

**WEST VIRGINIA
SECRETARY OF STATE
NATALIE E. TENNANT
ADMINISTRATIVE LAW DIVISION**

Form #3

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SECRETARY OF STATE
STATE OF WEST VIRGINIA

**NOTICE OF AGENCY APPROVAL OF A PROPOSED RULE
AND
FILING WITH THE LEGISLATIVE RULE-MAKING REVIEW COMMITTEE**

AGENCY: WV Offices of the Insurance Commissioner TITLE NUMBER: 114

CITE AUTHORITY West Virginia Code §§33-2-10, 33-7-9a and 33-7-9(e)(2),(3) and (5)

AMENDMENT TO AN EXISTING RULE: YES NO

IF YES, SERIES NUMBER OF RULE BEING AMENDED: 45

TITLE OF RULE BEING AMENDED: Recognizing Annuity Mortality Tables For Use In Determining Reserve
Liabilities For Annuities

IF NO, SERIES NUMBER OF RULE BEING PROPOSED: _____

TITLE OF RULE BEING PROPOSED: _____

THE ABOVE PROPOSED LEGISLATIVE RULE HAVING GONE TO A PUBLIC HEARING OR A PUBLIC COMMENT PERIOD IS HEREBY APPROVED BY THE PROMULGATING AGENCY FOR FILING WITH THE SECRETARY OF STATE AND THE LEGISLATIVE RULE MAKING REVIEW COMMITTEE FOR THEIR REVIEW.



Authorized Signature

Insurance Commissioner
Legislative Rule
Title 114, Series 45

**RECOGNIZING ANNUITY MORTALITY TABLES FOR USE IN DETERMINING
RESERVE LIABILITIES FOR ANNUITIES**

TITLE 114, SERIES 45

BRIEF SUMMARY OF RULE

This rule is based on a National Association of Insurance Commissioners' model regulation, which was adopted during the Fall 2012 NAIC meeting. It is anticipated that most states will adopt these amendments. Currently, six states have adopted the model and nine states have introduced or intend to introduce in 2014. Changes will be effective for individual annuities and pure endowment contracts issued on or after August 1, 2015. This also applies to settlement options in life insurance contracts. The change prescribes the 2012 Individual Annuity Reserving Table ("2012 IAR Table") as the minimum standard of valuation and requires the use of a projection scale known as Scale G2. The 2012 IAR Table was developed by the Society of Actuaries Committee on Life Insurance Research. Since development of the currently used mortality table, the industry has experienced significant mortality improvement. This has caused concern amongst regulators that annuities in payout status are under-reserved. The 2012 IAR Table was formed to take into consideration the more recent industry experience as well as future improvement at each valuation date. This makes the table more dynamic with the intention to keep the table from becoming dated too quickly. As such, the 2012 IAR Table is a generational mortality table. This means that the table contains a set of mortality rates that decrease for a given age from one projection year to the next.

QUESTIONNAIRE

(Please include a copy of this form with each filing of your rule: Notice of Public Hearing or Comment Period, Proposed Rule, and if needed, Emergency and Modified Rule.)

DATE: August 1, 2014

TO: LEGISLATIVE RULE-MAKING REVIEW COMMITTEE

FROM: WV OFFICE OF THE INSURANCE COMMISSIONER
ATTN: Legal Division
1124 Smith Street
Post Office Box 50540
Charleston, West Virginia 25305-0540

LEGISLATIVE RULE TITLE: Recognizing Annuity Mortality Tables
For Use In Determining Reserve
Liabilities For Annuities
Title 114, Series 45

1. Authorizing statute(s) citation:

West Virginia Code §§33-2-10, 33-7-9a and 33-7-9(e) (2),
(3) and (5)

2. a. Date filed in State Register with Notice of Hearing or Public Comment Period:

June 24, 2014 (notice of public comment period).

b. What other notice, including advertising, did you give of the hearing?

N/A

c. Date of Public Hearing(s) or Public Comment Period ended:

Public comment period ended on July 24, 2014.

d. Attach list of persons who appeared at hearing, comments received, amendments, reasons for amendments.

Attached X No comments received

e. Date you filed in State Register the agency approved proposed Legislative Rule following public hearing: (be exact)

August 1, 2014

Insurance Commissioner
Title 114, Series 45

- f. **Name, title, address and phone/fax/e-mail numbers of agency person(s) to receive all written correspondence regarding this rule: (Please type)**

Andrew R. Pauley, CPCU, PIR
General Counsel
WV Offices of the Insurance Commissioner
1124 Smith Street 1 P.O. Box 50540
Charleston, WV 25305-0540
304.558.6279 1 ext. 1402
Andrew.Pauley@wvinsurance.gov

- g. **IF DIFFERENT FROM ITEM 'f', please give Name, title, address and phone number(s) of agency person(s) who wrote and/or has responsibility for the contents of this rule: (Please type)**

N/A

3. **If the statute under which you promulgated the submitted rules requires certain findings and determinations to be made as a condition precedent to their promulgation:**

N/A

- a. **Give the date upon which you filed in the State Register a notice of the time and place of a hearing for the taking of evidence and a general description of the issues to be decided.**
- b. **Date of hearing or comment period:**
- c. **On what date did you file in the State Register the findings and determinations required together with the reasons therefor?**
- d. **Attach findings and determinations and reasons:**

ATTACHMENT TO QUESTION 2(d):

The Offices of the Insurance Commissioner received only one comment on this rule. The comment was received by the American Council of Life Insurers ("ACLI") and is addressed below.

1) ACLI states that it supports and applauds the Commissioner's proposed adoption of the NAIC 2012 Individual Annuity Reserve Table (2012 IAR table) as the reserve standard for future new payout annuity contracts as defined in NAIC Model 821. They are, however, concerned about the specified application to contracts issued August 1, 2015 and later. Recognizing the unique rulemaking process in West Virginia, ACLI respectfully requests that the proposed amendments to the subject rule be issued in the form of an emergency rule so that the 2012 IAR table is applied to contracts issued on or after January 1, 2015. ACLI states that a mortality table needs to be recognized by 26 states in order for that table to be considered 'prevailing' and therefore used to establish reserves for determining Federal Income Tax. They also point out that since this table will produce higher reserves, if it is not available for determining reserves for income tax, those additional statutory reserves will not be tax deductible to companies. They further comment that absent adoption of the table by at least 26 states, this will negatively impact companies domiciled in states which have adopted the 2012 IAR table and make it more expensive for them to write new payout annuity contracts for consumers in West Virginia. ACLI feels that by changing the applicability date to January 1, 2015, there will be a greater chance of the table being recognized by at least 26 states and therefore ensuring a competitive balance that would result from a tax basis that is parallel with the statutory basis. ACLI notes that an April 3 memo was sent to all state insurance commissioners by the NAIC Life Insurance and Annuities (A) Committee that reiterated the importance of states adopting the 2012 IAR table in 2014 with applicability to contracts issued on and after January 1, 2015. ACLI comments that to date, nine states have adopted the 2012 IAR table, all with the January 1, 2015 applicability date. Eight states currently have proposed rules pending, all with the January 1, 2015 applicability date. ACLI is also anticipating rulemaking action this year in eighteen additional states, a number of which have already confirmed they will be using the January 1, 2015 applicability date. Although the Commissioner appreciates the concerns raised by ACLI, he does not believe that a change of the effective date for the required use of the subject mortality table to January 1, 2015 is warranted under the circumstances



Financial Security...for Life.

Michael Rowden
Legislative Director, State Relations

July 15, 2014

Commissioner Michael D. Riley
West Virginia Offices of the Insurance Commissioner
1124 Smith Street
P.O. Box 50540
Charleston, West Virginia 25305-0540

RE: Proposed Amendments to Legislative Rule 114-45 (Recognizing Annuity Mortality Tables For Use In Determining Reserve Liabilities For Annuities)

Dear Commissioner Riley:

I am writing on behalf of the American Council of Life Insurers (ACLI) a Washington, D.C.-based trade association with more than 300 member companies operating in the United States and abroad. ACLI advocates in federal, state, and international forums for public policy that supports the industry marketplace and the 75 million American families that rely on life insurers' products for financial and retirement security protection. ACLI members offer life insurance, annuities, retirement plans, long-term care and disability income insurance, and reinsurance, representing more than 90 percent of industry assets and premiums. Two hundred forty-seven ACLI member companies provide financial and retirement security protection to families in West Virginia. Ninety-three percent of all life and annuity payments in West Virginia are from ACLI member companies.

ACLI supports and applauds the Offices' proposed adoption of the NAIC 2012 Individual Annuity Reserve Table (2012 IAR table) as the reserve standard for future new payout annuity contracts as defined in NAIC Model 821. We are, however, concerned about the specified application to contracts issued August 1, 2015 and later. Recognizing the unique rulemaking process in West Virginia, we respectfully request that the proposed amendments to Legislative Rule 114-45 be issued in the form of an emergency rule so that the 2012 IAR table is applied to contracts issued on or after January 1, 2015, for the reasons outlined below.

A mortality table needs to be recognized by 26 states in order for that table to be considered 'prevailing' and therefore used to establish reserves for determining Federal Income Tax. Since this table will produce higher reserves, if it is not available for determining reserves for income tax, those additional statutory reserves will not be tax deductible to companies. Absent adoption of the table by at least 26 states, this will negatively impact companies domiciled in states which have adopted the 2012 IAR table and make it more expensive for them to write new payout annuity contracts for consumers in West Virginia. By changing the applicability date to January 1, 2015, there will be a greater chance of the table being recognized by at least 26 states and therefore ensuring a competitive balance that would result from a tax basis that is parallel with the statutory basis.

American Council of Life Insurers
101 Constitution Avenue, NW, Washington, DC 20001-2133
(202) 624-2371 t (866) 953-4114 f michaelrowden@acli.com
www.acli.com

July 15, 2014

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In an April 3 memo (*attached*) sent to all state insurance commissioners, Commissioner Julie Mix McPeak (TN), Chair, Life Insurance and Annuities (A) Committee, reiterated the importance of states adopting the 2012 IAR table in 2014 with applicability to contracts issued on and after January 1, 2015.

To date, nine states have adopted the 2012 IAR table, all with the January 1, 2015 applicability date. Eight states currently have proposed rules pending, all with the January 1, 2015 applicability date. We are also anticipating rulemaking action this year in eighteen additional states, a number of which have already confirmed they will be using the January 1, 2015 applicability date.

The ACLI remains committed to appropriate reserves, and we believe the 2012 IAR table helps achieve that goal. We commend the Offices of the Insurance Commissioner for moving forward with rulemaking to adopt the 2012 IAR table. By issuing an emergency rule and applying the table to future new payout annuity contracts issued on or after January 1, 2015, West Virginia will be participating in a nationwide effort to ensure that consumers have access to competitively priced products from all insurers.

Thank you for the opportunity to comment on the proposed amendments to Legislative Rule 114-45.

Respectfully Submitted,

A handwritten signature in black ink that reads "Michael Rowden". The signature is written in a cursive, flowing style.

Michael Rowden

Insurance Commissioner
Legislative Rule
Title 114, Series 45

**RECOGNIZING ANNUITY MORTALITY TABLES FOR USE IN DETERMINING
RESERVE LIABILITIES FOR ANNUITIES**

TITLE 114, SERIES 45

STATEMENT OF CIRCUMSTANCES

The amendments to this existing rule are necessary to implement the 2012 Individual Annuity Reserve Table (2012 IAR) for use in valuing minimum reserves for individual annuities and pure endowment contracts issued after a specified date in the future. The joint American Academy of Actuaries/Society of Actuaries Payout Annuity Table Team developed the 2012 IAR mortality table, and the National Association of Insurance Commissioners adopted it in Model Regulation 821. Because people who purchase annuities are living longer, it is necessary to update the mortality table so that insurers will maintain reasonably conservative reserves. This annuity mortality table is a "generational" table containing factors that adjust the mortality rates annually based on expected mortality improvements. In other words, the table contains a set of mortality rates that decrease for a given age from one projection year to the next.

FISCAL NOTE FOR PROPOSED RULES

Rule Title: Recognizing Annuity Mortality Tables For Use In Determining Reserve Liabilities For Annuities (Title 114, Series 45)

Type of Rule: Legislative Interpretive Procedural

Agency: WV Offices of the Insurance Commissioner

Address: Post Office Box 50540
1124 Smith Street, Albert T. Summers Building
Charleston, West Virginia 25305-0540

Phone Number: (304) 558-0401 Email: Andrew.Pauley@wvinsurance.gov

Fiscal Note Summary

Summarize in a clear and concise manner what impact this measure will have on costs and revenues of state government.

N/A

Fiscal Note Detail

Show over-all effect in Item 1 and 2 and, in Item 3, give an explanation of Breakdown by fiscal year, including long-range effect.

FISCAL YEAR			
Effect of Proposal	Current Increase/Decrease (use "-")	Next Increase/Decrease (use "-")	Fiscal Year (Upon Full Implementation)
1. Estimated Total Cost	N/A	N/A	N/A
Personal Services	N/A	N/A	N/A
Current Expenses	N/A	N/A	N/A
Repairs & Alterations	N/A	N/A	N/A
Assets	N/A	N/A	N/A
Equipment	N/A	N/A	N/A
Other	N/A	N/A	N/A
2. Estimated Total Revenues	N/A	N/A	N/A

Rule Title: "Recognizing Annuity Mortality Tables For Use In Determining Reserve Liabilities For Annuities" 114 CSR 45

3. **Explanation of above estimates (including long-range effect):**
Please include any increase or decrease in fees in your estimated total revenues.

None

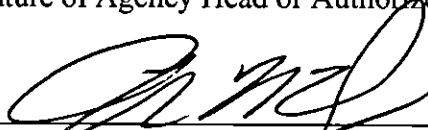
MEMORANDUM

Please identify any areas of vagueness, technical defects, reasons the proposed rule **would not** have a fiscal impact, and/or any special issues **not** captured elsewhere on this form.

N/A

Date: 7/31/14

Signature of Agency Head or Authorized Representative



Andrew R. Pauley, CPCU, PIR, General Counsel
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**TITLE 114
LEGISLATIVE RULE
INSURANCE COMMISSIONER**

**SERIES 45
RECOGNIZING ANNUITY MORTALITY TABLES
FOR USE IN DETERMINING RESERVE LIABILITIES FOR ANNUITIES**

Section.

114-45-1. General.

114-45-2. Purpose.

114-45-3. Definitions.

114-45-4. Individual Annuity or Pure Endowment Contracts.

114-45-5. Application of the 2012 IAR Table.

114-45-~~56~~. Group Annuity or Pure Endowment Contracts.

114-45-~~67~~. Application of the 1994 GAR Table.

Appendix I. 2012 IAM Period Table; Female, Age Nearest Birthday.

Appendix II. 2012 IAM Period Table; Male, Age Nearest Birthday.

Appendix III. Projection Scale G2; Female, Age Nearest Birthday.

Appendix IV. Projection Scale G2; Male, Age Nearest Birthday.

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INSURANCE COMMISSIONER

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SERIES 45
RECOGNIZING ANNUITY MORTALITY TABLES
FOR USE IN DETERMINING RESERVE LIABILITIES FOR ANNUITIES

SECRETARY OF THE
STATE OF MARYLAND

§114-45-1. General.

1.1. Scope. -- This Legislative rule applies to all life insurance companies and fraternal benefit societies doing business in this State and to all life insurance companies and fraternal benefit societies which are authorized to reinsure life insurance, annuities or accident and health insurance business in this State. This rule is based upon the National Association of Insurance Commissioners' "Model Rule For Recognizing a New Annuity Mortality Table For Use In Determining Reserve Liabilities For Annuities (Model 821)," as amended in 2012.

1.2. Authority. -- W. Va. Code §§ 33-2-10, 33-7-9a and 33-7-9(e)(2),(3) and (5).

1.3. Filing Date. -- ~~May 7, 1999.~~

1.4. Effective Date. -- ~~May 7, 1999.~~

§114-45-2. Purpose.

The purpose of this rule is to recognize the following mortality tables for use in determining the minimum standard of valuation for annuity and pure endowment contracts: the 1983 table "a"; the 1983 Group Annuity Mortality (1983 GAM) Table; the Annuity 2000 Mortality Table; the 2012 Individual Annuity Reserving (2012 IAR) Table, and the 1994 Group Annuity Reserving (1994 GAR) Table.

§114-45-3. Definitions.

3.1. As used in this rule, "1983 Table 'a'" means that mortality table developed by the Society of Actuaries Committee To Recommend a New Mortality Basis for Individual Annuity Valuation and adopted as a recognized mortality table for annuities in June 1982 by the National Association of Insurance Commissioners.

3.2. As used in this rule, "1983 GAM Table" means that mortality table developed by the Society of Actuaries Committee on Annuities and adopted as a recognized mortality table for annuities in December 1983 by the National Association of Insurance Commissioners.

3.3. As used in this rule, "1994 GAR Table" means that mortality table developed by the Society of Actuaries Group Annuity Valuation Table Task Force and shown at on pages 866-867 of Volume XLVII of the Transactions of the Society of Actuaries 866-867 (1995).

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3.4. As used in this rule, "Annuity 2000 Mortality Table" means that mortality table developed by the Society of Actuaries Committee on Life Insurance Research and shown at on page 240 of Volume XLVII of the Transactions of the Society of Actuaries 240 (1995).

3.5. As used in this rule, "Period table" means a table of mortality rates applicable to a given calendar year (the Period).

3.6. As used in this rule, "Generational mortality table" means a mortality table containing a set of mortality rates that decrease for a given age from one year to the next based on a combination of a Period table and a projection scale containing rates of mortality improvement.

3.7. As used in this rule "2012 IAR Table" means that Generation mortality table developed by the Society of Actuaries Committee on Life Insurance Research and containing rates, q_x^{2012+n} , derived from a combination of the 2012 IAM Period Table and Projection Scale G2, using the methodology stated in section 5.

3.8. As used in this rule, "2012 Individual Annuity Mortality Period Life (2012 IAM Period) Table" means the Period table containing loaded mortality rates for calendar year 2012. This table contains rates, q_x^{2012} , developed by the Society of Actuaries Committee on Life Insurance Research and is shown in Appendices I-II.

3.9. As used in this rule, "Projection Scale G2 (Scale G2)" is a table of annual rates, $G2_x$, of mortality improvement by age for projecting future mortality rates beyond calendar year 2012. This table was developed by the Society of Actuaries Committee on Life Insurance Research and is shown in Appendices III-IV.

§114-45-4. Individual Annuity or Pure Endowment Contracts.

4.1. Except as provided in subsections 4.2 and 4.3 of this section, the 1983 Table "a" is recognized and approved as an individual annuity mortality table for valuation and, at the option of the life insurance company or fraternal benefit society, may be used for purposes of determining the minimum standard of valuation for any individual annuity or pure endowment contract issued on or after April 6, 1977.

4.2. Except as provided in subsection 4.3 of this section, either the 1983 Table "a" or the Annuity 2000 Mortality Table shall be used for determining the minimum standard of valuation for any individual annuity or pure endowment contract issued on or after January 1, 1997.

4.3. Except as provided in subsection 4.4 of this section, the Annuity 2000 Mortality Table

**Title 114, Series 45
Legislative Rule
Insurance Commissioner**

shall be used for determining the minimum standard of valuation for any individual annuity or pure endowment contract issued on or after April 1, 1999.

4.4. Except as provided in subsection 4.5 of this section, the 2012 IAR Mortality Table shall be used for determining the minimum standard of valuation for any individual annuity or pure endowment contract issued on or after August 1, 2015.

4.45. The 1983 Table "a" without projection is to be used for determining the minimum standards of valuation for an individual annuity or pure endowment contract issued on or after April 1, 1999, solely when the contract is based on life contingencies and is issued to fund periodic benefits arising from:

4.5.a. Settlements of various forms of claims pertaining to court settlements or out of court settlements from tort actions;

4.5.b. Settlements involving similar actions such as worker's compensation claims;
or

4.5.c. Settlements of long term disability claims where a temporary or life annuity has been used in lieu of continuing disability payments.

§114-45-5. Application of the 2012 IAR Mortality Table.

5.1. In using the 2012 IAR Mortality Table, the mortality rate for a person age x in year (2012 + n) is calculated as follows:

$$q_x^{2012+n} = q_x^{2012}(1 - G2_x)^n$$

5.2. The resulting q_x^{2012+n} shall be rounded to three decimal places per 1,000, e.g., 0.741 deaths per 1,000. Also, the rounding shall occur according to the formula above, starting at the 2012 period table rate.

5.3. For example, for a male age 30, $q_x^{2012} = 0.741$.

$$q_x^{2013} = 0.741 * (1 - 0.010) ^ 1 = 0.73359, \text{ which is rounded to } 0.734.$$

$$q_x^{2014} = 0.741 * (1 - 0.010) ^ 2 = 0.7262541, \text{ which is rounded to } 0.726.$$

5.4. A method leading to incorrect rounding would be to calculate q_x^{2014} as $q_x^{2013} * (1 - 0.010)$, or $0.734 * 0.99 = 0.727$.

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5.5. It is incorrect to use the already rounded q_x^{2013} to calculate q_x^{2014} .

§114-45-56. Group Annuity or Pure Endowment Contracts.

56.1. Except as provided in subsections 56.2 and 56.3 of this section, the 1983 GAM Table, the 1983 Table "a," and the ~~1993~~ 1994 GAR Table are recognized and approved as group annuity mortality tables for valuation and, at the option of the life insurance company or fraternal benefit society, any one of these tables may be used for purposes of valuation for any annuity or pure endowment purchased on or after April 6, 1977 under a group annuity or pure endowment contract.

56.2. Except as provided in subsection 56.3 of this section, either the 1983 GAM Table or the 1994 GAR Table shall be used for determining the minimum standard of valuation for any annuity or pure endowment purchased on or after January 1, 1997 under a group annuity or pure endowment contract.

56.3. The 1994 GAR Table shall be used for determining the minimum standard of valuation for any annuity or pure endowment purchased on or after April 1, 1999 under a group annuity or pure endowment contract.

§114-45-67. Application of the 1994 GAR Table.

7.1. In using the 1994 GAR Table, the mortality rate for a person age x in year $(1994 + n)$ is calculated as follows:

$$q_x^{1994+n} = q_x^{1994}(1 - AA_x)^n$$

where the q_x^{1994} and AA_x s are as specified in the 1994 GAR Table.

APPENDIX I

2012 IAM Period Table
Female, Age Nearest Birthday

<u>AGE</u>	<u>1000 · q_x²⁰¹²</u>	<u>AGE</u>	<u>1000 · q_x²⁰¹²</u>	<u>AGE</u>	<u>1000 · q_x²⁰¹²</u>	<u>AGE</u>	<u>1000 · q_x²⁰¹²</u>
<u>0</u>	<u>1.621</u>	<u>30</u>	<u>0.300</u>	<u>60</u>	<u>3.460</u>	<u>90</u>	<u>88.377</u>
<u>1</u>	<u>0.405</u>	<u>31</u>	<u>0.321</u>	<u>61</u>	<u>3.916</u>	<u>91</u>	<u>97.491</u>
<u>2</u>	<u>0.259</u>	<u>32</u>	<u>0.338</u>	<u>62</u>	<u>4.409</u>	<u>92</u>	<u>107.269</u>
<u>3</u>	<u>0.179</u>	<u>33</u>	<u>0.351</u>	<u>63</u>	<u>4.933</u>	<u>93</u>	<u>118.201</u>
<u>4</u>	<u>0.137</u>	<u>34</u>	<u>0.365</u>	<u>64</u>	<u>5.507</u>	<u>94</u>	<u>130.969</u>
<u>5</u>	<u>0.125</u>	<u>35</u>	<u>0.381</u>	<u>65</u>	<u>6.146</u>	<u>95</u>	<u>146.449</u>
<u>6</u>	<u>0.117</u>	<u>36</u>	<u>0.402</u>	<u>66</u>	<u>6.551</u>	<u>96</u>	<u>163.908</u>
<u>7</u>	<u>0.110</u>	<u>37</u>	<u>0.429</u>	<u>67</u>	<u>7.039</u>	<u>97</u>	<u>179.695</u>
<u>8</u>	<u>0.095</u>	<u>38</u>	<u>0.463</u>	<u>68</u>	<u>7.628</u>	<u>98</u>	<u>196.151</u>
<u>9</u>	<u>0.088</u>	<u>39</u>	<u>0.504</u>	<u>69</u>	<u>8.311</u>	<u>99</u>	<u>213.150</u>
<u>10</u>	<u>0.085</u>	<u>40</u>	<u>0.552</u>	<u>70</u>	<u>9.074</u>	<u>100</u>	<u>230.722</u>
<u>11</u>	<u>0.086</u>	<u>41</u>	<u>0.600</u>	<u>71</u>	<u>9.910</u>	<u>101</u>	<u>251.505</u>
<u>12</u>	<u>0.094</u>	<u>42</u>	<u>0.650</u>	<u>72</u>	<u>10.827</u>	<u>102</u>	<u>273.007</u>
<u>13</u>	<u>0.108</u>	<u>43</u>	<u>0.697</u>	<u>73</u>	<u>11.839</u>	<u>103</u>	<u>295.086</u>
<u>14</u>	<u>0.131</u>	<u>44</u>	<u>0.740</u>	<u>74</u>	<u>12.974</u>	<u>104</u>	<u>317.591</u>
<u>15</u>	<u>0.156</u>	<u>45</u>	<u>0.780</u>	<u>75</u>	<u>14.282</u>	<u>105</u>	<u>340.362</u>
<u>16</u>	<u>0.179</u>	<u>46</u>	<u>0.825</u>	<u>76</u>	<u>15.799</u>	<u>106</u>	<u>362.371</u>
<u>17</u>	<u>0.198</u>	<u>47</u>	<u>0.885</u>	<u>77</u>	<u>17.550</u>	<u>107</u>	<u>384.113</u>
<u>18</u>	<u>0.211</u>	<u>48</u>	<u>0.964</u>	<u>78</u>	<u>19.582</u>	<u>108</u>	<u>400.000</u>
<u>19</u>	<u>0.221</u>	<u>49</u>	<u>1.051</u>	<u>79</u>	<u>21.970</u>	<u>109</u>	<u>400.000</u>
<u>20</u>	<u>0.228</u>	<u>50</u>	<u>1.308</u>	<u>80</u>	<u>24.821</u>	<u>110</u>	<u>400.000</u>
<u>21</u>	<u>0.234</u>	<u>51</u>	<u>1.308</u>	<u>81</u>	<u>28.351</u>	<u>111</u>	<u>400.000</u>
<u>22</u>	<u>0.240</u>	<u>52</u>	<u>1.460</u>	<u>82</u>	<u>32.509</u>	<u>112</u>	<u>400.000</u>
<u>23</u>	<u>0.245</u>	<u>53</u>	<u>1.613</u>	<u>83</u>	<u>37.329</u>	<u>113</u>	<u>400.000</u>
<u>24</u>	<u>0.247</u>	<u>54</u>	<u>1.774</u>	<u>84</u>	<u>42.830</u>	<u>114</u>	<u>400.000</u>
<u>25</u>	<u>0.250</u>	<u>55</u>	<u>1.950</u>	<u>85</u>	<u>48.997</u>	<u>115</u>	<u>400.000</u>
<u>26</u>	<u>0.256</u>	<u>56</u>	<u>2.154</u>	<u>86</u>	<u>55.774</u>	<u>116</u>	<u>400.000</u>
<u>27</u>	<u>0.261</u>	<u>57</u>	<u>2.399</u>	<u>87</u>	<u>63.140</u>	<u>117</u>	<u>400.000</u>
<u>28</u>	<u>0.270</u>	<u>58</u>	<u>2.700</u>	<u>88</u>	<u>71.066</u>	<u>118</u>	<u>400.000</u>
<u>29</u>	<u>0.281</u>	<u>59</u>	<u>3.054</u>	<u>89</u>	<u>79.502</u>	<u>119</u>	<u>400.000</u>
						<u>120</u>	<u>1000.000</u>

APPENDIX II

2012 IAM Period Table
Male, Age Nearest Birthday

<u>AGE</u>	<u>1000 · q_x²⁰¹²</u>	<u>AGE</u>	<u>1000 · q_x²⁰¹²</u>	<u>AGE</u>	<u>1000 · q_x²⁰¹²</u>	<u>AGE</u>	<u>1000 · q_x²⁰¹²</u>
0	1.605	30	0.741	60	5.096	90	109.993
1	0.401	31	0.751	61	5.614	91	123.119
2	0.275	32	0.754	62	6.169	92	137.168
3	0.229	33	0.756	63	6.759	93	152.171
4	0.174	34	0.756	64	7.398	94	168.194
5	0.168	35	0.756	65	8.106	95	185.260
6	0.165	36	0.756	66	8.548	96	197.322
7	0.159	37	0.756	67	9.076	97	214.751
8	0.143	38	0.756	68	9.708	98	232.507
9	0.129	39	0.800	69	10.463	99	250.397
10	0.113	40	0.859	70	11.357	100	268.607
11	0.111	41	0.926	71	12.418	101	290.016
12	0.132	42	0.999	72	13.675	102	311.849
13	0.169	43	1.069	73	15.150	103	333.962
14	0.213	44	1.142	74	16.860	104	356.207
15	0.254	45	1.219	75	18.815	105	380.000
16	0.293	46	1.318	76	21.031	106	400.000
17	0.328	47	1.454	77	23.540	107	400.000
18	0.359	48	1.627	78	26.375	108	400.000
19	0.387	49	1.829	79	29.572	109	400.000
20	0.414	50	2.057	80	33.234	110	400.000
21	0.443	51	2.302	81	37.533	111	400.000
22	0.473	52	2.545	82	42.261	112	400.000
23	0.513	53	2.779	83	47.441	113	400.000
24	0.554	54	3.011	84	53.233	114	400.000
25	0.602	55	3.254	85	59.855	115	400.000
26	0.655	56	3.529	86	67.514	116	400.000
27	0.688	57	3.845	87	76.340	117	400.000
28	0.710	58	4.213	88	86.388	118	400.000
29	0.727	59	4.631	89	97.634	119	400.000
						120	1000.000

APPENDIX III

Projection Scale G2
Female, Age Nearest Birthday

<u>AGE</u>	<u>G2_x</u>	<u>AGE</u>	<u>G2_x</u>	<u>AGE</u>	<u>G2_x</u>	<u>AGE</u>	<u>G2_x</u>
0	0.010	30	0.010	60	0.013	90	0.006
1	0.010	31	0.010	61	0.013	91	0.006
2	0.010	32	0.010	62	0.013	92	0.005
3	0.010	33	0.010	63	0.013	93	0.005
4	0.010	34	0.010	64	0.013	94	0.004
5	0.010	35	0.010	65	0.013	95	0.004
6	0.010	36	0.010	66	0.013	96	0.004
7	0.010	37	0.010	67	0.013	97	0.003
8	0.010	38	0.010	68	0.013	98	0.003
9	0.010	39	0.010	69	0.013	99	0.002
10	0.010	40	0.010	70	0.013	100	0.002
11	0.010	41	0.010	71	0.013	101	0.002
12	0.010	42	0.010	72	0.013	102	0.001
13	0.010	43	0.010	73	0.013	103	0.001
14	0.010	44	0.010	74	0.013	104	0.000
15	0.010	45	0.010	75	0.013	105	0.000
16	0.010	46	0.010	76	0.013	106	0.000
17	0.010	47	0.010	77	0.013	107	0.000
18	0.010	48	0.010	78	0.013	108	0.000
19	0.010	49	0.010	79	0.013	109	0.000
20	0.010	50	0.010	80	0.013	110	0.000
21	0.010	51	0.010	81	0.012	111	0.000
22	0.010	52	0.011	82	0.012	112	0.000
23	0.010	53	0.011	83	0.011	113	0.000
24	0.010	54	0.011	84	0.010	114	0.000
25	0.010	55	0.012	85	0.010	115	0.000
26	0.010	56	0.012	86	0.009	116	0.000
27	0.010	57	0.012	87	0.008	117	0.000
28	0.010	58	0.012	88	0.007	118	0.000
29	0.010	59	0.013	89	0.007	119	0.000
						120	0.000

APPENDIX IV

Projection Scale G2
Male, Age Nearest Birthday

<u>AGE</u>	<u>G2_x</u>	<u>AGE</u>	<u>G2_x</u>	<u>AGE</u>	<u>G2_x</u>	<u>AGE</u>	<u>G2_x</u>
<u>0</u>	<u>0.010</u>	<u>30</u>	<u>0.010</u>	<u>60</u>	<u>0.015</u>	<u>90</u>	<u>0.007</u>
<u>1</u>	<u>0.010</u>	<u>31</u>	<u>0.010</u>	<u>61</u>	<u>0.015</u>	<u>91</u>	<u>0.007</u>
<u>2</u>	<u>0.010</u>	<u>32</u>	<u>0.010</u>	<u>62</u>	<u>0.015</u>	<u>92</u>	<u>0.006</u>
<u>3</u>	<u>0.010</u>	<u>33</u>	<u>0.010</u>	<u>63</u>	<u>0.015</u>	<u>93</u>	<u>0.005</u>
<u>4</u>	<u>0.010</u>	<u>34</u>	<u>0.010</u>	<u>64</u>	<u>0.015</u>	<u>94</u>	<u>0.005</u>
<u>5</u>	<u>0.010</u>	<u>35</u>	<u>0.010</u>	<u>65</u>	<u>0.015</u>	<u>95</u>	<u>0.004</u>
<u>6</u>	<u>0.010</u>	<u>36</u>	<u>0.010</u>	<u>66</u>	<u>0.015</u>	<u>96</u>	<u>0.004</u>
<u>7</u>	<u>0.010</u>	<u>37</u>	<u>0.010</u>	<u>67</u>	<u>0.015</u>	<u>97</u>	<u>0.003</u>
<u>8</u>	<u>0.010</u>	<u>38</u>	<u>0.010</u>	<u>68</u>	<u>0.015</u>	<u>98</u>	<u>0.003</u>
<u>9</u>	<u>0.010</u>	<u>39</u>	<u>0.010</u>	<u>69</u>	<u>0.015</u>	<u>99</u>	<u>0.002</u>
<u>10</u>	<u>0.010</u>	<u>40</u>	<u>0.010</u>	<u>70</u>	<u>0.015</u>	<u>100</u>	<u>0.002</u>
<u>11</u>	<u>0.010</u>	<u>41</u>	<u>0.010</u>	<u>71</u>	<u>0.015</u>	<u>101</u>	<u>0.002</u>
<u>12</u>	<u>0.010</u>	<u>42</u>	<u>0.010</u>	<u>72</u>	<u>0.015</u>	<u>102</u>	<u>0.001</u>
<u>13</u>	<u>0.010</u>	<u>43</u>	<u>0.010</u>	<u>73</u>	<u>0.015</u>	<u>103</u>	<u>0.001</u>
<u>14</u>	<u>0.010</u>	<u>44</u>	<u>0.010</u>	<u>74</u>	<u>0.015</u>	<u>104</u>	<u>0.000</u>
<u>15</u>	<u>0.010</u>	<u>45</u>	<u>0.010</u>	<u>75</u>	<u>0.015</u>	<u>105</u>	<u>0.000</u>
<u>16</u>	<u>0.010</u>	<u>46</u>	<u>0.010</u>	<u>76</u>	<u>0.015</u>	<u>106</u>	<u>0.000</u>
<u>17</u>	<u>0.010</u>	<u>47</u>	<u>0.010</u>	<u>77</u>	<u>0.015</u>	<u>107</u>	<u>0.000</u>
<u>18</u>	<u>0.010</u>	<u>48</u>	<u>0.010</u>	<u>78</u>	<u>0.015</u>	<u>108</u>	<u>0.000</u>
<u>19</u>	<u>0.010</u>	<u>49</u>	<u>0.010</u>	<u>79</u>	<u>0.015</u>	<u>109</u>	<u>0.000</u>
<u>20</u>	<u>0.010</u>	<u>50</u>	<u>0.010</u>	<u>80</u>	<u>0.015</u>	<u>110</u>	<u>0.000</u>
<u>21</u>	<u>0.010</u>	<u>51</u>	<u>0.011</u>	<u>81</u>	<u>0.014</u>	<u>111</u>	<u>0.000</u>
<u>22</u>	<u>0.010</u>	<u>52</u>	<u>0.011</u>	<u>82</u>	<u>0.013</u>	<u>112</u>	<u>0.000</u>
<u>23</u>	<u>0.010</u>	<u>53</u>	<u>0.012</u>	<u>83</u>	<u>0.013</u>	<u>113</u>	<u>0.000</u>
<u>24</u>	<u>0.010</u>	<u>54</u>	<u>0.012</u>	<u>84</u>	<u>0.012</u>	<u>114</u>	<u>0.000</u>
<u>25</u>	<u>0.010</u>	<u>55</u>	<u>0.013</u>	<u>85</u>	<u>0.011</u>	<u>115</u>	<u>0.000</u>
<u>26</u>	<u>0.010</u>	<u>56</u>	<u>0.013</u>	<u>86</u>	<u>0.010</u>	<u>116</u>	<u>0.000</u>
<u>27</u>	<u>0.010</u>	<u>57</u>	<u>0.014</u>	<u>87</u>	<u>0.009</u>	<u>117</u>	<u>0.000</u>
<u>28</u>	<u>0.010</u>	<u>58</u>	<u>0.014</u>	<u>88</u>	<u>0.009</u>	<u>118</u>	<u>0.000</u>
<u>29</u>	<u>0.010</u>	<u>59</u>	<u>0.015</u>	<u>89</u>	<u>0.008</u>	<u>119</u>	<u>0.000</u>
						<u>120</u>	<u>0.000</u>