

## VIII. QUALITY OF LIFE ANALYSIS

### Summary

The EconSys Study Team investigated the effects of service-connected disability by analyzing the 2007 Survey of Disabled Veterans<sup>118</sup> and the 2001 National Survey of Veterans.<sup>119</sup> Both of these surveys included items that address quality of life (QOL). The analysis looks at quality of life from the perspective of differences between service-connected disabled veterans and veterans without service-connected disabilities (SCD). The purpose of this effort is to:

- Develop a broad measure of QOL using veterans' data,
- Measure quality of life loss,
- Estimate quality of life loss for service-connected disabled veterans based on norms for non-SCD veterans, and
- Gain a better understanding of QOL loss among SCD veterans.

The study team's efforts have resulted in the development of an enhanced measure of quality of life. The enhanced measure is a broader measure than the Veterans' RAND-12 (VR-12) measure. The enhanced measure includes physical QOL, and mental QOL, and adds life satisfaction and stress effects of disability. The enhanced QOL measure has strong reliability<sup>120</sup> and good validity<sup>121</sup> (see Enhanced QOL Measure section).

Results based on the enhanced measure show that QOL loss increases linearly with net award.<sup>122</sup> This validates the current system—those with the greatest QOL loss are receiving higher net awards from VA, factoring in individual unemployability (IU) and special monthly compensation (SMC) payments. When veterans receiving SMC and IU are eliminated, the relationship between net award and QOL loss is not so consistent (see Quality of Life Loss by Degree of Disability section).

Life satisfaction, as a measure of overall QOL, is considered as a QOL measure for VA. The 2007 Survey of Disabled Veterans data show that life satisfaction highly correlated with age—the older a person is, the greater the life satisfaction. The range of responses to life satisfaction does not vary as much as the responses to the enhanced QOL measure. There are also no norms for comparing the life satisfaction of SCD and non-

<sup>118</sup> Conducted by CNA Corporation (CNAC) for the Veterans' Disability Benefits Commission. Final Report for the Veterans' Disability Benefits Commission: Compensation, Survey Results, and Selected Topics, August 2007.

<sup>119</sup> U.S. Department of Veterans Affairs. Office of Policy and Planning. (2001). *National Survey of Veterans: Final report and appendices*. Retrieved April 8, 2008, from <http://www1.va.gov/vetdata/page.cfm?pg=5>

<sup>120</sup> Chronbach's alpha, a measure of psychometric reliability, is estimated at .96, which is a high level, given that 1 is the highest possible.

<sup>121</sup> The enhanced measure achieved a .53 correlation with the VR-12 score, indicating that the enhanced measure captures Quality of Life and adds dimensions not included in the VR, which was the goal of the enhancement.

<sup>122</sup> Net award refers to the entire cash compensation VA pays a disabled veteran including the schedule award and as appropriate, additional compensation based on dependent(s), individual unemployability, special monthly compensation, aid and attendance, and housebound benefits.

SCD veterans. These three deficiencies (correlation with age, lack of variance, and lack of norms) eliminate life satisfaction from consideration as the solitary QOL measure for VA. The enhanced QOL measure includes life satisfaction, but does not have these deficiencies (see Enhanced Measure section).

There is wide variance in QOL loss among veterans with disabilities in the same body system and sub-systems. QOL loss is very individualized; two veterans with the same rating and diagnoses may have very different QOL. Consequently, there will be winners and losers in a system that compensates for the average loss of quality of life associated with a particular disability. The receipt of additional compensation for IU mediates the greater loss of QOL for these veterans in the 60 to 90% disability rating range (see Figure VIII-3).

Veterans with impairments in the Mental Disorders body system of the VA Schedule for Rating Disabilities (VASRD) have the greatest QOL loss. Veterans with post-traumatic stress disorder (PTSD) have the largest overall QOL loss and the largest mental QOL loss of all diagnoses assessed. PTSD also results in a substantial physical QOL loss (see Figure VIII-7 and Figure VIII-8).

The 2007 Survey of Disabled Veterans is representative of the ratings and body systems in the VASRD. QOL loss is present on average among veterans with disabilities in every body system and all rating levels. The sample was not designed to be representative of each of the 724 diagnostic codes. QOL loss occurred for all of the 40 diagnostic codes with more than 100 respondents in the sample. QOL loss on average also occurred among veterans in every one of the 173 diagnostic codes with 15 or more responses.<sup>123</sup>

## In-Depth Analysis of 2007 QOL Survey

### Enhanced QOL Measure

The 2007 survey<sup>124</sup> of more than 21,000 disabled veterans included items addressing quality of life from three sources:

- Veteran's RAND quality of life measures,<sup>125</sup> VR-12, an adaptation of the Short Form 36 Health Survey (SF-36) for veterans, plus additional items from the VR-36
- General Social Survey (GSS)<sup>126</sup>

<sup>123</sup> All diagnostic codes with at least 15 cases resulted in QOL loss; diagnostic codes with fewer than 15 had inconsistent results.

<sup>124</sup> The 2007 Survey of Disabled Veterans for the Veterans' Disability Benefits Commission sought, in part, to assess whether the current VA benefits program compensates for quality of life degradation resulting from service-connected disability.

<sup>125</sup> The SF-36 and the SF-12 are measures most often used in research on quality of life. Originally developed by the RAND Corporation, they were adapted by VA as the Veterans' RAND measures of quality of life, the VR-36 and the VR-12. The adaptation for veterans expanded response choices in some items to increase the range of possible response options. They measure health related QOL and provide scores for mental QOL, physical QOL and subscales such as vitality, mobility and others. The SF/VR-12 is an abbreviated form of the SF/VR-36.

<sup>126</sup> Conducted by NORC, University of Chicago. (u.d.). *General Social Survey (GSS)*. Retrieved August 13, 2008, from <http://www.norc.org/projects/General+Social+Survey.htm>

- Additional items suggested by the Veterans' Disability Benefits Commission (VDBC)

The VR-12 is a health-related measure of quality of life and represents an established health-related QOL scale, and responses to the items produce a score for physical QOL and a score for mental QOL that can be compared to U.S. population norms. The study team's approach for calculating QOL loss improved on traditional analysis involving the VR-12 by developing norms for non-SCD veterans from the most recent 2001 National Survey of Veterans (NSV) instead of the U.S. population.

The literature review of QOL domains reveals that QOL is more broadly defined than physical and mental quality of life. (Appendix F contains a review of the literature on disability and quality of life.) It is defined to include the degree of overall life satisfaction that is positively or negatively influenced by an individual's perception of aspects of life of importance including matters both related and unrelated to health.<sup>127</sup> QOL could be defined in terms of the extent to which people possess certain goods, can access certain services, or have certain abilities and opportunities that help satisfy their needs and desires in major life domains including physical, psychological, social, economic, environmental, and cultural/personal.<sup>128</sup>

The additional 28 items that were asked of the 2007 survey participants cover more dimensions of quality of life than the VR-12. In addition to strengthening the mental and physical dimensions, the 2007 survey covers the following QOL domains:

- Social functioning
- Economic
- Environmental
- Personal/cultural.

Given the richness of the study data set, the study team was challenged to establish an enhanced measure that considers the full range of QOL items in the 2007 survey in addition to the VR-12 items. Creating a broader measure of QOL provides a more

<sup>127</sup> Moons, P., Van Deyk, K., Budts, W., and others. (2004). Caliber of quality-of-life assessments in congenital heart disease: A plea for more conceptual and methodological rigor. *Archives of Pediatric Adolescent Medicine*, 158, 1062–1069.

<sup>128</sup> Bognar, G. (2005). The concept of the quality of life. *Social Theory and Practice*, 31(4), 561-580.

Bowling, A. (1997). *Measuring health: A review of quality of life measurement scales*, (2<sup>nd</sup> ed.), (All chapters). Milton Keynes, England: Open University Press.

Cella, D., Lai, J., and others. (2004). CORE Item Banking Program: Past, present and future. *Quality of Life Newsletter*, 2, 5–8.

Seid, M., Varni, W. J., Segall, D., & Kurtin, S. P. (2004). Health-related quality of life as a predictor of pediatric healthcare costs: A two-year prospective cohort analysis. *Health and Quality of Life Outcomes*, 2(48), 1–10.

Sloan, J. A., Novotny, P. J., & Loprinzi, C. L. (1998). *Analyzing quality of life (QOL) endpoints in clinical trials via the SAS system*. Statistics, Data Analyses, and Modeling. Retrieved April 2, 2008, from <http://www2.sas.com/proceedings/sugi23/Stats/p225pt1.pdf>

Renwick, R., and others. (2005). *The quality of life profile: A generic measure of health and well-being*. Toronto, Canada: Quality of Life Research Unit, Centre for Health Promotion, Department of Public Health Sciences, University of Toronto. Retrieved April 1, 2008, from [www.utoronto.ca/qol/profile.html](http://www.utoronto.ca/qol/profile.html)

Yazicioglu, K., and others. (2006). Effects of sociodemographic characteristics, illness process, and social support on the levels of perceived quality of life in veterans. *Military Medicine*, 17, 1083–1088.

conceptually and empirically valid approach for measuring QOL by covering more QOL issues relevant to veterans with disabilities as well as by increasing the sensitivity of the QOL measure. Another motivation for exploring an enhanced scale is that the VR-12 produces two measures—a measure of mental QOL and a measure of physical QOL, rather than an overall measure of quality of life or a measure of overall loss of quality of life.

Table VIII-1 lists the questions grouped by domains and topics covered in the 2007 survey that were analyzed by the study team to form an enhanced measure of quality of life.

Health-related QOL (as measured by the VR-12 and which includes physical and mental dimensions) cover some of the same dimensions that are used to establish a disability rating that provides compensation for earnings loss capacity. There is a potential concern that if the factors used to determine earnings loss capacity are also used to determine quality of life, then there could be overlap instead of a separation of payments. Earnings loss compensation is based on the 8 hours per day that an individual/veteran would be expected to work; the remaining 16 hours are for personal activities and sleep. The study team posits that the physical and mental health domains are inherently part of disabled individual's personal life, not just his/her work life, and therefore should not be excluded in assessing overall quality of life. This concept of life being composed of two realms—work and personal—also factors into payments and is consistent with a two-track compensation system that compensates for work disability and non-economic loss.

The study team conducted a psychometric analysis using factor analysis to explore the possibility that these items might form factors needed to establish an enhanced QOL scale. In layman's terms, factor analysis is a statistical technique that is used to determine the extent to which a set of questions define and measure a single concept. If that is established, factor analysis continues to determine whether subgroups of questions define separate domains of the single concept. In this study, factor analysis was used to determine whether the set of survey items under investigation from the 2007 Survey of Disabled Veterans could be used to establish an enhanced measure of quality of life and, secondly, whether subgroups of the items represent more domains of quality of life than the mental and physical domains.

**Table VIII-1. QOL Items Available from the 2007 Survey of Disabled Veterans**

QOL Domains and Topics	Question Content (Highlighting indicates items from VR-12)
VR Physical Functioning (PF)	B.2 Does your health now limit you in moderate activities such as moving a table, pushing a vacuum cleaner, bowling, or playing golf? [Source: VR-12]; B.3 [Does your health now limit you in] climbing several flights of stairs? [Source: VR-12]
VR Role-Physical (RP)	B.5 During the past 4 weeks, how much of the time have you cut down the amount of time you spent on work or other activities as a result of your physical health? [Source: VR-36]; B.4 During the past 4 weeks, how much of the time have you accomplished less than you would like as a result of your physical health? [Source: VR-12]; B.6 During the past 4 weeks, how much of the time were you limited in the kind of work or other activities you do as a result of your physical health? [Source VR-12]; B.7 During the past 4 weeks, how much of the time have you had difficulty performing work or other activities as a result of your physical health? [Source: VR-36]
VR Bodily Pain (BP)	B.12 How much bodily pain have you had during the past 4 weeks? [Source: VR-36] B.13 During the past 4 weeks, how much did pain interfere with your normal work including both work outside the home and housework? [Source: VR-12]
VR General Health (GH)	B.1 In general, would you say your health is... [Source: VR-12]
VR Vitality (VT)	B.18 How much of the time during the past 4 weeks did you have a lot of energy? [Source VR-12]
VR Social Functioning (SF)	B.11 During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups? [Source: VR-36] B.20 During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities like visiting with friends, relatives, and so forth? [Source VR-12] B.21 During the past 4 weeks, how much of the time has your physical health or an emotional problem kept you from bonding or being emotionally close with someone in your family? [Source: New question, similar to social functioning] B.22 During the past 4 weeks, How much of the time has your physical health or an emotional problem kept you from enjoying nature, art, or music? Would you say...? [Source: New question, similar to social functioning]
VR Role-Emotional (RE)	B.8 During the past 4 weeks, how much of the time have you cut down the amount of time you spent on work or other activities as a result of any emotional problems? [Source VR-36]; B.9 During the past 4 weeks, how much of the time have you accomplished less than you would like as a result of any emotional problems? [Source VR-12]; B.10 During the past 4 weeks, how much of the time did you not do work or other activities as carefully as usual as a result of any emotional problems? [Source VR-12]
VR Mental Health (MH)	B.14 How much of the time during the past 4 weeks have you been a very nervous person? [Source VR-36] B.15 How much of the time during the past 4 weeks have you felt so down in the dumps that nothing could cheer you up? [Source VR-36] B.17 How much of the time during the past 4 weeks have you felt calm and peaceful? [Source VR-12] B.16 How much of the time during the past 4 weeks have you felt downhearted and blue? [Source VR-12]; B.19 How much of the time during the past 4 weeks have you been a happy person? [Source VR-36]
Life Satisfaction—Overall and Specific Dimensions [Source: General Social Survey]	C.1 How much satisfaction do you get from your life overall? C.2 How much satisfaction do you get from the city or place you live in? C.3 How much satisfaction do you get from your non-working activities – hobbies or, other interests? C.4 How much satisfaction do you get from your family life? C.5 How much satisfaction do you get from your friendships? C.6. How much satisfaction do you get from your health and physical condition C.7 We are interested in how people are getting along financially these days.
Stress Effects of Disability [Source: New Questions]	C9. What was the initial effect of your service connected disability on your life? C10. Over time, has this changed? (Dropped due to psychometric analysis results) C11a. I pretty much adjusted to living with my service-connected disability. (Dropped due to psychometric analysis results) C11b. Living with my service-connected disability bothers me every day. C11c. I had to change my career plans due to my service-connected disability. C11d. I had to change my family plans due to my service-connected disability. C11e. I worry about the future due to my service-connected disability. C11f. I don't like thinking about my service-connected disability. C11g. My service-connected disability is hard on my family. C11h. My service connected disability is visible to other people. C11i. I hardly notice my service connected disability.
Total Enhanced QOL Measure	Based on factor analysis of the above items (See Appendix G).

Source: Items from 2007 Survey of Disabled Veterans classified into domains by the EconSys Study Team.

The first step in factor analysis establishes the unrotated factor, which identifies all items that are related to each other. Those that are included in this set are viewed psychometrically as measuring the concept under study, in this case quality of life; those that do not are viewed psychometrically as not contributing to the measurement of the concept of quality of life and are discarded. The results of the analysis of the 28 items from the 2007 survey was that all but 2 items (C10 and C11a in Table VIII-1 above) related to the first factor, establishing the group of items that define an enhanced measure of QOL. After extracting this factor, the factor analysis continued to identify whether items could be grouped into subscales based on their interrelationships. The analysis revealed that the enhanced QOL measure consisted of four factors or domains of quality of life:

- Physical
- Mental
- Life satisfaction
- Stress effects of disability

The enhanced QOL measure broadens the quality of life measure to include life satisfaction and the stress effects of disability in addition to physical and mental QOL. The result is an enhanced QOL measure that encompasses more of the domains of interest to disabled veterans.

The enhanced QOL measure has strong psychometric properties. The results of the psychometric analysis support the construct validity of the enhanced QOL measure by indicating that items measuring different components of QOL cluster together in patterns that are predictable or reasonable based on the multidimensional structure of the QOL construct. For example, Item C6: “How much satisfaction do you get from your health and physical condition?” was a key component of both the life satisfaction factor and the physical health factor. The enhanced QOL measure also evidences very high reliability (internal consistency, Chronbach’s alpha = .96).<sup>129</sup>

The enhanced QOL measure is expressed in terms of standard scores with a mean of zero and standard deviation of one. Standard scores are calculated to address the fact that some survey questions have three response choices (yes, limited a little; yes, limited a lot; no, not limited at all) and others have four, five, and six choices. Standardizing the scores equates them statistically. Furthermore, factor analysis weights items differently based on their relationship to the overall QOL score. Items with a stronger relationship to QOL are weighted higher than items with lower loadings to the QOL factor. The physical and mental QOL components correlate highly to the enhanced QOL, .56 and .64, respectively. (Correlation scores above .50 are generally viewed as representing a strong relationship between subdomains and domains in psychometrics.) Since the rotated factor solution was used, the study team followed the established

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<sup>129</sup> Chronbach’s alpha is a statistic that measures reliability. It ranges from 0 to 1, so .96 indicates very high level of reliability.

methodology of calculating uncorrelated physical and mental QOL components, which helps in interpreting results.

Quality of life loss was calculated for the enhanced overall QOL measure and the physical and mental components. This was accomplished by comparing the enhanced QOL measures with population norms developed from the 2001 NSV.<sup>130</sup> The 2001 NSV included VR-12 responses from 13,610 veterans who reported no SCD. The VR-12 items were scored for the non-SCD veterans in the NSV by age and gender, using the approach advanced by Dr. Lewis Kazis of Boston University.<sup>131</sup> These scores were used to estimate what the VR-12 score would be for each SCD veteran in the VDBC sample if that veteran did not have a SCD. The relationship between the VR-12 scores and the enhanced QOL measure scores for veterans in the VDBC sample was used to estimate an enhanced score for each non-SCD veteran in the NSV sample. This produced norms for non-SCD veterans that could be used for comparison with SCD veterans on the enhanced measure as well as on the physical and mental QOL measures.

Quality of life in veterans with service-connected disabilities in the 2007 survey data set is lower than the norm for veterans with no service-connected disabilities, lower than the norm for veterans with no disabilities (service-connected or acquired after service), as shown in Figure VIII-1, and lower than the U.S. population.<sup>132</sup> These scores are based on U.S. norms for the VR-12, with a mean of 50 and standard deviation of 10, which suggests that non-disabled veterans and non-SCD veterans have higher mental QOL than the general population. The estimated non-disabled norm is almost identical to the actual norm, confirming the validity of the estimated norms.

It is not possible to estimate non-SCD or non-disabled veterans' norms separately for life satisfaction and stress effects of disability components of the overall QOL measure because the NSV did not include questions pertaining to these topics. Therefore, the subsequent analyses are based on the overall enhanced QOL measure and the enhanced physical and mental QOL. Appendix G contains a detailed description of the methodology used to create the enhanced QOL measure, ascertain its psychometric properties, and establish norms.

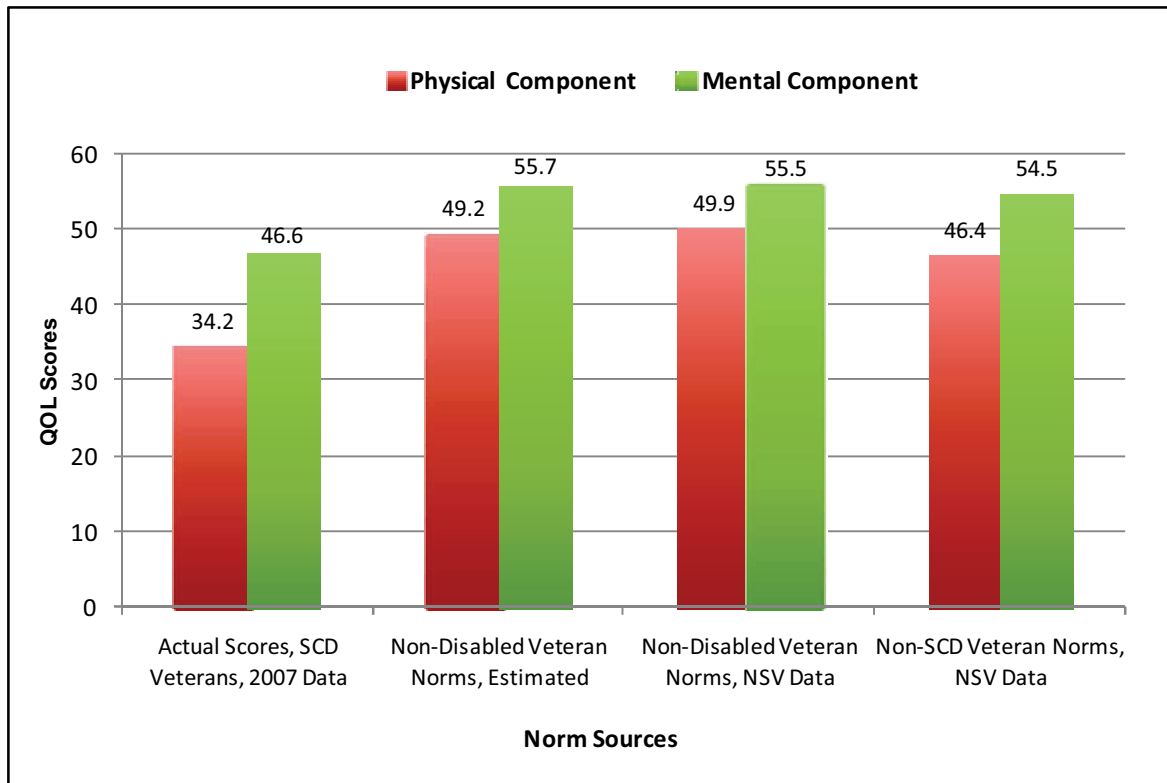
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<sup>130</sup> Department of Veterans Affairs. 2001. *2001 National Survey of Veterans*. Retrieved February 2, 2008 from <http://www1.va.gov/vetdata/docs/NSV%20Final%20Report.pdf>

<sup>131</sup> Spiro A., Rogers W., Qian, S. & Kazis, L. (2004, September). *Imputing Physical and Mental Summary Scores (PCS and MCS) for the Veterans SF-12 Health Survey in the Context of Missing Data*. Report submitted to Department of Health and Human Services Center for Medicare and Medicaid Studies (CMS).

<sup>132</sup> The SF-12 has a population norm of 50 for mental and 50 for physical.

**Figure VIII-1. Physical and Mental QOL Score Comparisons Using VR-12 Scores, SCD Veterans, Non-Disabled Veterans, and Non-SCD Veterans**



Source: Analysis of 2007 Survey of Disabled Veterans data and 2001 National Survey of Veterans data; results are national estimates.

In addition to the QOL items, the 2007 survey also includes variables that can be analyzed as important predictors and correlates of QOL. Descriptive and predictive analyses of interrelationships of these items with the enhanced QOL measure were conducted to provide further support for the construct validity of the scale (convergent validity). Table VIII-2 displays these items.

### Overview of Quality of Life Loss

Quality of life loss in this analysis is defined as the difference between the estimated QOL scores for non-SCD veterans and the actual QOL scores for SCD veterans on the standardized enhanced QOL measure. This analysis assumes that the non-SCD veterans are the same as SCD veterans, except that SCD veterans have one or more SCD. The comparisons show the difference in QOL due to SCDs, and exclude QOL loss due to aging, acquired non-SCDs, and other life events that are experienced by both SCD and non-SCD veterans. To be consistent with the earnings loss analysis, this analysis focuses primarily on veterans receiving benefits from a VASRD rating, not IU or SMC. Veterans receiving IU and SMC are analyzed separately.



**Table VIII-2. Important Correlates of QOL Available from the 2007 Survey of Disabled Veterans**

QOL Related Topics	Question Content
<b>Economic Adequacy</b>	C8. Do you think the disability payment you receive from VA compensates you fairly for potential lost earnings? [Source: New question]
	C11j. I receive the right amount of compensation for my service-connected disability.
	C11k. I receive too little compensation for my service-connected disability.
	C11l. I receive too much compensation for my service-connected disability.
<b>Supportive Technologies</b>	B.23 Do you have serious difficulty seeing, even when wearing glasses or contact lenses? [Source: National Health Interview Survey (NHIS) 1994 Disability Supplement]
	B.24 Do you now use a hearing aid? [Source: NHIS Disability Supplement]
	B.25 Do you now use any of these aids to get around? [Source: NHIS Disability Supplement]
	01 Cane
	02 Crutches
	03 Walker
	04 Medically prescribed shoes
	05 Manual wheelchair
06 Electric wheelchair	
07 Scooter	
B.26 Do you now use an artificial leg, foot, arm, or hand? [Source: NHIS Disability Supplement]	
<b>Additional Symptoms</b>	B26A. Are you experiencing problems with breathing or other respiratory functions due to a service-connected disability? [Source: New question]
	B.28 Do you have any physical, mental, or emotional symptoms that are intermittent, in other words, that come and go? [Source: New question]

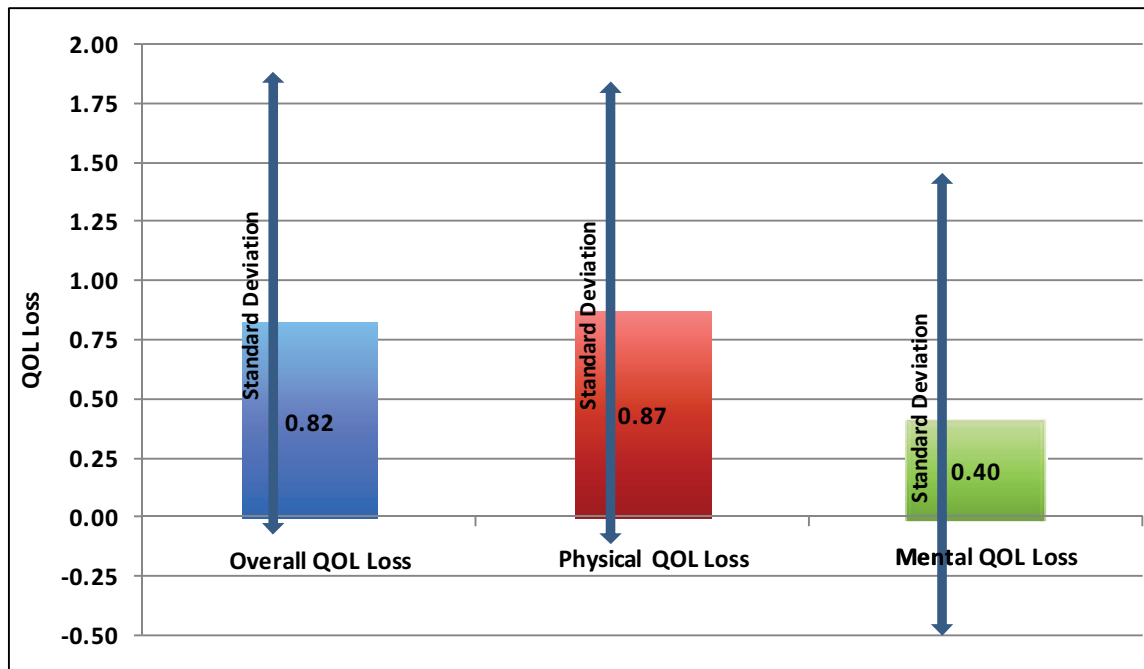
Source: 2007 VDBC Survey of Disabled Veterans.

The QOL scores are analyzed for losses in overall, physical, and mental QOL. Each of these is measured on a scale of approximately -2 to +4, with +4 indicating the highest QOL loss score, and with zero indicating "no QOL loss." QOL loss is rarely negative, which would indicate that the individual or group has better quality of life than before experiencing disability. The overall QOL loss assigns different weights to items based on their correlations to the overall measure's score. The mental and physical QOL losses are calculated differently in order to ensure that their scores are uncorrelated. For these reasons, the physical and mental QOL losses do not total up to the overall QOL loss. QOL loss means overall QOL loss unless it is specifically identified as physical QOL loss or mental QOL loss.

The calculated QOL loss standard score is zero for veterans with no loss of quality of life, and the average QOL loss score for SCD veterans compared with non-SCD veterans is 0.8 on a scale of -2 to +4 (the highest QOL loss score) with 0 as "no QOL loss," and is shown in Figure VIII-2. The scale is based on standard deviations. In a normal distribution, 68.2 percent of the cases are within 1 standard deviation of the mean, 95.4 percent are within 2 standard deviations of the mean; 99.6 percent are within 3 standard deviations, and 99.8 are within 4 standard deviations. The loss of physical quality of life exceeds 0.9, and loss of mental quality of life is 0.4 on average, which may partially be explained by the fact that far more veterans have physical disabilities than mental disabilities. The QOL loss of three-fourths of the survey sample exceeded 0.5, and the primary diagnoses included at least one veteran for 593 diagnostic codes represented among veterans without IU and without SMCs in the 2007 survey sample.

An overall finding that permeates the QOL loss analysis is that the standard deviations are large. Standard deviations are a measure of dispersion. Large standard deviations indicate that variation is great among individual veterans with the same disability, the same rating, and other dimensions analyzed. These large standard deviations indicate that QOL loss is very personal and individualized; two veterans with the same disability and same rating can have very different losses in quality of life.

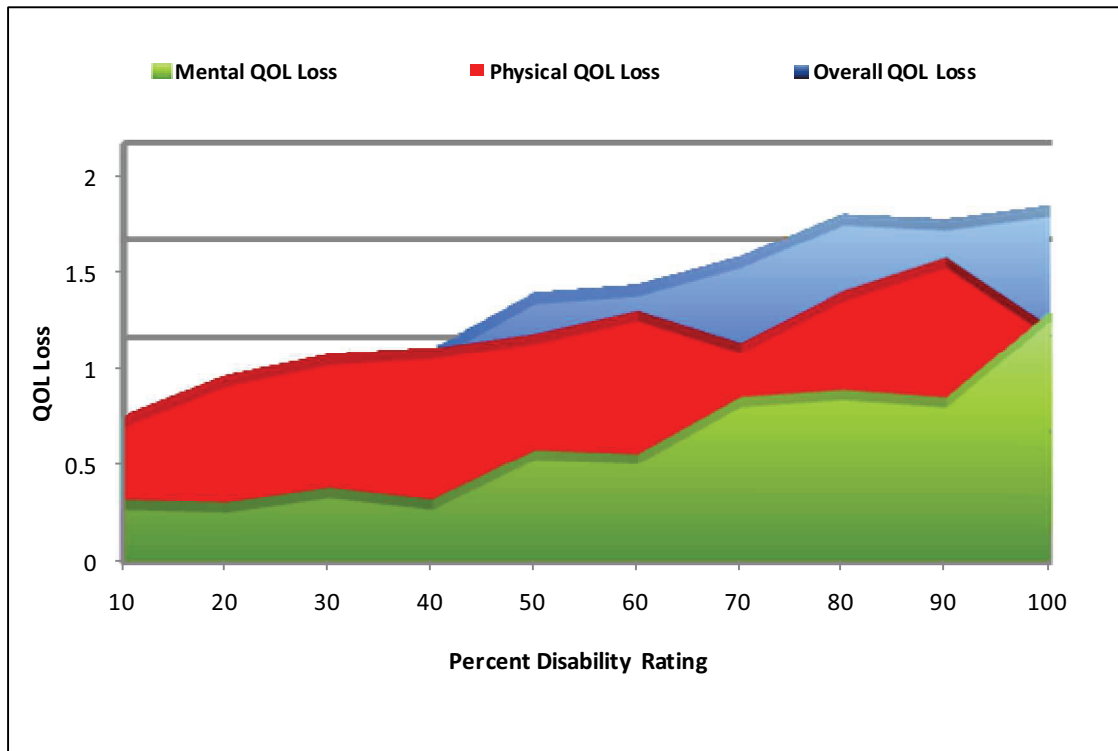
**Figure VIII-2. QOL Loss, SCD Veterans**



*Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates.*

### Quality of Life Loss by Severity of Disability

Overall loss of quality of life increases as VA combined degree of disability (CDD) ratings increase. Figure VIII-3 shows the distinct relationship between the two when veterans who receive IU and SMC payments are excluded. While overall QOL loss increases at a steady rate corresponding to higher disability levels, the relationship between mental and physical QOL loss is much more variable: physical QOL loss dips at the 70% and 100% disability rating levels and mental QOL loss veers sharply upward at the 100% disability rating level.

**Figure VIII-3. QOL Loss by CDD Rating Level, SCD Veterans without IU and without SMC**

Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates.

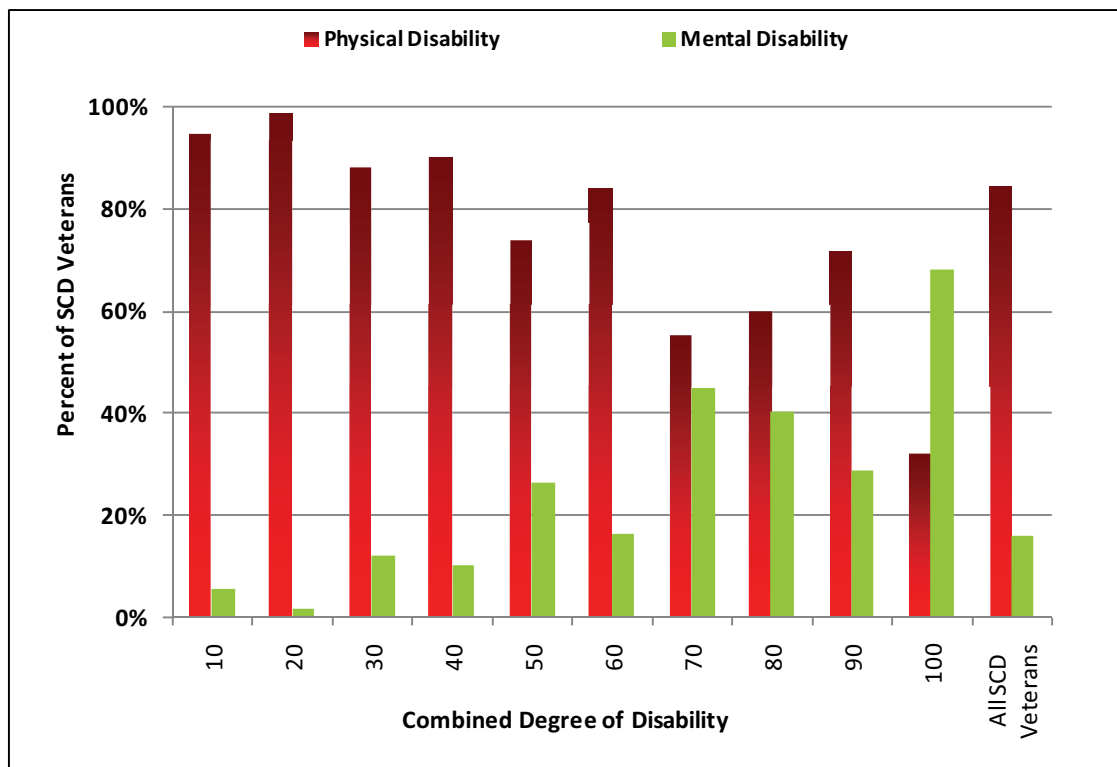
The results of QOL loss by severity indicate that 100% disabled veterans have lower physical QOL loss and higher mental QOL loss than 90% disabled veterans. This may be explained in part by the fact that nearly one-half (44 percent) of veterans rated at 100% have mental diagnoses as their primary disability compared to only about one-third of those rated 90% disabled. The enhanced mental QOL loss measure is sensitive enough to detect mental QOL loss at all disability rating levels.<sup>133</sup> Physical QOL loss does not change as much with increased disability rating levels as does mental QOL loss, although physical QOL loss is higher than mental QOL loss at any given level.

The slope of this distribution and contribution of physical and mental QOL loss are affected by the nature of the VASRD ratings—some diagnoses have a wide range of rating levels; others do not, and there are far more physical diagnoses than mental diagnoses. Loss of quality of life by rating level is partially explained by the fact that physical primary diagnoses and mental primary diagnoses are not equally represented at each rating level. Figure VIII-4 compares the percentage of primary physical diagnoses with the percentage of primary mental diagnoses at each disability rating level for all

<sup>133</sup> CNA Corporation (2007). Final Report for the Veterans' Disability Benefits Commission. Arlington, VA: CNA Corporation (CNAC). p. 69. CNAC found disabled veterans with low disability ratings (10-40 percent) to have no mental quality of life loss relative to U.S. population and little to no difference for those rated 50-90 percent who are not IU.

SCD veterans without IU and without SMCs. The noticeable decline in physical loss of quality of life at the 70% rating level is partially explained by the decline in the proportion of veterans with a physical primary diagnosis at that disability rating level. At the 70% disability rating level, 55 percent of SCD veterans have a physical primary diagnosis, a considerable drop from 84 percent at the 60% rating level. At the 90% disability rating level, 71 percent of the SCD veterans have a physical primary diagnosis, and at the 100% disability rating level, 32 percent have a physical primary diagnosis.

**Figure VIII-4. Comparison of Percentages of Primary Physical with Primary Mental Diagnoses at Each Disability Rating Level, SCD Veterans without IU and without SMC**



*Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates.*

The primary diagnoses of SCD veterans rated at 60% and lower disability rating levels are nearly all physical. Although mental primary diagnoses do not make up the majority of primary diagnoses at any disability rating level, they make up more than one-third at the 70% and 80% rating levels, and nearly one-third at the 90% rating level. At the 100% disability rating level, nearly two-thirds of the SCD veterans without IU and without SMC have a mental primary diagnosis.

The physical and mental nature of the primary disability plays a dominant role in the physical and mental QOL losses well as the overall QOL loss.

### Quality of Life Loss by Individual Unemployability

Payment at the 100% level for IU can be assigned when a service-connected disability makes it impossible for the veteran to obtain substantially gainful employment. Generally, IU requires one disability rating of 60% or more or a CDD between 70% and 90% where at least one disability is rated 40% or higher. However, veterans who are unable to secure and sustain substantially gainful employment by reason of service-connected disability and who do not meet the percentage standards can be granted extra-schedular consideration. IU eligibility criteria also includes annual income thresholds. Annual income cannot exceed the poverty threshold established by the Bureau of the Census which was \$882.25 per month for 2007.<sup>134</sup> This criterion differs somewhat from the Social Security Administration definition of substantial gainful activity for Social Security Disability Insurance which was \$900 in 2007; the threshold is \$940 per month for 2008.<sup>135</sup>

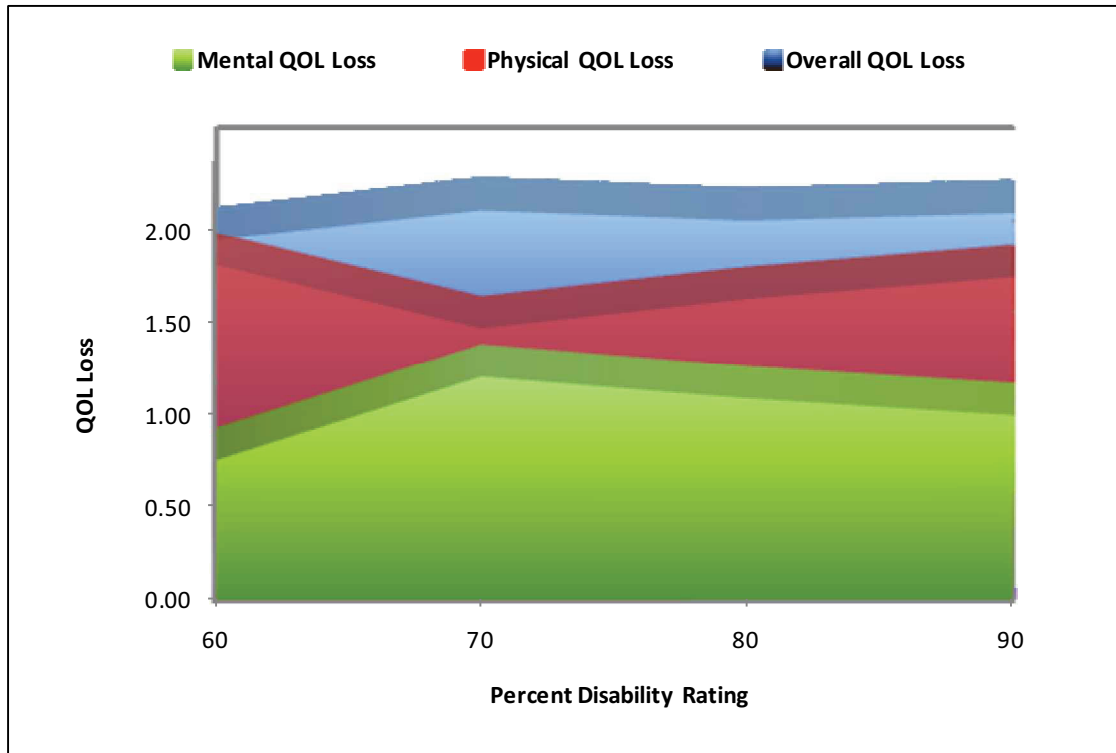
189,838 veterans were receiving IU as of September 2007. This is 36 percent of SCD veterans with 60% to 90% combined degree of disability. About 53 percent of veterans with an IU rating have mental primary disabilities. IU is strongly associated with greater QOL loss as seen in Figure VIII-5. Veterans with 60% to 90% CDD rating levels make up 19 percent of SCD veterans; and veterans with IU have higher overall, physical, and mental QOL loss than veterans at the same disability ratings without IU. Overall QOL loss for veterans with IU is approximately equivalent at the 60%, 70%, 80% and 90% disability rating levels; and the overall QOL loss is approximately equivalent to the QOL loss experienced by veterans rated at the 100% disability rating level without IU and without SMCs. Since IU equates to a 100% disability rating level, this finding supports the assertion that the IU rating is being properly applied relative to QOL loss. The difference in physical QOL loss is greatest for veterans at the 60% disability rating level, where veterans with IU experience a physical QOL loss of 1.6 compared to a physical QOL loss of 1.1 for veterans rated at 60% without IU. The difference in mental QOL loss is greatest for veterans at the 70% disability rating level, where SCD veterans with IU have a 1.2 mental QOL loss and veterans without IU have a 0.8 mental QOL loss. Overall, these findings are consistent with the point often made that an individual's ability to work or otherwise be productive plays a positive role in quality of life.

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<sup>134</sup> U.S. Census Bureau. (2008). Preliminary estimates of weighted average poverty thresholds for 2007. Retrieved June 24, 2008, from <http://www.census.gov/hhes/www/poverty/threshld/07prelim.html>. \*\*Note that this is a preliminary estimate for 2007 and an estimate for 2008 is not available.

<sup>135</sup> U.S. Social Security Administration. (2007). Substantial gainful activity. Retrieved June 24, 2008 from <http://www.ssa.gov/OACT/COLA/sga.html> and retrieved August 26, 2008 from <http://www.ssa.gov/pressoffice/colafacts.htm>

**Figure VIII-5. QOL Loss by Selected CDD Rating Levels, SCD Veterans with IU and without SMC**



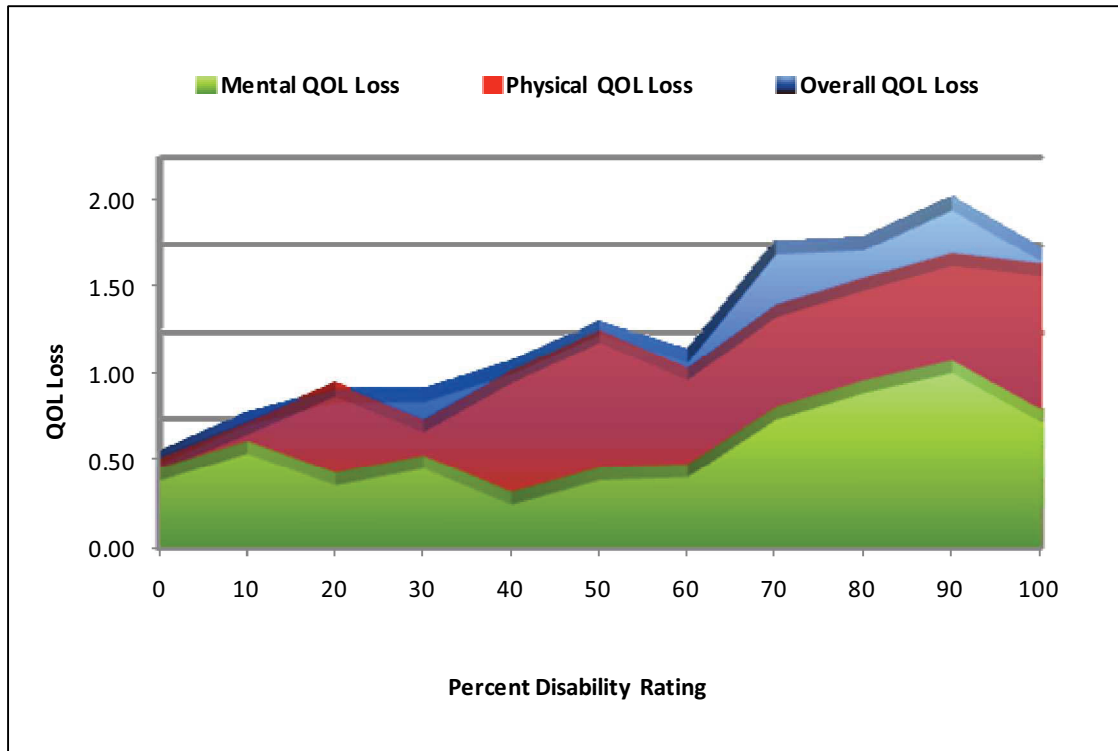
Source: Analysis of 1,597 veterans with IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates.

### QOL Loss by Disability Rating Level and Special Monthly Compensation

About 10 percent (259,598) of SCD veterans receive SMC payments for physical conditions. No SMC payments are made for mental conditions. As of September 2007, 188,747 veterans received SMC (K) and 14,119 veterans received SMC (L), (M), (N), (O), or (P) for loss of or loss of use of multiple limbs or organs. Another 45,774 veterans received SMC (S), (L), (R.1) or (R.2) for assistance or housebound. SMC (K) can be awarded to veterans at all levels of disability from 0% to 100%, while the disabilities required for all other SMCs result in a CDD rating level of 100%. On average veterans receiving SMC exhibit higher overall QOL loss (1.26) than veterans who do not receive SMC payments or IU (0.82) as well as higher mental and physical QOL loss. (Veterans without SMC and IU are shown earlier in this chapter in Figure VIII-3). There is no consistent relationship between receiving and not receiving SMCs at the individual rating levels. Receipt of SMCs is associated with a higher overall QOL loss at the 10%, 70% and 90% ratings, when compared with veterans who do not receive SMCs or IU. Veterans at the 10%, 20%, 30%, 70% and 90% ratings who receive SMC (K) have a higher mental QOL loss than veterans without SMCs or IU. Since SMCs are paid for physical conditions, these findings indicate the mental toll of the physical conditions that qualify veterans for SMC (K) payments. At the 100% rating, veterans report a higher physical

QOL loss than veterans without SMCs and IU, emphasizing the physical toll of the disabilities at 100%. The mental loss at the 100% disability level is not greater for SMC veterans, and that is partially explained by the high proportion of veterans with mental disabilities in that group who have high mental QOL loss. The mental loss associated with the physical condition triggering the SMC is not as great as the mental loss for 100% disabled veterans, where more than two-thirds have a primary condition that is mental. (See Figure VIII-6).

**Figure VIII-6. QOL Loss at Each Disability Rating Level, Veterans with SMCs**

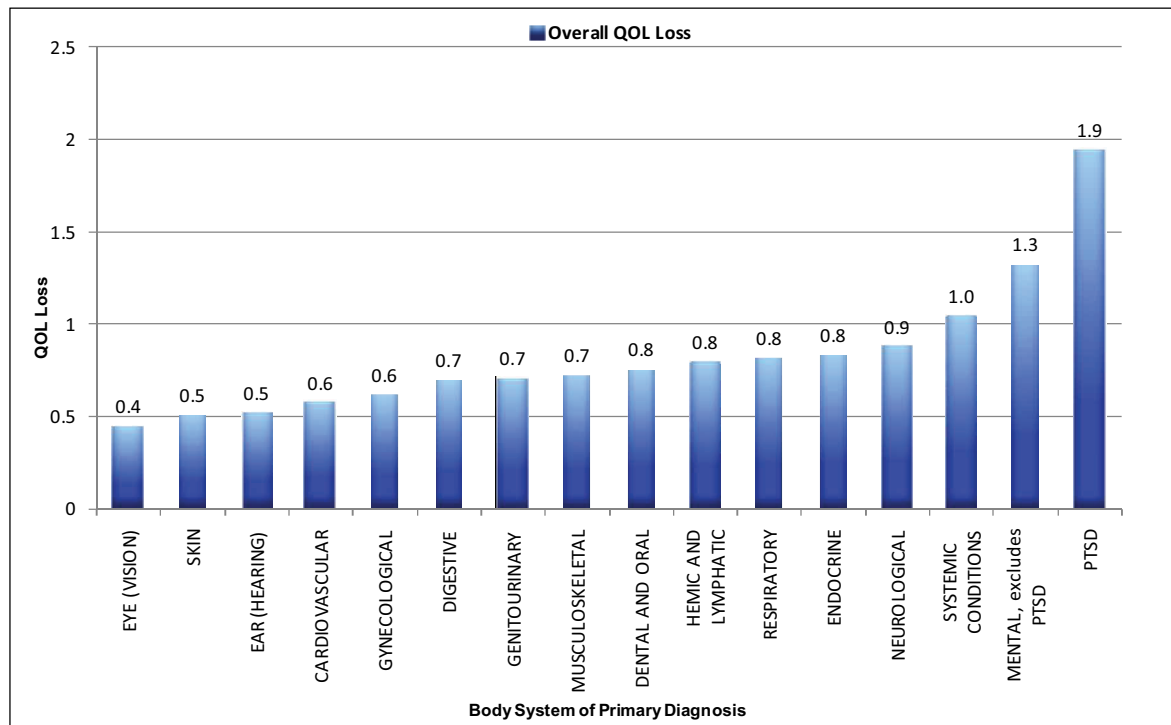


Source: Analysis of veterans with SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates.

**QOL Impact by Body System and Aggregated Diagnostic Codes**

The body system associated with the greatest overall quality of life loss is mental, which is broken down into PTSD (1.9) and mental excluding PTSD (1.3). Greatest overall QOL loss is further followed by the systemic conditions (1.0) and neurological (0.9) body systems. Lowest losses of overall QOL occurred in the eye (0.4), skin (0.5), and ear (0.5) body systems. Seven of the physical body systems have a fairly constant QOL loss, at 0.7 and 0.8. (See Figure VIII-7).

**Figure VIII-7. Overall QOL Loss by Body System of Primary Diagnosis, Veterans without IU and without SMC**



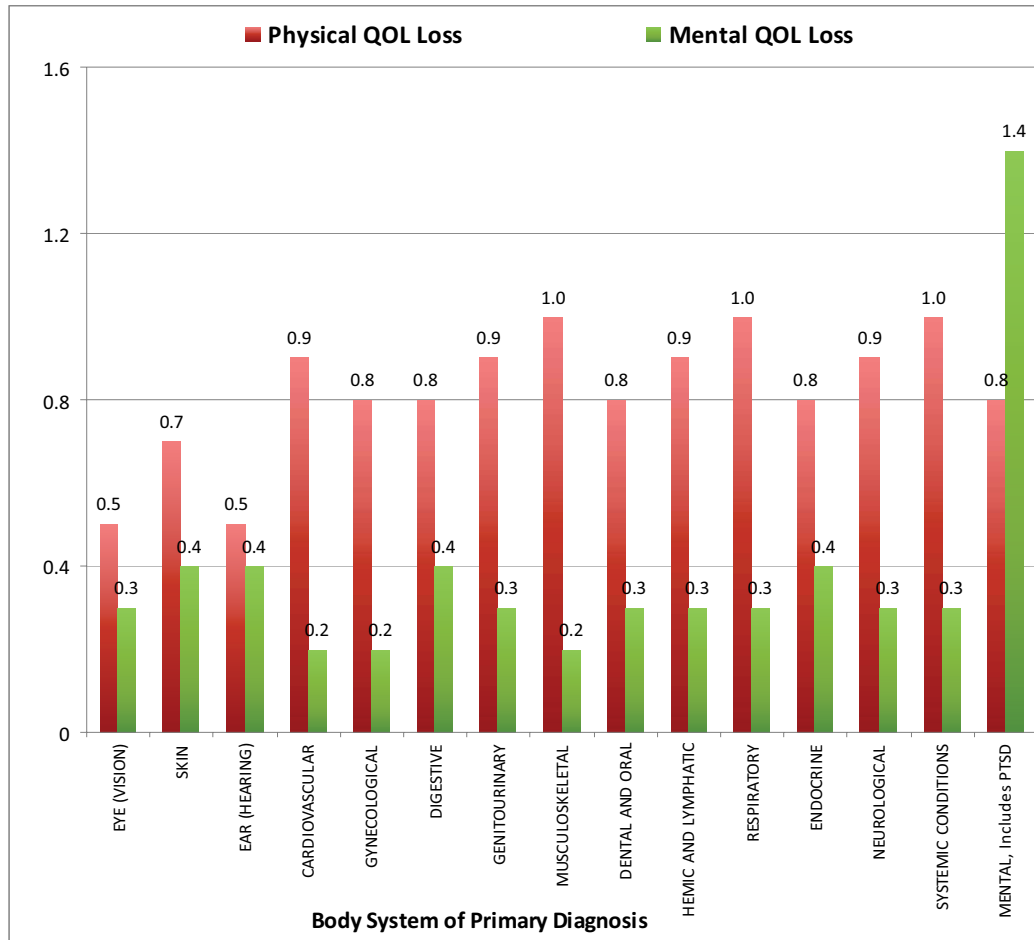
Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates.

Greater physical QOL loss is associated with physical disabilities and greater mental QOL loss is associated with mental disabilities (See Figure VIII-8). Mental conditions also show a physical QOL loss that is close to the average physical QOL loss for all SCD veterans and higher than several physical conditions. The mental body system including PTSD has a higher physical QOL loss than that for eye, skin, and ear body systems. The mental body system including PTSD has a physical QOL loss equal to or greater than the eye, skin, ear, gynecological, digestive, dental, and endocrine body systems. These results appear even though the scoring methodology used for physical and mental QOL loss makes these two factors uncorrelated. Such results may indicate that psychiatric symptoms exert a physical toll on the body as well as possible co-morbidity between physical and mental SCDs (for example, PTSD may result from or be associated with actual physical trauma).

The body systems with the highest physical QOL loss are systemic, respiratory, and musculoskeletal (all 1.0), followed by neurological, cardiovascular, genitourinary, hemic and lymphatic, and neurological (all 0.9). The body system with the highest mental QOL loss was mental including PTSD (1.4). It far exceeded the amount of mental QOL loss associated all other body systems, where losses ranged from (0.2) to (0.4). (See Figure VIII-8).



**Figure VIII-8. Physical and Mental QOL Loss by Body System of Primary Diagnosis, Veterans without IU and without SMC**



Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates.

The musculoskeletal body system, which accounts for the largest percentage of disabled veterans, has a mid-range overall QOL loss (0.7), and has the highest physical QOL loss (1.0), and the lowest mental QOL loss (0.2) along with the cardiovascular and gynecological body systems. These rankings are averages but within each body system individual veterans may be far above or below the average (as indicated by large standard deviations discussed earlier in this chapter).

Twenty-eight individual diagnoses or body subsystems were similarly examined for QOL loss. (See Table VIII-3.) In keeping with findings for body systems as a whole, four of the five subsystems that had the greatest QOL loss were within the mental body system. They were:

- PTSD—1.9 overall QOL loss, 0.9 physical QOL loss, 1.6 mental QOL loss

- Anxiety, major depressive disorder, bipolar disorder, dysthymic disorder (excluding PTSD)—1.4 overall QOL loss, 0.8 physical QOL loss, 1.1 mental QOL loss
- Dementia due to head trauma, amnesic, and other cognitive disorders—1.3 overall QOL loss, 0.9 physical QOL loss, 0.9 mental QOL loss
- Schizophrenia—1.3 overall QOL loss, 0.6 physical QOL loss 1.3 mental QOL loss
- Infectious diseases and immune disorders including lupus, AIDS, chronic fatigue syndrome, malaria, and rheumatic fever produce overall QOL loss of 1.0; 1.0 for physical, and 0.3 for mental QOL loss. (No subsystems were examined.)

**Table VIII-3. QOL Loss for 28 Body Subsystems for Veterans without IU and without SMC**

Body Subsystems	Overall QOL Loss	Physical QOL Loss	Mental QOL Loss
PTSD	1.9	0.9	1.6
Anxiety, major depressive disorder, bipolar disorder, dysthymic disorder	1.4	0.8	1.1
Dementia due to head trauma, amnesic and other cognitive disorders	1.3	0.9	0.9
Schizophrenia	1.3	0.6	1.3
Infectious disease and immune disorders including lupus, AIDS, chronic fatigue syndrome, malaria, rheumatic fever	1.0	1.0	0.3
Miscellaneous neurological disorders: Migraine Headaches, Huntington’s Chorea, narcolepsy	1.0	1.2	0.2
Central Nervous System: encephalitis, multiple sclerosis, traumatic brain disease, poliomyelitis, meningitis	1.0	1.0	0.5
Trachea and bronchi	0.9	1.1	0.3
Endocrine	0.8	0.8	0.4
Hemic and lymphatic	0.8	0.9	0.3
Heart	0.8	1.1	0.3
Ankyloses, limitation of motion, and other impairments of joints and bones	0.8	1.0	0.1
Lungs and pleura	0.8	1.0	0.3
Cranial and peripheral nerves disorders	0.8	0.9	0.3
Dental and oral conditions	0.8	0.8	0.3
Epilepsies	0.8	0.6	0.5
Muscle injuries	0.7	0.9	0.6
Genitourinary	0.7	0.9	0.3
Digestive	0.7	0.8	0.4
Nose and throat	0.7	0.8	0.3
Hearing	0.6	0.7	0.5
Gynecological conditions	0.6	0.8	0.2
Musculoskeletal diseases	0.6	0.9	0.0
Skin	0.5	0.7	0.4
Arteries and veins	0.5	0.8	0.2
Diseases of ear and other sense organs	0.5	0.5	0.3
Eye	0.4	0.5	0.3
Amputations and loss of use of extremities	0.2	0.4	0.3

Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and + 4, with 0 = no loss of quality of life; means are national estimates.

The neurological body system has overall QOL loss of 0.9 (0.9 for physical and 0.3 for mental QOL loss). The findings for subsystems of the neurological body system are:

- Central Nervous System: encephalitis, multiple sclerosis, traumatic brain disease, poliomyelitis, meningitis (1.0 for the overall, 1.0 for physical, and 0.5 for mental QOL loss)
- Miscellaneous neurological disorders: migraine headaches, Huntington’s Chorea, narcolepsy (1.0 for the overall, 1.2 for physical, and 0.2 for mental QOL loss)
- Cranial and peripheral nerves disorders: paralysis, neuritis, and neuralgia (0.8 for the overall, 0.9 for physical and 0.3 for mental QOL loss)
- Epilepsies and seizure disorders (0.8 for the overall, 0.6 for physical, and 0.5 for mental QOL loss).

Diseases of the endocrine system including diabetes, hypothyroidism, and malignant growths produce average overall QOL loss of 0.8 (0.8 for physical QOL loss and 0.4 for mental QOL loss).

For the musculoskeletal body system (which is the primary diagnosis with highest percent of service-connected disabled veterans, 41.9 percent), there are four subsystems:

- Ankyloses,<sup>136</sup> limitation or loss of motion, spinal disk disorders, and other impairments of joints and bones (0.8 for the overall, 1.0 for physical, and 0.1 for mental QOL loss)
- Amputations and loss of use of extremities (0.2 for the overall, 0.4 for physical, and 0.3 for mental QOL loss)
- Muscle injuries, impairments, damage, and loss (0.7 for the overall, 0.9 for physical, and 0.6 for mental QOL loss)
- Musculoskeletal diseases: arthritis, prosthesis, muscle and bone inflammation (0.6 for the overall, 0.9 for physical, and 0.0 for mental QOL loss)

The body system associated with the second lowest QOL loss is the skin including disfigurement of head, neck or face, superficial scars, dermatitis or eczema, psoriasis or acne (0.5 for the overall, 0.7 for physical, and 0.4 for mental QOL loss).

As noted earlier, the eye, ear and skin body systems have the lowest QOL loss.

Subsystems within them include:

- Ear (0.6 for the overall, 0.7 for physical, and 0.5 for mental QOL loss)
- Eye (0.4 for the overall, 0.5 for physical, and 0.3 for mental QOL loss)
- Diseases of ear and other sense organs: tinnitus, ear infection, loss of taste or smell (0.5 for the overall, 0.5 for physical, and 0.3 for mental QOL loss)

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<sup>136</sup> Defined here as immobility or limited motion of a joint caused by bone fusion. *Source:* VASRD.

- Nose and throat: sinusitis, inability to speak, upper respiratory condition (0.7 for the overall, 0.8 for physical and 0.3 for mental QOL loss). The dental and oral body system was in the middle in terms of the overall QOL loss (0.8 for the overall, 0.8 for physical, and 0.3 for mental QOL loss).

### QOL Loss by Individual Diagnostic Codes

The 2007 survey sample was designed to provide statistically reliable estimates by body system plus PTSD at aggregated rating levels (10%, 20-40%, 50-90%, and 100%). It was not designed for analysis at the individual diagnostic code level, and therefore does not have adequate samples at each diagnostic code. A total of 127 diagnostic codes are not represented in the 2007 survey sample at all, and there are 10 or fewer veterans in the sample for 376 diagnostic codes. Those not represented include outdated codes that are not in use today.

Samples ranging between 103<sup>137</sup> and 1,346 are available in the 2007 survey sample for 33 diagnostic codes for SCD veterans without SMCs and without IU. These diagnoses are among the most frequent in each of VA's 15 body systems. Some noteworthy findings can be reported for these specific diagnostic codes (Table IX-4). First, PTSD is the most frequent primary diagnostic code in the sample because it was the only individual diagnostic code intentionally over-sampled. Also PTSD has the highest level of QOL loss among the groups with sufficient sample size. Other conditions that have high QOL loss among veterans without SMCs and without IU include major depressive disorder, the 33<sup>rd</sup> most frequent primary diagnosis; schizophrenia, the 31<sup>st</sup> most frequent diagnosis; non-Hodgkin's lymphoma, the 203<sup>rd</sup> most frequent diagnosis; lupus, the 168<sup>th</sup> most frequent diagnosis; multiple sclerosis, the 107<sup>th</sup> most frequent diagnosis; arteriosclerotic heart disease, the 26<sup>th</sup> most frequent diagnosis; anxiety disorder, the 12<sup>th</sup> most frequent diagnosis; and traumatic brain disease, the 58<sup>th</sup> most frequent diagnosis.

The lowest QOL loss among those diagnostic codes with sample sizes over 103 are skin condition at 0.3, hypertension at 0.4, tinnitus at 0.5 and prostate gland condition at 0.5. Skin condition is the 19<sup>th</sup> most frequent primary diagnosis, hypertension is the 11<sup>th</sup>, tinnitus is the 2<sup>nd</sup> most frequent, and prostate gland condition is the 101<sup>st</sup>. Every condition (identified by diagnostic code) with samples above 103 has some QOL loss.

Stakeholders<sup>138</sup> expressed interest in several specific diagnostic codes including traumatic brain injury, but there is currently no single code for traumatic brain injury. Major depressive disorder, which ranks 21<sup>st</sup> in frequency of primary diagnostic codes, had shared the highest overall QOL loss with PTSD at (1.9). Major depressive disorder had (1.0) for physical and (1.2) for mental QOL loss. The next highest frequencies for QOL loss were dementia due to head trauma (overall 1.2, physical 0.9, and mental 0.8), acne (overall 1.3 for 7 cases), traumatic brain disease (overall 1.1), and seizure disorders (overall 0.8). Of the 57 veterans in the survey sample with hemorrhoids as

<sup>137</sup> Samples greater than 100 were included because they are viewed as a reasonable minimum.

<sup>138</sup> Representatives of the Office of Management and Budget, Hill staff, and individuals who attended the Disability Forum held by EconSys on May 28, 2008.

their primary disability, the average overall QOL loss was (0.6). Hemorrhoids ranks 97<sup>th</sup> in frequency of primary diagnosis for veterans not receiving IU or SMC (see Table VIII-4).

**Table VIII-4. Results for QOL Loss by Frequent and Selected Primary Diagnostic Codes (SCD Veterans without IU and without SMC)**

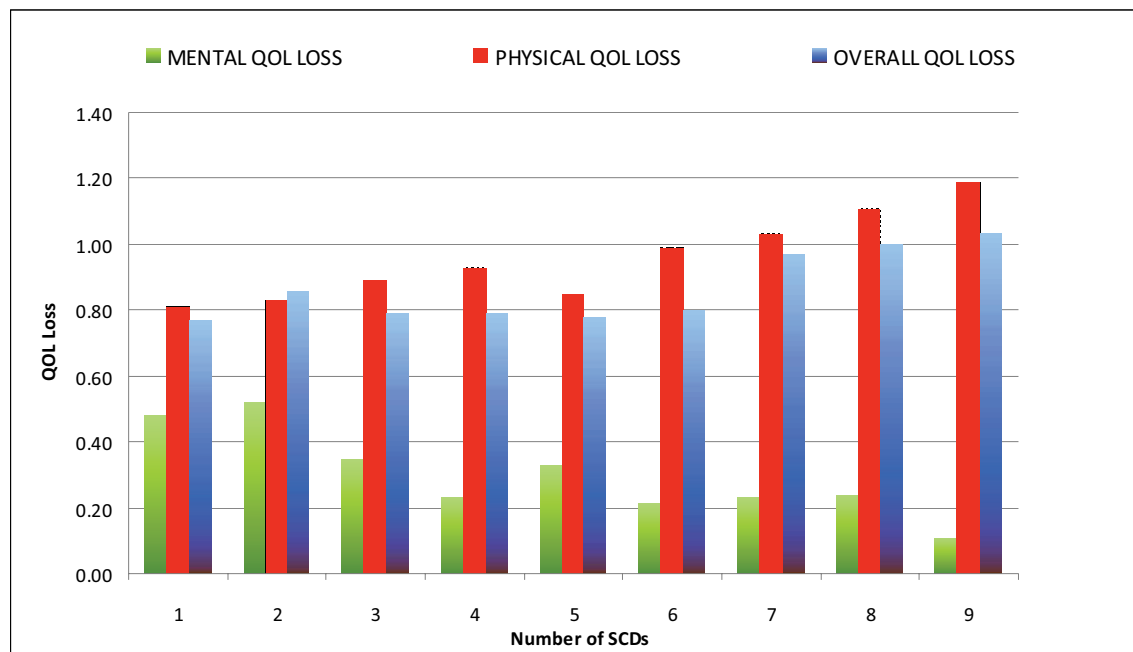
Primary Diagnosis	Sample Count	Estimated %	Average Overall QOL Loss	Average Physical QOL Loss	Average Mental QOL Loss
<b>Most Frequent in Sample:</b>					
Post-traumatic stress disorder	1,346	6.5%	1.9	0.9	1.6
Diabetes mellitus	881	3.5%	0.9	0.8	0.4
Impaired hearing	508	2.7%	0.6	0.7	0.5
Tinnitus	457	4.7%	0.5	0.5	0.3
Hypertension	398	2.3%	0.4	0.6	0.2
Removal of spleen	328	0.2%	0.5	0.7	0.3
Anxiety disorder	325	1.5%	1.0	0.7	1.0
Duodenal ulcer	308	1.3%	0.6	0.8	0.4
Asthma	305	1.2%	0.9	1.1	0.2
Arteriosclerotic heart disease	233	0.8%	0.9	1.1	0.3
Non-Hodgkin's lymphoma	206	0.1%	1.2	1.1	0.5
Migraine headaches	203	1.0%	1.0	1.2	0.2
Limited motion of the jaw	190	0.1%	0.7	0.8	0.2
Dermatitis or eczema	185	0.8%	0.7	0.7	0.4
Colitis	175	0.3%	0.7	0.8	0.2
Skin condition	174	0.9%	0.3	0.5	0.4
Schizophrenia	167	1.1%	1.3	0.5	1.4
Acquired immune deficiency syndrome	167	0.1%	1.0	0.6	0.4
Leukemia	157	0.1%	0.9	1.1	0.3
Malignant growth genitourinary	154	0.2%	0.8	0.7	0.5
Seizure disorder	153	0.5%	0.8	0.7	0.5
Disfigurement of head, neck or face	150	0.6%	0.4	0.5	0.5
Superficial scars	142	0.8%	0.6	0.7	0.6
Hiatal hernia	128	0.5%	0.7	0.8	0.3
Lupus	126	0.1%	1.1	1.3	0.0
Traumatic brain disease	122	0.4%	1.1	0.8	0.7
Sleep apnea syndromes	117	0.4%	0.8	0.9	0.1
Psoriasis	114	0.4%	0.6	0.6	0.3
Major depressive disorder	110	0.7%	1.9	1.0	1.2
Varicose veins	107	0.6%	0.6	0.9	0.3
Prostate gland condition	105	0.2%	0.5	0.6	0.2
Traumatic arthritis	104	4.1%	0.7	0.9	0.0
Blood condition	103	0.1%	0.7	1.0	0.2
<b>Other Diagnoses of Interest:</b>					
Dementia Due To Head Trauma	48	0.3%	1.2	0.9	0.8
Acne	7	0.0%	1.3	1.4	0.6
Hemorrhoids	57	0.2%	0.6	0.6	0.5
<b>Total Disabled Veterans without SMC or IU</b>	<b>15,906</b>	<b>100%</b>	<b>0.8</b>	<b>0.9</b>	<b>0.4</b>

Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates.

### QOL Impact of Multiple Disabilities

In general, loss of quality of life increases as the total number of disabilities (service-connected and non-service-connected) increase, ranging from 0.7 for one diagnosis to 1.3 for 15 diagnoses. (See Figure VIII-9.) Physical QOL loss increases as the number of SCDs increase and mental QOL loss decreases as the number of SCDs increase. Overall QOL loss is highest for veterans with more than seven disabilities, and it is fairly consistent for those with six or fewer disabilities.

**Figure VIII-9. QOL Loss by Number of SCDs, Veterans without IU and without SMC**



Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates; 0 rated disabilities are counted.

Figure VIII-10 depicts QOL loss by number of SCDs rated 10% or higher<sup>139</sup> and degree of disability. Higher overall QOL loss, which is shown by darker shades, is greatest at the bottom of the chart where the disability rating is higher. However, within those higher disability ratings, the lower left is somewhat darker than the lower right, demonstrating that a few disabilities that produce a high combined disability rating are associated with a high level of QOL loss. The top half of the chart illustrates that fewer disabilities at the

<sup>139</sup> To be considered for disability compensation, specific health issues are identified by the veteran and/or the medical examination. VA reviews each health issue and assigns a rating to it from 0 to 100. A health issue with a 0 rating means that the veteran identified it, but VA's assessment resulted in a 0 rating for that health issue. The disability rating is assigned to the combination of all non-0 rated health issues. A 0 rated health issue may later be found to be disabling, which entitles the veteran to compensation back to the point in time when it was 0 rated.

50% or lower rating levels are associated with higher QOL loss, and that a higher number of SCDs is associated with a lower QOL loss score.

These findings are consistent with the earnings loss findings, which show that a higher number of SCDs contributing to a combined disability rating is associated with lower earnings loss. A single disability at a higher disability rating is associated with a higher QOL loss than multiple disabilities that achieve the same rating.

**Figure VIII-10. Overall QOL Loss by Number of non-Zero Rated SCDs and Combined Degree of Disability, Veterans without IU and without SMC**

Degree of Disability	Number of non-Zero Rated SCDs							Total
	1	2	3	4	5	6		
10%	0.4						0.4	
20%	0.8	0.6					0.7	
30%	1.0	0.5	0.7	1.1			0.9	
40%	1.0	1.1	0.8	0.5	0.8		0.9	
50%	1.6	1.1	1.2	1.0	1.1	0.9	1.2	
60%	1.2	1.3	1.4	1.4	1.1	1.1	1.3	
70%	1.7	1.6	1.3	1.2	1.3	1.4	1.4	
80%			1.8	1.5	1.6	1.6	1.6	
90%			1.6			1.6	1.6	
100%	1.6	1.8	1.9	1.7		1.6	1.7	

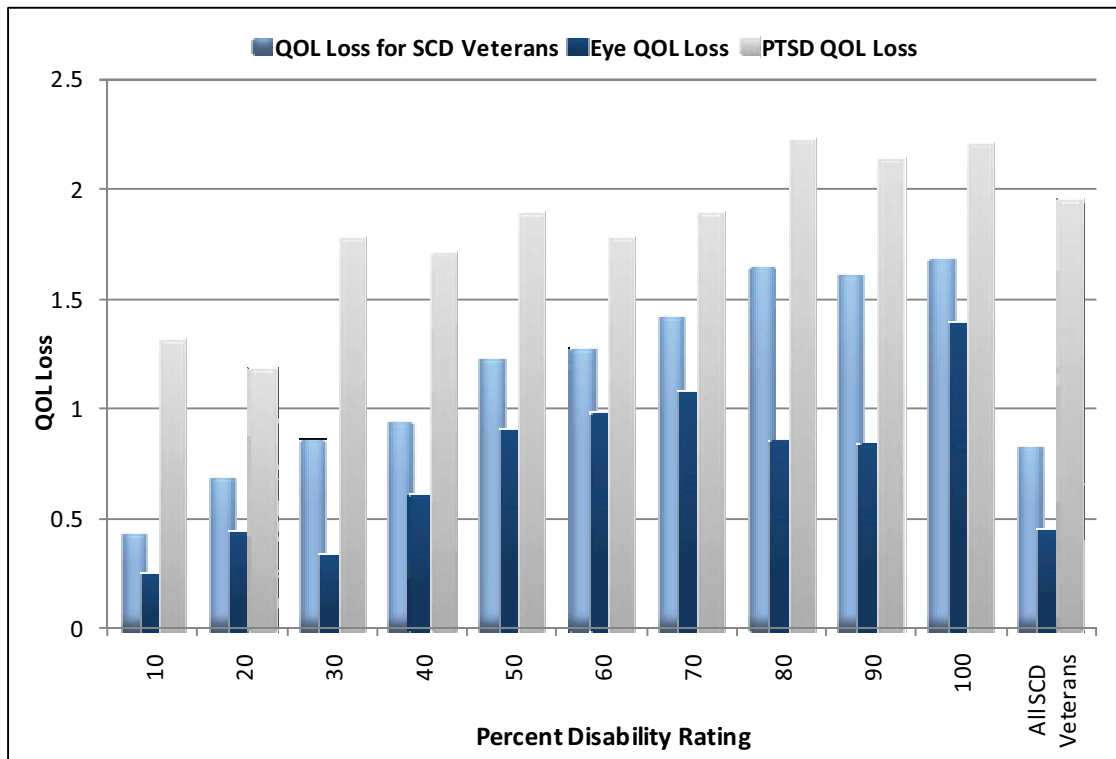
KEY	
	Low Sample
	0.0-0.4
	0.5-0.8
	0.9-1.2
	1.3-1.5
	1.6-1.7
	1.8-1.9

Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates. Blank cells indicate insufficient sample. Zero rated disabilities are not counted.

### QOL Impact of Ratings and Body Systems Combined

Lower disability ratings are found to have higher QOL loss for conditions in the mental body system than in the physical body system. Figure VIII-11 contrasts the difference between PTSD and eye injuries to illustrate this point. At the 10% disability rating level, PTSD has a QOL loss of 1.3 whereas eye injuries have a QOL loss of 0.2, and the overall QOL loss for all disabilities at the 10% disability rating level is 0.4. At the 100% disability rating level, PTSD has a QOL loss of 2.2, whereas eye injuries have a QOL loss of 1.4, and QOL loss for all disabilities at the 100% level is 1.7. QOL loss tends to increase with disability rating levels on average for all SCD veterans, but there is wide variation in specific diagnoses and in subsystems, as this figure illustrates.

**Figure VIII-11. Comparison of QOL Loss for PTSD and Eye Injuries, Veterans without IU and without SMC**



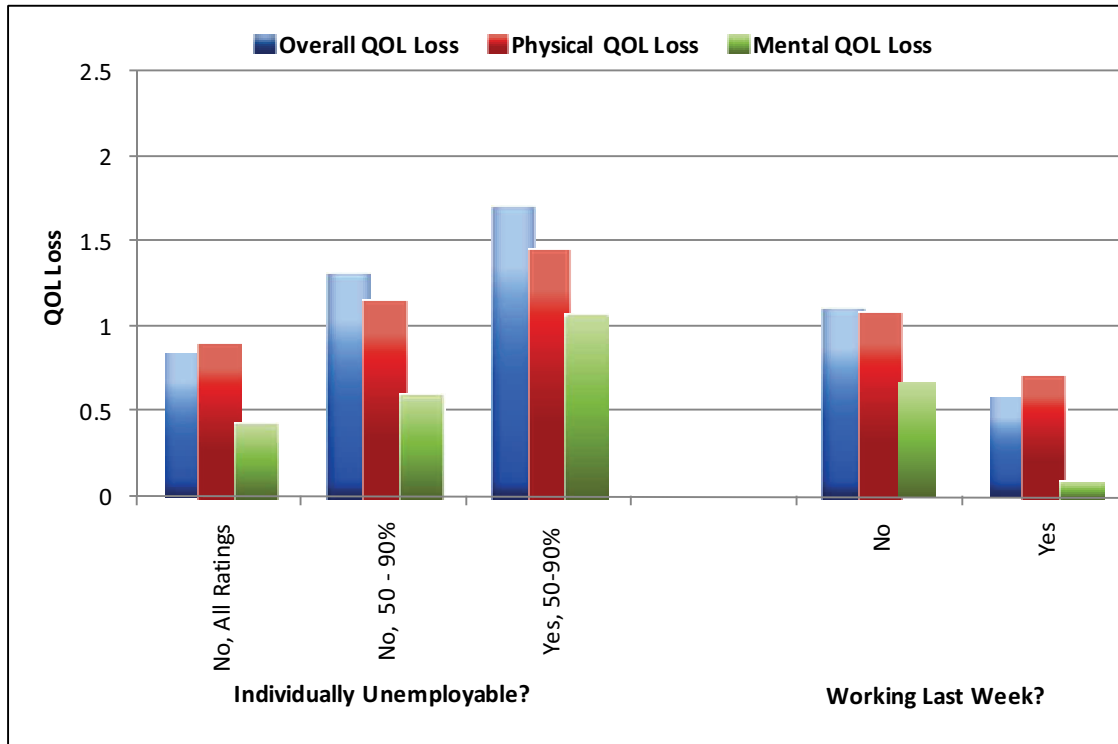
Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates.

### QOL Loss and Employment

Veterans with disability ratings between 60% and 90% may be paid at the 100% disability level if the veteran demonstrates that he/she is unable to secure and follow substantially gainful employment because of service-connected injuries, as described earlier in this chapter. The QOL analysis reveals that veterans receiving IU have a greater QOL loss (1.7) than all other veterans with disabilities who do not receive IU (0.8) as well as all other veterans at the 60 to 90% disability rating levels who do not receive IU (1.3). In contrast, employed veterans have a much lower (0.8) loss of quality of life. These findings indicate a strong relationship between IU and QOL loss and between unemployment and QOL loss. Veterans who can work and do work enjoy a higher quality of life, but it is important to realize that disability makes it impossible for some veterans to work (see Figure VIII-12).



**Figure VIII-12. QOL Loss Results for Veterans Rated Individually Unemployability and Veterans Who Reported They Are Working**



Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates.

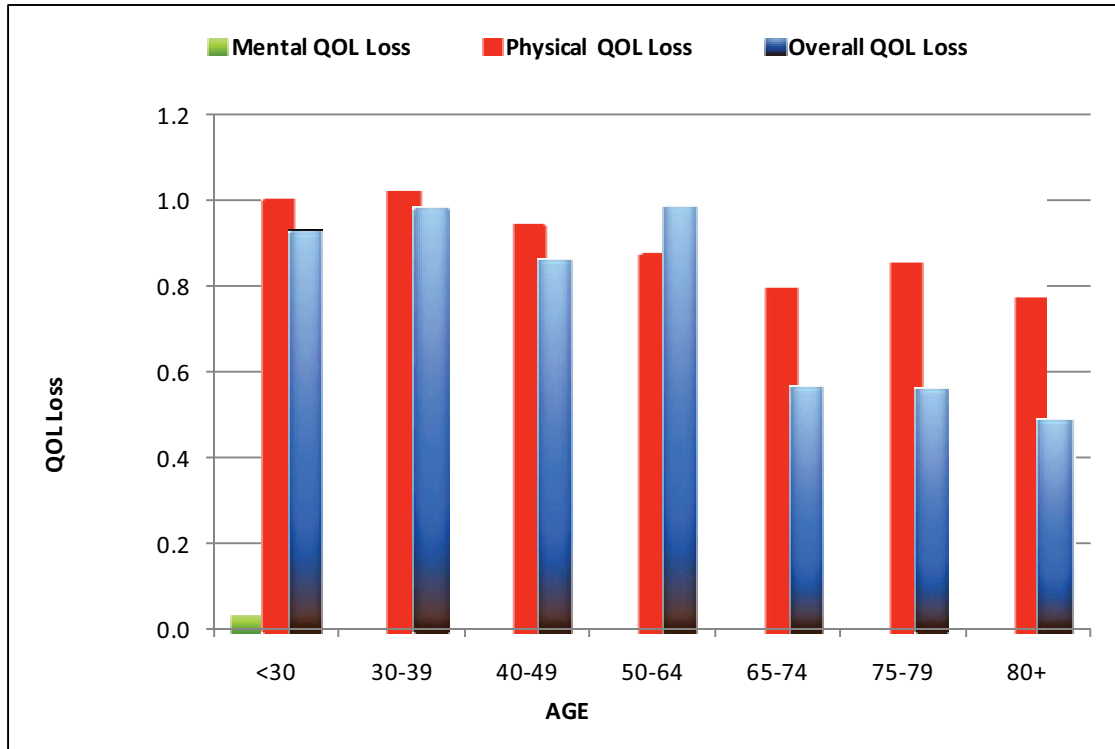
### Quality of Life Loss and Age

Age of the disabled veteran is important when considering overall loss of quality of life. Figure VIII-13 illustrates the relationship between age and QOL loss among SCD veterans. The QOL loss measure compares SCD veterans with non-SCD veterans of the same age and gender. It captures the effect of SCDs on QOL rather than the effect of aging on QOL. Relative to their non-SCD age and gender peers, overall QOL loss is lowest among the oldest SCD veterans. Overall QOL loss had an inconsistent relationship to age—it is highest among veterans ages 50 to 64, followed by those under age 39, and then by those ages 40 to 49. QOL loss dropped significantly at age 65, and then again at age 80. Perhaps individuals who reach retirement age accept their circumstances and are no longer aspiring to greater career, health, and personal goals. When we consider mental and physical QOL loss (below), we fine-tune our picture about the relationship between age and QOL loss.

The greatest loss of overall QOL in veterans ages 50 to 64 is associated with the large proportion of Vietnam era veterans in this age range. When we explore QOL loss by the date of release from active duty, Vietnam era veterans have the highest QOL loss (1.2 overall, 1.0 physical, and 0.7 mental QOL loss), compared with the next highest QOL loss

group of veterans released from active duty May 7, 1975 to August 1, 1990 (0.9 overall, 1.0 physical, and 0.3 mental QOL loss).<sup>140</sup>

**Figure VIII-13. QOL Loss by Age, SCD Veterans without IU and without SMC**



Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates.

Physical and mental QOL loss has a different relationship to age than overall QOL. The highest physical QOL loss is found in SCD veterans in the 30 to 39 age range, followed closely by SCD veterans below age 30. The lowest physical QOL loss is found in SCD veterans in the 65 to 74 age range and over age 80. The highest mental QOL loss is for SCD veterans over age 80; followed by those in the 75 to 79 age range, which is close to the mental QOL loss for veterans in the 50 to 64 age range. Mental QOL loss is lowest for veterans under age 30 and for those in the 40 to 49 age range. Physical QOL loss is higher among younger veterans and mental QOL loss is higher among older veterans. This analysis does not consider the nature of the veterans' disabilities, which may also influence these findings.

The finding that physical QOL loss was not highest in the older ages seems counter-intuitive. Since QOL loss is measured by comparing SCD veterans with non-SCD veterans by age and gender, physical QOL loss does not increase among older SCD veterans

<sup>140</sup> The CNAC report referenced on the first page of this chapter suggested that this may be due to premature aging of disabled veterans, with the healthy population catching up in their later years. pp. 52-57.

because their non-SCD counterparts are also experiencing physical impairments associated with aging. SCD veterans, however, experience higher mental QOL loss than their non-SCD counterparts as they age.

### **Quality of Life Loss Related to Benefit Amount and Veterans' Perceived Fairness**

SCD veterans generally receive compensation for the remainder of their life<sup>141</sup> after becoming eligible for program benefits, so QOL is affected by the benefit itself. That is, disability compensation is a factor affecting QOL. The study team examined the relationship between the amount of disability benefits received relative to QOL loss and the degree to which veterans feel that their disability compensation is fair.

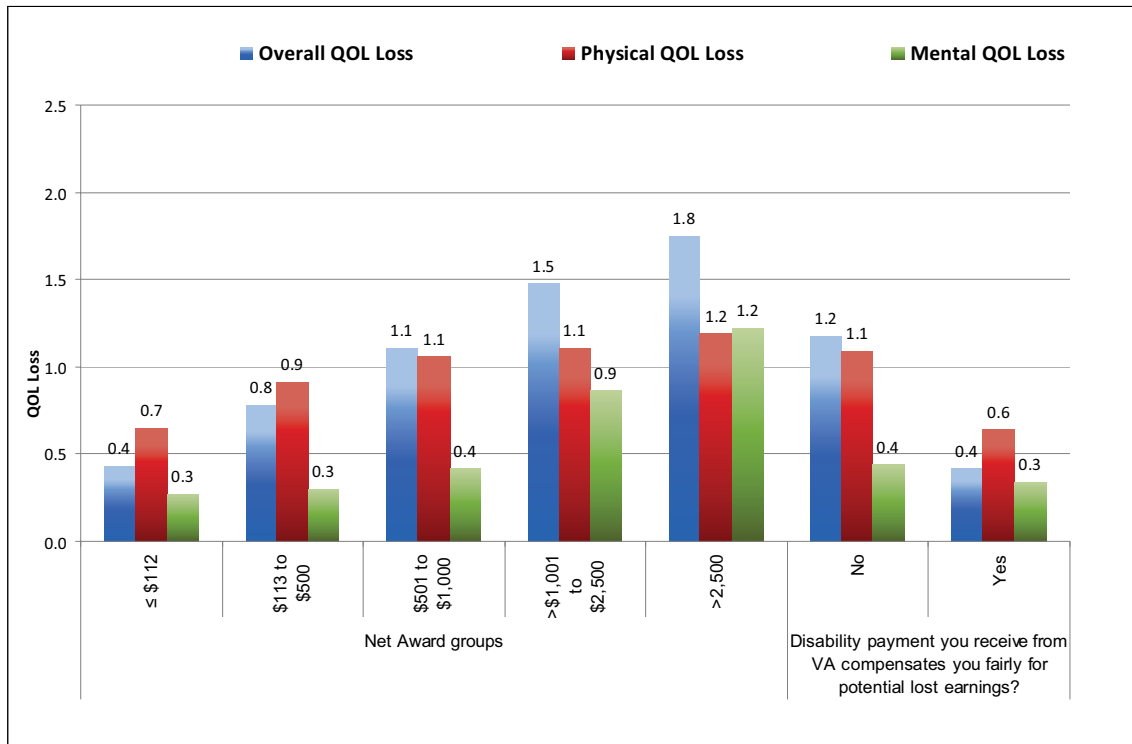
Net award, which is the total compensation VA pays to SCD veterans including IU, SMCs, and other factors, can be viewed as a proxy for degree of disability. The total net award is likely to have a relationship to QOL (see Figure VIII-14). Overall loss of quality of life increases as net award—and degree of disability—increases. Mental loss of quality of life increases more than physical loss of quality of life as net award increases, indicating the mental burden of disability increases with the severity of disability. While compensation does not increase mental quality of life, money does allow for purchase of special equipment and services to enable the individual to participate in social and community activities. Compensation may alleviate physical QOL loss by providing income for assistive devices, personal and professional help, and other daily expenses related to physical needs of disabled veterans.

Disabled veterans' views of the fairness of their disability compensation are also related to QOL. Veterans who have a lower loss of QOL feel their compensation is fair; those with a higher loss of QOL feel their compensation is unfair. Figure VIII-14 also illustrates the results of these analyses. Feeling that compensation is unfair is related to quality of life conceptually because it is an indication of lack of satisfaction with their life situation or quality of life.

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<sup>141</sup> The remaining life on average is 16.3 years for SCD veterans in the 2007 Survey of Disabled Veterans sample.

**Figure VIII-14. QOL Loss Associated with Benefit Amount, Veterans’ Perceived Fairness Regarding Their Benefit Amount, Veterans without IU and without SMC**

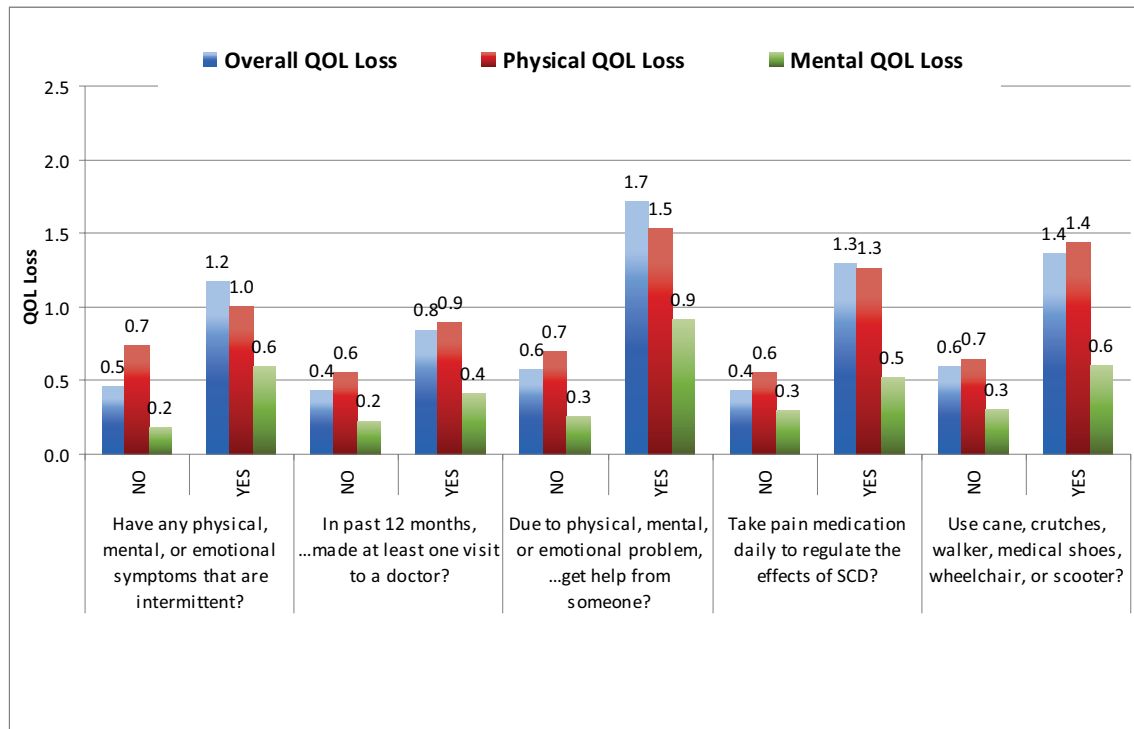


Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates.

### Quality of Life Loss and Health Condition

In general, findings show that SCD veterans have lower quality of life than veterans without SCDs and QOL loss increases as severity of disability increases. The 2007 survey provides additional evidence that connects QOL loss to health status. Veterans with disabilities who feel that their symptoms are intermittent, individuals who are taking medication for pain, and individuals who are receiving help from another person with routine activities exhibit greater loss of overall, physical, and mental quality of life. SCD veterans who saw their doctor concerning their SCD also reported lower quality of life, suggesting that veterans whose SCD presents symptoms severe enough to motivate a visit to a doctor have a greater loss of QOL than veterans whose SCD does not motivate them to make a visit to a doctor. Results are shown in Figure VIII-15.

**Figure VIII-15. QOL Loss Associated with Intermittent Symptoms, Medical Treatment, and Assistance, SCD Veterans without IU and without SMC**



Source: Analysis of 15,906 veterans without IU and without SMC from the 2007 Survey of Disabled Veterans compared to norms from the 2001 National Survey of Veterans; QOL estimated between -2 and +4, with 0 = no loss of quality of life; means are national estimates.

**Diagnostic Codes with No Measurable QOL Impact (Candidates for Deletion)**

One purpose of the QOL loss analysis was to identify whether any diagnostic codes have no quality of life loss for the purpose of consideration for elimination in conjunction with the results of the earnings loss analysis. While the 2007 survey sample is sufficient to generate estimates at the body system and aggregated rating levels, it is not sufficient to estimate the measurable impact of each of the diagnostic codes. Sample sizes were large enough to conclude that 30 diagnoses that account for 40 percent of the primary diagnoses of all SCD veterans without IU and SMC show a QOL loss. These 30 diagnoses are among the most used primary diagnostic codes overall and those that are among the most used in each body system/disability rating combination. All of the diagnostic codes that had samples of 15 or more showed some loss in quality of life. Some diagnostic codes, typically with one or two veterans in each, showed no loss of quality of life. Results for one or two veterans are not generalizable to other veterans with these diagnoses. These QOL analysis indicates that the overwhelming majority of the diagnoses, at least those examined which had more than a few cases, have some degree of QOL loss.