIONS FOR STATES IN THE WEST

<u>State</u>	<u>Flesch</u>	<u>Description of Readability</u>
Arizona	60.0	Standard
California	56.0	Fairly Difficult
Colorado	56.7	Fairly Difficult
Hawaii	48.0	Difficult
Idaho	26.3	Very Difficult
Montana	50.7	Fairly Difficult
New Mexico	63.7	Standard
Oregon	67.0	Standard
Utah	53.3	Fairly Difficult

The preceding results acknowledge that state income tax instructions are difficult to read, but has there been progress in reducing the degree of difficulty? Exhibit 4 provides a longitudinal comparison of the readability scores for 2005 and 1990 for states in the West. The Fog and Flesch scores for 1990 are from the earlier study by Urbancic (1994). The results for the West as a region indicate substantial improvements for the Fog Index from 15.2 in 1990 to 13.9 for 2005, and for Flesch from 41.4 in 1990 to 53.5 in 2005. On the basis of individual state results for the Fog Index reported in Exhibit 4, New Mexico, Utah and Arizona achieved the greatest improvements in the readability of tax instructions for 2005 compared with 1990, and a smaller improvement was achieved by Oregon, but readability levels worsened since 1990 for Idaho, Montana and Hawaii. Based on results for the Flesch Reading Ease formula, the greatest improvements in readability are achieved by Arizona and New Mexico. Moreover, indications of readability improvement based on results from the Flesch formula are observed for all states in the West except Hawaii. These readability improvements have been accomplished through the efforts of state tax agencies to annually revise the instructions. Although many revisions are written to reflect new tax laws, other revisions are implemented for the purpose of improved readability and reflect the general legislative movement toward 'Plain English' at both the state and federal levels of government in the United States. According to Giles and Still (2005) government agencies as diverse as those responsible for the nation's

defense and those responsible for the nation's health require that materials for which these offices must assume responsibility adhere to a measure of readability according to a scale that assigns a reading grade level.

EXHIBIT 4
A LONGITUDINAL COMPARISON OF THE READABILITY
OF INCOME TAX INSTRUCTIONS FOR STATES IN THE WEST

State	Fog		Flesch	
	2005	1990	2005	1990
Arizona	12.3	17.2	60.0	28.1
California	14.0	14.2	56.0	49.7
Colorado	13.4	11.8	56.7	37.6
Hawaii	14.9	13.2	48.0	63.5
Idaho	19.7	16.9	26.3	17.4
Montana	15.8	13.9	50.7	50.3
New Mexico	11.2	18.5	63.7	33.7
Oregon	10.2	11.7	67.0	55.3
Utah	13.6	19.7	53.3	37.3
Average	13.9	15.2	53.5	41.4

V. CONCLUDING COMMENTS

This study reports on a readability assessment for individual income tax instructions among states in the West. The results find that to various degrees improvements in the readability of instruction booklets have been achieved by most states between 1990 and 2005. However, state income tax instructions have a readability grade level of 13.9, which, on the basis of Census Bureau data, is beyond the educational attainment level of at least 42.3 percent of the adult population in the West. This is a significant problem since tax instruction materials are primarily intended for use by the general population that earns income under each state's jurisdiction. The difficulty encountered in attempting to understand tax instructions places many taxpayers at risk of penalties for making errors in their self-assessed returns. Therefore, some taxpayers rely on commercially available tax preparation software, but many others feel compelled to incur a fee and obtain professional

assistance in preparing the return. This fee in effect becomes a further cost added to the tax burden itself, and unfairly targets a segment of the adult population based on education.

Providing the taxpayer with the necessary information to correctly determine individual income tax is the responsibility of state tax agencies. Since the instructions bear in part on issues of enforcement and taxpayer compliance, tax agencies have an incentive to develop instructions which are appropriate to the reading skills of the taxpayer. Toward meeting this responsibility, tax agencies should minimize the use of technical words, specialized terms and lengthy sentences. This can be done by replacing long, unfamiliar words with equivalent terms that are more conventional. Also, when technical terms are necessary, they should be accompanied by adequate explanations. Aside from improving instructions, states might consider offering free on-line tax preparation services for qualifying low-income taxpayers. State income taxation laws are based on a self-assessment reporting process. For this reason, it is the responsibility of state tax agencies to make concerted efforts toward writing instructions that are more readable. Such efforts can improve tax return accuracy and the amount of state resource expenditures necessitated for agency follow-up procedures owing to taxpayer errors can be reduced.

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