

H2,K=TABHL(H2T,LE,K,20,80,10) 8, A
 H2T=.0266/.0171/.0110/.0065/.0040/.0016/.0006 8.1, T
 H2 - MORTALITY, AGES 15-44 (DEATHS/PERSON-YEAR)
 TABHL - A FUNCTION WITH VALUES SPECIFIED BY A TABLE
 H2T - H2 TABLE
 LE - LIFE EXPECTANCY (YEARS)

HAT2,KL=(P2,K)(1-H2,K)/30 9, R
 HAT2 - MATURATION RATE, AGE 44-45 (PERSONS/YEAR)
 P2 - POPULATION, AGES 15-44 (PERSONS)
 H2 - MORTALITY, AGES 15-44 (DEATHS/PERSON-YEAR)

P3,K=P3,J+(DT)*(HAT2,K-PAT3,J,K) 10, L
 P3=P31 10.1, H
 P31=15E7 10.2, C
 P3 - POPULATION, AGES 45-64 (PERSONS)
 DT - TIME INTERVAL BETWEEN CONSECUTIVE CALCULATIONS (YEARS)
 HAT2 - MATURATION RATE, AGE 44-45 (PERSONS/YEAR)
 P2 - POPULATION, AGES 45-64 (PERSONS/YEAR)
 HAT3 - MATURATION RATE, AGE 64-65 (PERSONS/YEAR)
 P31 - P3 INITIAL (PERSONS)

D3,KL=P3,K*H3,K 11, R
 D3 - DEATHS PER YEAR, AGES 45-64 (PERSONS/YEAR)
 P3 - POPULATION, AGES 45-64 (PERSONS)
 H3 - MORTALITY, AGES 45-64 (DEATHS/PERSON-YEAR)

H3,K=TABHL(H3T,LE,K,20,80,10) 12, A
 H3T=.0562/.0373/.0252/.0171/.0118/.0083/.006 12.1, T
 H3 - MORTALITY, AGES 45-64 (DEATHS/PERSON-YEAR)
 TABHL - A FUNCTION WITH VALUES SPECIFIED BY A TABLE
 H3T - H3 TABLE
 LE - LIFE EXPECTANCY (YEARS)

HAT3,KL=(P3,K)(1-H3,K)/20 13, R
 HAT3 - MATURATION RATE, AGE 64-65 (PERSONS/YEAR)
 P3 - POPULATION, AGES 45-64 (PERSONS)
 H3 - MORTALITY, AGES 45-64 (DEATHS/PERSON-YEAR)

P4,K=P4,J+(DT)*(HAT3,K-P4,J,K) 14, L
 P4=P41 14.1, N
 P41=6E7 14.2, C
 P4 - POPULATION, AGES 65+ (PERSONS)
 DT - TIME INTERVAL BETWEEN CONSECUTIVE CALCULATIONS (YEARS)
 HAT3 - MATURATION RATE, AGE 64-65 (PERSONS/YEAR)
 P4 - POPULATION, AGES 65+ (PERSONS)
 P41 - P4 INITIAL (PERSONS)

D4,KL=P4,K*H4,K 15, R
 D4 - DEATHS PER YEAR, AGES 65+ (PERSONS/YEAR)
 P4 - POPULATION, AGES 65+ (PERSONS)
 H4 - MORTALITY, AGES 65+ (DEATHS/PERSON-YEAR)

H4,K=TABHL(H4T,LE,K,20,80,10) 16, A
 H4T=.13/.11/.09/.07/.06/.05/.04 16.1, T
 H4 - MORTALITY, AGES 65+ (DEATHS/PERSON-YEAR)
 TABHL - A FUNCTION WITH VALUES SPECIFIED BY A TABLE
 H4T - H4 TABLE
 LE - LIFE EXPECTANCY (YEARS)

DEATH RATE SUBSECTOR

D,K=D1,K+D2,K+D3,K+D4,K 17, A
 D - DEATHS PER YEAR (PERSONS/YEAR)
 D1 - DEATHS PER YEAR, AGES 0-14 (PERSONS/YEAR)
 D2 - DEATHS PER YEAR, AGES 15-44 (PERSONS/YEAR)
 D3 - DEATHS PER YEAR, AGES 45-64 (PERSONS/YEAR)
 D4 - DEATHS PER YEAR, AGES 65+ (PERSONS/YEAR)

CDR,K=1000*D,K/POP,K 12, S
 CDR - CRUDE DEATH RATE (DEATHS/1000 PERSON-YEAR)
 D - DEATHS PER YEAR (PERSONS/YEAR)
 POP - POPULATION (PERSONS)

LE,K=LEN*LMF,K*LMIS,K*LMSP,K*LMC,K 19, A
 LE=20 19.1, C
 LE - LIFE EXPECTANCY (YEARS)
 LMF - LIFE EXPECTANCY MULTIPLIER FROM FOOD (DIMENSIONLESS)
 LMIS - LIFE EXPECTANCY MULTIPLIER FROM HEALTH SERVICES (DIMENSIONLESS)
 LMP - LIFE EXPECTANCY MULTIPLIER FROM PERSISTENT POLLUTION (DIMENSIONLESS)
 LMC - LIFE EXPECTANCY MULTIPLIER FROM CROWDING (DIMENSIONLESS)

LMF,K=TABHL(LMFT,PPC,K,0,5,1) 20, A
 LMFT=5/1.2/1.3/1.35/1.4 20.1, T
 LMF - LIFE EXPECTANCY MULTIPLIER FROM FOOD (DIMENSIONLESS)
 TABHL - A FUNCTION WITH VALUES SPECIFIED BY A TABLE
 LMFT - LIFE EXPECTANCY MULTIPLIER FROM PERSISTENT POLLUTION (DIMENSIONLESS)
 PPC - FOOD PER CAPITA (VEGETABLE-EQUIVALENT KILOGRAMS/PERSON-YEAR)
 SPC - UNSUSTAINABLE FOOD PER CAPITA (VEGETABLE-EQUIVALENT KILOGRAMS/PERSON-YEAR)

HSAPC,K=TABHL(HSAPCT,SOPC,K,0,2000,250) 21, A
 HSAPCT=0/20/50/95/140/175/200/225/230 21.1, T
 HSAPC - HEALTH SERVICES ALLOCATIONS PER CAPITA (DOLLARS/PERSON-YEAR)
 TABHL - A FUNCTION WITH VALUES SPECIFIED BY A TABLE
 HSAPCT - HSAPC TABLE
 SOPC - SERVICE OUTPUT PER CAPITA (DOLLARS/PERSON-YEAR)

EHSPC,K=SMOOTH(HSAPC,K,HSID) 22, A
 HSID=20 22.1, C
 EHSPC - EFFECTIVE HEALTH SERVICES PER CAPITA (DOLLARS/PERSON-YEAR)
 SMOOTH - FIRST-ORDER EXPONENTIAL INFORMATION DELAY
 HSAPC - HEALTH SERVICES ALLOCATIONS PER CAPITA (DOLLARS/PERSON-YEAR)
 HSID - HEALTH SERVICES IMPACT DELAY (YEARS)

LMHS,K=CLIP(LMHS2,K,LMHS1,K,TIME,K,1940) 23, A
 LMHS - LIFE EXPECTANCY MULTIPLIER FROM HEALTH SERVICES (DIMENSIONLESS)
 CLIP - A FUNCTION SWITCHED DURING THE RUN
 LMHS2 - LMHS, VALUE AFTER TIME=PYEAR (DIMENSIONLESS)
 LMHS1 - LMHS, VALUE BEFORE TIME=PYEAR (DIMENSIONLESS)
 TIME - CURRENT TIME IN THE SIMULATION RUN

LMHS1,K=TABHL(LMHS1T,EHSPC,K,0,100,20) 24, A
 LMHS1T=1/1.1/1.4/1.6/1.7/1.9 24.1, T
 LMHS1 - LMHS, VALUE BEFORE TIME=PYEAR (DIMENSIONLESS)
 TABHL - A FUNCTION WITH VALUES SPECIFIED BY A TABLE
 LMHS1T - LMHS1 TABLE
 EHSPC - EFFECTIVE HEALTH SERVICES PER CAPITA (DOLLARS/PERSON-YEAR)

LMHS2,K=TABHL(LMHS2T,EHSPC,K,0,100,20) 25, A
 LMHS2T=1/1.4/1.6/1.8/1.95/2.0 25.1, T
 LMHS2 - LMHS, VALUE AFTER TIME=PYEAR (DIMENSIONLESS)
 TABHL - A FUNCTION WITH VALUES SPECIFIED BY A TABLE
 LMHS2T - LMHS2 TABLE
 EHSPC - EFFECTIVE HEALTH SERVICES PER CAPITA (DOLLARS/PERSON-YEAR)

FPU,K=TABHL(FPUT,POP,K,0,1600,250) 26, A
 FPUT=0/2/4/5/5.5/6/6.5/7/7.5/8 26.1, T
 FPU - FRACTION OF POPULATION URBAN (DIMENSIONLESS)
 TABHL - A FUNCTION WITH VALUES SPECIFIED BY A TABLE
 FPUT - FPU TABLE
 POP - POPULATION (PERSONS)

CMI,K=TABHL(CMIT,IOPC,K,0,1600,200) 27, A
 CMIT=5/0.05/0.1/0.08/0.02/0.05/1/15/2 27.1, T
 CMI - CROWDING MULTIPLIER FROM INDUSTRIALIZATION (DIMENSIONLESS)