# TRANSMITTAL SHEET FOR NOTICE OF INTENDED ACTION

| Control 482 De                           | partment   | or Agency <u>I</u> | Department of Ins                                      | wrance*                              |                   |            | · <del></del> · |
|--|------------|--------------------|--|--------------------------------------|-------------------|------------|-----------------|
| Rule No. <u>Chapte</u>                   | er 482-1-0 | )76                |  |                                      |                   |            |                 |
| Rule Title: <u>Proc</u><br>for Annuities | edures fo  | r Recognizing      | g a new Annuity I                                      | Mortality Tal                        | ble for use in    | Determinin | g Reserves      |
| New                                      | <u> </u>   | _Amend             | Repeal   | Adop                                 | t by Referenc     | e e        |                 |
| Would the abser                          |            |                    | e significantly har                                    | rm or endang                         | ger the           |            | N/A*            |
| ls there a reason<br>protection of the   |            |                    | een the state's pol<br>or welfare?                     | lice power ar                        | nd the            |            | N/A*            |
| Is there anther, ladequately prote       |            |                    | of regulation avai                                     | ilable that co                       | uld               |            | N/A*            |
|  |            |                    | of directly or ind<br>d and, if so, to wh              |                                      | asing the         |            | N/A*            |
| Is the increase is<br>might result from  |            |                    | umful to the publ<br>oposed rule?                      | ic than the h                        | arm that          |            | N/A*            |
|  |            |                    | ss designed solely<br>ne protection of th              |                                      | ose of, and       |            | N/A*            |
| *******                                  | ******     | *******            | ***********  | ********                             | <b>非冰水水水水水水水水</b> | ********   | *****           |
| Does the propos                          | sed rule b | ave an econo       | mic impact?  |                                      |                   |            | N/A*            |
|  |            |                    | mpact, the proposection (f) of Secti                   |                                      |                   |            |                 |
| ********                                 | *****      | ***********        | ***********  | ************************************ | 牵水准铁水水水水水水        | *********  | ******          |
| Certification of                         | Authoriz   | zed Official       |  |                                      |                   |            |                 |
|  | 17 and 27  | -7-43, Code o      | e has been propo<br><u>f Alabama 1975,</u><br>e Code.* |                                      |                   |            |                 |
| Signature of ce                          | rtifying c | Ji                 | m L. Ridling<br>omnissioner of I                       | nsurance                             | Lea               |            | · <del></del>   |
| Date:June 1                              | 7, 2014    |                    |  |                                      |                   |            |                 |

\*Note: The Alabama Department of Insurance is exempt from the Alabama Administrative Procedures - Act pursuant to Section 41-22-2(e), Code of Alabama 1975.

# Alabama Department of Insurance

## **NOTICE OF INTENDED ACTION**

**AGENCY NAME**: Alabama Department of Insurance

**RULE NO. & TITLE**: Chapter 482-1-076: Procedures for Recognizing

a new Annuity Mortality Table for Use in Determining Reserve Liabilities for Annuities.

**INTENDED ACTION**: Amend chapter.

**SUBSTANCE OF PROPOSED ACTION**: The Commissioner of Insurance is proposing to make various minor changes to the regulation to incorporate the 2012 changes made in the NAIC's Model Rule by the same name.

TIME, PLACE, MANNER OF PRESENTING VIEWS: Interested persons may submit data, views, or arguments in writing at any time prior to the date stated below to the Alabama Department of Insurance, Attention: Legal Division, Post Office Box 303351, Montgomery, Alabama 36130-3351, or orally by appearing at the public hearing, Suite 502, RSA Tower, 201 Monroe Street, Montgomery, Alabama, beginning at 10:00 AM, August 6, 2014.

#### FINAL DATE FOR COMMENT AND COMPLETION OF NOTICE:

August 6, 2014

CONTACT PERSON AT AGENCY: Reyn Norman

General Counsel

Commissioner of Insurance

| 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11 | ALABAMA DEPARTMENT OF INSURANCE INSURANCE REGULATION  CHAPTER 482-1-076  PROCEDURES FOR RECOGNIZING A NEW ANNUITY MORTALITY TABLE FOR USE IN DETERMINING RESERVE LIABILITIES FOR ANNUITIES |           |
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- 1 482-1-076-.01 Authority. This Chapter is promulgated by the Commissioner
- 2 of Insurance pursuant to Sections 27-2-17 and 27-36-7, Code of Alabama,
- 3 1975.
- 4 Author: Commissioner of Insurance
- 5 Statutory Authority: Code of Alabama 1975, §§ 27-2-17, 27-36-7
- 6 History: New: December 6, 1985, Effective December 16, 1985; Revised
- October 23, 1998, Effective January 1, 1999
- 8 482-1-076-.02 Purpose. The purpose of this Chapter is to recognize the
- 9 following mortality tables for use in determining the minimum standard of
- 10 valuation for annuity and pure endowment contracts: the 1983 Table "a," the
- 11 1983 Group Annuity Mortality (1983 GAM) Table, the Annuity 2000 Mortality
- 12 Table, the 2012 Individual Annuity Reserving (2012 IAR) Table, and the 1994
- 13 Group Annuity Reserving (1994 GAR) Table.
- 14 Author: Commissioner of Insurance
- 15 Statutory Authority: Code of Alabama 1975, §\$ 27-2-17, 27-36-7
- 16 History: New: December 6, 1985, Effective December 16, 1985; Revised
- 17 October 23, 1998, Effective January 1, 1999; Revised , 2014; Effective
- 18 January 1, 2015
- 19 482-1-076-.03 Definitions. The following definitions shall apply for
- 20 purposes of this Chapter:
- 21 (a) 1983 Table "a". That mortality table developed by the Society of
- 22 Actuaries Committee to Recommend a New Mortality Basis for Individual
- 23 Annuity Valuation and adopted as a recognized mortality table for annuities
- 24 in June, 1982, by the National Association of Insurance Commissioners. [See
- 25 1982 Proceedings of the NAIC II, page 454.]
- 26 (b) 1983 GAM Table. That mortality table developed by the Society of
- 27 Actuaries Committee on Annuities and adopted as a recognized mortality

- 1 table for annuities in December, 1983, by the National Association of
- 2 Insurance Commissioners. [See 1984 Proceedings of the NAIC I, pages 414 to
- 3 415.]
- 4 (c) 1994 GAR Table. That mortality table developed by the Society of
- 5 Actuaries Group Annuity Valuation Table Task Force. The 1994 GAR Table is
- 6 included in the report on pages 865-919 of Volume XLVII of the Transactions
- 7 of the Society of Actuaries (1995).
- 8 (d) Annuity 2000 Mortality Table. That mortality table developed by
- 9 the Society of Actuaries Committee on Life Insurance Research. The Annuity
- 10 2000 Mortality Table is included in the report on pages 211-249 of Volume
- 11 XLVII of the Transactions of the Society of Actuaries (1995).
- 12 (e) Period table. A table of mortality rates applicable to a given
- 13 calendar year (the Period).
- 14 (f) Generational Mortality Table. A mortality table containing a set
- of mortality rates that decrease for a given age from one year to the next
- 16 based on a combination of a Period table and a projection scale containing
- 17 rates of mortality improvement.
- 18 (g) 2012 IAR Table. That Generational mortality table developed by
- 19 the Society of Actuaries Committee on Life Insurance Research and
- 20 containing rates,  $q_x^{2012+n}$ , derived from a combination of the 2012 IAM Period
- 21 Table and Projection Scale G2, using the methodology stated in Rule 482-1-
- 22 076-.07.
- 23 (h) 2012 Individual Annuity Mortality Period Life (2012 IAM Period)
- 24 Table. The Period table containing loaded mortality rates for calendar
- 25 year 2012. This table contains rates, qx2012, developed by the Society of

- 1 Actuaries Committee on Life Insurance Research and is shown in Appendices
- 2 1-2.
- 3 (i) Projection Scale G2 (Scale G2). A table of annual rates, G2x, of
- 4 mortality improvement by age for projecting future mortality rates beyond
- 5 calendar year 2012. This table was developed by the Society of Actuaries
- 6 Committee on Life Insurance Research and is shown in Appendices 3-4.
- 7 Author: Commissioner of Insurance
- 8 Statutory Authority: Code of Alabama 1975, SS 27-2-17, 27-36-7
- 9 History: New: December 6, 1985, Effective December 16, 1985; Revised
- 10 October 23, 1998, Effective January 1, 1999; Revised , 2014; Effective
- 11 January 1, 2015
- 12 482-1-076-.04 Individual Annuity or Pure Endowment Contracts.
- 13 (1) Except as provided in Paragraphs (2) and (3) of this Rule, the
- 14 1983 Table "a" is recognized and approved as an individual annuity
- 15 mortality table for valuation and, at the option of the company, may be
- 16 used for purposes of determining the minimum standard of valuation for any
- 17 individual annuity or pure endowment contract issued on or after July 30,
- 18 1979.
- 19 (2) Except as provided in Paragraph (3) of this Rule, either the 1983
- 20 Table "a" or the Annuity 2000 Mortality Table shall be used for determining
- 21 the minimum standard of valuation for any individual annuity or pure
- 22 endowment contract issued on or after January 1, 1987.
- 23 (3) Except as provided in Paragraph (4) of this Rule, the Annuity
- 24 2000 Mortality Table shall be used for determining the minimum standard of
- 25 valuation for any individual annuity or pure endowment contract issued on
- 26 or after January 1, 1999.

- 1 (4) Except as provided in paragraph (5) of this Rule, the 2012 IAR
- 2 Mortality Table shall be used for determining the minimum standard of
- 3 valuation for any individual annuity or pure endowment contract issued on
- 4 or after [the effective date of this amended regulation].
- 5 (4)(5) The 1983 Table "a" without projection is to be used for
- 6 determining the minimum standards of valuation for an individual annuity or
- 7 pure endowment contract issued on or after January 1, 1999, solely when the
- 8 contract is based on life contingencies and is issued to fund periodic
- 9 benefits arising from any of the following:
- 10 (a) Settlements of various forms of claims pertaining to court
- 11 settlements or out of court settlements from tort actions+.
- 12 (b) Settlements involving similar actions such as worker's
- 13 compensation claims; or.
- 14 (c) Settlements of long term disability claims where a temporary or
- 15 life annuity has been used in lieu of continuing disability payments.
- 16 Author: Commissioner of Insurance
- 17 Statutory Authority: Code of Alabama 1975, \$\$ 27-2-17, 27-36-7
- 18 History: New: December 6, 1985, Effective December 16, 1985; Revised
- 19 October 23, 1998, Effective January 1, 1999; Revised , 2014; Effective
- 20 January 1, 2015
- 21 482-1-076-.05 Group Annuity or Pure Endowment Contracts.
- 22 (1) Except as provided in Paragraphs (2) and (3) of this Rule, the
- 23 1983 GAM Table, the 1983 Table "a" and the 1994 GAR Table are recognized
- 24 and approved as group annuity mortality tables for valuation and, at the
- 25 option of the company, any one of these tables may be used for purposes of

- 1 valuation for any annuity or pure endowment purchased on or after July 30,
- 2 1979, under a group annuity or pure endowment contract.
- 3 (2) Except as provided in Paragraph (3) of this Rule, either the 1983
- 4 GAM Table or the 1994 GAR Table shall be used for determining the minimum
- 5 standard of valuation for any annuity or pure endowment purchased on or
- 6 after January 1, 1987, under a group annuity or pure endowment contract.
- 7 (3) The 1994 GAR Table shall be used for determining the minimum
- 8 standard of valuation for any annuity or pure endowment purchased on or
- 9 after January 1, 1999, under a group annuity or pure endowment contract.
- 10 Author: Commissioner of Insurance
- 11 Statutory Authority: Code of Alabama 1975, §§ 27-2-17, 27-36-7
- 12 History: New: December 6, 1985, Effective December 16, 1985; Revised
- 13 October 23, 1998, Effective January 1, 1999
- 14 482-1-076-.06 Application of the 1994 GAR Table. In using the 1994 GAR
- 15 Table, the mortality rate for a person age x in year (1994 + n) is
- 16 calculated as follows:
- $17 q_v^{1994+n} = q_v^{1994} (1 AA_v)^n$
- 18 where the  $q_x^{1994}$ s and  $AA_x$ s are as specified in the 1994 GAR Table.
- 19 Author: Commissioner of Insurance
- 20 Statutory Authority: Code of Alabama 1975, §\$ 27-2-17, 27-36-7
- 21 History: New: October 23, 1998, Effective January 1, 1999
- 22 482-1-076-.07 Application of the 2012 IAR Mortality Table.
- 23 (1) In using the 2012 IAR Mortality Table, the mortality rate for a
- 24 person age x in year (2012 + n) is calculated as follows:
- 25  $q_x^{2012+n} = q_x^{2012} (1 G2_x)^m$

- 1 (2) The resulting  $q_x^{2012+n}$  shall be rounded to three decimal places per
- 2 1,000, e.g., 0.741 deaths per 1,000. Also, the rounding shall occur
- 3 according to the formula above, starting at the 2012 period table rate.
- 4 (3) For example, for a male age 30,  $q_x^{2012} = 0.741$ .
- $q_x^{2013} = 0.741 * (1 0.010) ^ 1 = 0.73359$ , which is rounded to 0.734.
- 6  $q_x^{2014} = 0.741 * (1 0.010) ^ 2 = 0.7262541$ , which is rounded to 0.726.
- 7 (4) A method leading to incorrect rounding would be to calculate  $q_x$
- 8  $^{2014}$  as  $q_x^{2013}$  \* (1 0.010), or 0.734 \* 0.99 = 0.727. It is incorrect to
- 9 use the already rounded  $q_x^{2013}$  to calculate  $q_x^{2014}$ .
- 10 Author: Commissioner of Insurance
- 11 Statutory Authority: Code of Alabama 1975, SS 27-2-17, 27-36-7
- 12 **History:** New: \_\_\_\_\_, 2014; January 1, 2015
- $\frac{13}{482-1-076-.07}$  482-1-076-.08 Separability. If any provision of this
- 14 Chapter or the application thereof to any person or circumstances is for
- 15 any reason held to be invalid, the remainder of the Chapter and the
- 16 application of such provision to other persons or circumstances shall not
- 17 be affected thereby.
- 18 Author: Commissioner of Insurance
- 19 Statutory Authority: Code of Alabama 1975, §§ 27-2-17, 27-36-7
- 20 History: New: December 6, 1985, Effective December 16, 1985; Revised
- 21 October 23, 1998, Effective January 1, 1999

- 1 482-1-076-.08 482-1-076-.09 Effective Date. The provisions of this
- 2 Chapter shall become effective January 1, 1999 January 1, 2015, upon its
- 3 approval by the Commissioner of Insurance, and upon its having been on file
- 4 as a public document in the office of the Secretary of State for ten days.
- 5 Author: Commissioner of Insurance
- 6 Statutory Authority: Code of Alabama 1975, §\$ 27-2-17, 27-36-7
- 7 History: New: December 6, 1985, Effective December 16, 1985; Revised
- 8 October 23, 1998, Effective January 1, 1999; Revised , 2014,
- 9 Effective January 1, 2015

## APPENDIX I

# 2012 IAM Period Table Female, Age Nearest Birthday

| AGE | $1000 \cdot q_x^{2012}$ | AGE | $1000 \cdot q_x^{2012}$ | AGE | $1000 \cdot q_x^{2012}$ | AGE  | $1000 \cdot q_x^{2012}$ |
|-----|-------------------------|-----|-------------------------|-----|-------------------------|------|-------------------------|
| 0   | 1.621                   | 30  | 0.300                   | 60  | 3.460                   | 90   | 88.377                  |
| 1   | 0.405                   | 31  | 0.321                   | 61  | 3.916                   | 91   | 97.491                  |
| 2   | 0.259                   | 32  | 0.338                   | 62  | 4.409                   | 92   | 107.269                 |
| 3   | 0.179                   | 33  | 0.351                   | 63  | 4.933                   | 93   | 118.201                 |
| 4   | 0.137                   | 34  | 0,365                   | 64  | 5.507                   | 94   | 130.969                 |
| 5   | 0.125                   | 35  | 0.381                   | 65  | 6.146                   | 95   | 146.449                 |
| 6   | 0.117                   | 36  | 0.402                   | 66  | 6.551                   | 96   | 163.908                 |
| 7   | 0.110                   | 37  | 0.429                   | 67  | 7.039                   | 97   | 179.695                 |
| 8   | 0.095                   | 38  | 0.463                   | 68  | 7.628                   | 98   | 196.151                 |
| 9   | 880.0                   | 39  | 0.504                   | 69  | 8.311                   | 99   | 213.150                 |
| 10  | 0.085                   | 40  | 0.552                   | 70  | 9.074                   | 100  | 230.722                 |
| 11  | 0.086                   | 41  | 0.600                   | 71  | 9.910                   | 101  | 251,505                 |
| 12  | 0.094                   | 42  | 0.650                   | 72  | 10.827                  | 102  | 273.007                 |
| 13  | 0.108                   | 43  | 0.697                   | 73  | 11.839                  | 103  | 295.086                 |
| 14  | 0.131                   | 44  | 0.740                   | 74  | 12.974                  | 104  | 317.591                 |
| 15  | 0.156                   | 45  | 0.780                   | 75  | 14.282                  | 105  | 340.362                 |
| 16  | 0.179                   | 46  | 0.825                   | 76  | 15.799                  | 106  | 362.371                 |
| 17  | 0.198                   | 47  | 0.885                   | 77  | 17.550                  | 107  | 384.113                 |
| 18  | 0.211                   | 48  | 0.964                   | 78  | 19.582                  | 1.08 | 400.000                 |
| 19  | 0.221                   | 49  | 1.051                   | 79  | 21.970                  | 109  | 400.000                 |
| 20  | 0.228                   | 50  | 1.161                   | 80  | 24.821                  | 110  | 400,000                 |
| 21  | 0.234                   | 51  | 1.308                   | 81  | 28.351                  | 111  | 400,000                 |
| 22  | 0.240                   | 52  | 1.460                   | 82  | 32.509                  | 112  | 400.000                 |
| 23  | 0.245                   | 53  | 1.613                   | 83  | 37,329                  | 113  | 400.000                 |
| 24  | 0.247                   | 54  | 1.774                   | 84  | 42.830                  | 114  | 400.000                 |
| 25  | 0.250                   | 55  | 1.950                   | 85  | 48.997                  | 115  | 400.000                 |
| 26  | 0.256                   | 56  | 2.154                   | 86  | 55.774                  | 116  | 400.000                 |
| 27  | 0.261                   | 57  | 2.399                   | 87  | 63.140                  | 117  | 400.000                 |
| 28  | 0.270                   | 58  | 2.700                   | 88  | 71.066                  | 118  | 400.000                 |
| 29  | 0.281                   | 59  | 3.054                   | 89  | 79.502                  | 119  | 400.000                 |
|     |                         |     |                         |     |                         | 120  | 1000.000                |

#### APPENDIX II

# 2012 IAM Period Table Male, Age Nearest Birthday

|     | 4000 2012               |     | 4000 2017               |      | 4 0 cm 2019             |     | 2012                    |
|-----|-------------------------|-----|-------------------------|------|-------------------------|-----|-------------------------|
| AGE | $1000 \cdot q_x^{2012}$ | AGE | $1000 \cdot q_x^{2012}$ | AGE  | $1000 \cdot q_x^{2012}$ | AGE | $1000 \cdot q_X^{2012}$ |
| 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 | 290.01 <del>6</del>     |
| 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

| AGE      | CO.    | AGE | CO     | AGE | Ca            | AGE      | co       |
|----------|--------|-----|--------|-----|---------------|----------|----------|
| AGE<br>0 | $G2_x$ | 30  | $G2_x$ | 60  | $GZ_{\infty}$ | 90       | $G2_{x}$ |
| 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         | 93<br>94 | 0.003    |
| 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

| AGE | $GZ_{x}$ | AGE | $G2_{x}$ | AGE | $G2_x$ | AGE | $G2_x$ |
|-----|----------|-----|----------|-----|--------|-----|--------|
| 0   | 0.010    | 30  | 0.010    | 60  | 0.015  | 90  | 0.007  |
| 1   | 0.010    | 31  | 0.010    | 61  | 0.015  | 91  | 0.007  |
| 2   | 0.010    | 32  | 0.010    | 62  | 0.015  | 92  | 0.006  |
| 3   | 0.010    | 33  | 0.010    | 63  | 0.015  | 93  | 0.005  |
| 4   | 0.010    | 34  | 0.010    | 64  | 0.015  | 94  | 0.005  |
| 5   | 0.010    | 35  | 0.010    | 65  | 0.015  | 95  | 0.004  |
| 6   | 0.010    | 36  | 0.010    | 56  | 0.015  | 96  | 0.004  |
| 7   | 0.010    | 37  | 0.010    | 67  | 0.015  | 97  | 0.003  |
| 8   | 0.010    | 38  | 0.010    | 68  | 0.015  | 98  | 0.003  |
| 9   | 0.010    | 39  | 0.010    | 69  | 0.015  | 99  | 0.002  |
| 10  | 0.010    | 40  | 0.010    | 70  | 0.015  | 100 | 0.002  |
| 11  | 0.010    | 41  | 0.010    | 71  | 0.015  | 101 | 0.002  |
| 12  | 0.010    | 42  | 0.010    | 72  | 0.015  | 102 | 0.001  |
| 13  | 0.010    | 43  | 0.010    | 73  | 0.015  | 103 | 0.001  |
| 14  | 0.010    | 44  | 0.010    | 74  | 0.015  | 104 | 0.000  |
| 15  | 0.010    | 45  | 0.010    | 75  | 0.015  | 105 | 0.000  |
| 16  | 0.010    | 46  | 0.010    | 76  | 0.015  | 106 | 0.000  |
| 17  | 0.010    | 47  | 0.010    | 77  | 0.015  | 107 | 0.000  |
| 18  | 0.010    | 48  | 0.010    | 78  | 0.015  | 108 | 0.000  |
| 19  | 0.010    | 49  | 0.010    | 79  | 0.015  | 109 | 0.000  |
| 20  | 0.010    | 50  | 0.010    | 80  | 0.015  | 110 | 0.000  |
| 21  | 0.010    | 51, | 0.011    | 81  | 0.014  | 111 | 0.000  |
| 22  | 0.010    | 52  | 0.011    | 82  | 0.013  | 112 | 0.000  |
| 23  | 0.010    | 53  | 0.012    | 83  | 0.013  | 113 | 0.000  |
| 24  | 0.010    | 54  | 0.012    | 84  | 0.012  | 114 | 0.000  |
| 25  | 0.010    | 55  | 0.013    | 85  | 0.011  | 115 | 0.000  |
| 26  | 0.010    | 56  | 0.013    | 86  | 0.010  | 116 | 0.000  |
| 27  | 0.010    | 57  | 0.014    | 87  | 0.009  | 117 | 0.000  |
| 28  | 0.010    | 58  | 0.014    | 88  | 0.009  | 118 | 0.000  |
| 29  | 0.010    | 59  | 0.015    | 89  | 0.008  | 119 | 0.000  |
|     |          |     |          |     |        | 120 | 0.000  |