Using data collected from the Human Mortality Database I made two sets of models. Model 1 follows the functional form below and

Model 2 follows the functional form below

lnMortality10 represents the natural log of mortality for the same cohort 10 years past; ex. For 25 year old males in 1960, lnMortality10 is equal to lnMortality for 15 year old males in 1950. For both models, age categories were broken up into the following categories: 5-9, 10-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80, of which the 10-19 age group was treated as the base. Year decades were defined as the 1940s, 50s, 60s, 70s, 80s, 90s, 00s, and 10s, of which the 1950s were treated as the base. The following countries were included in the regression, of which Australia was used as the base category: Australia, Canada, Denmark, France, Germany (1990-Present), Israel, Italy, Japan, Netherlands, Norway, Spain, Sweden, Taiwan, UK, USA, and West Germany. West Germany is included even post reunification. I ran the regressions separately for each of the three gender categories: total, female, and male.

After running the regression, I plotted the triple interaction coefficients( ) against either YearDecade or Agecategories. These figures can be found in the folders: /output/Figures/LagVars/TripleIntOnly for Model 1 and /output/Figures/NoLagVars/TripleIntOnly for Model 2. Additionally, the excel file /output/Figures/TripleInteractionBySex.xlsx contains all of the coefficients for each of the models as well as the coefficients for 6 more models that exclude Germany, Israel, Taiwan, and West Germany.

To obtain a better picture of what the US effect as a whole is, I added the coefficient associated with the US dummy to all of the triple interaction coefficients. Then I added the relevant double interaction terms to their triple interaction counterparts. Thus, the triple interaction coefficient for Americans in the year decade of 1980, aged 40-49, would have the double interaction coefficients of Americans in the year decade of 1980 and Americans aged 40-49 added to it, along with the US dummy term. The figures pertain to this series can be found in in the folders:

/output/Figures/LagVars/US Summed for Model 1 and /output/Figures/NoLagVars/US Summed for Model 2.

Finally, to better easily compare some of these models, I created a figure that displays eight graphs for the total gender classification. The file, AllTotalFiguresLeftIsNoLagRightIsLagTopisTripleBottomIsUSSum.png, contains eight graphs laid out in two, two by two squares. The left set of four graphs correspond to Model 2 and the right set of the four graphs correspond to Model 1. The top set within each set of four corresponds to the coefficients of the triple interaction term; DUS\*DYearDecade\*DAgecategories while the bottom set have the total US sums.

We see that when we look at the summed coefficients in Models 1 and 2, we see that the US tends to take better care of its elderly population relative to the young. In the bottom half of the figure we see that, generally, Mortality is highest for the cohorts aged 20-29 and lowest in the cohorts of 80. The Model 2 figure in bottom left of the left side of the figure shows a large rise in mortality among 5-9-year olds over time. The Model 1 figures show a similar increase for 20-29 year olds, when the cohort effect is accounted for. In general, the spread between series is tighter when we control for the cohort effect. Trends across the models remain fairly similar, indicating that most of the effect is not due to the triple interaction term.

When looking at just the triple interaction coefficients, we see a similar effect when controlling for the cohort effect and that it tightens the spread between series. The overall trends for each of the models remain similar across the models and between the US Sum coefficients and the triple interaction terms.

Folder Summary:

The folders in /output/Figures/LagVars/TripleIntOnly and /output/Figures/NoLagVars/TripleIntOnly contain a total of six figures each. Three for each gender category, and each gender category has one figure where the YearDecade was used as the X axis and the series are the Agecategories over time and another figure with Agecategories were used as the X axis and the series are the YearDecades.

The file, AllTotalFiguresLeftIsNoLagRightIsLagTopisTripleBottomIsUSSum.png, contains eight graphs laid out in two, two by two squares. The left set of four graphs correspond to Model 2 and the right set of the four graphs correspond to Model 1. The top set within each set of four corresponds to the coefficients of the triple interaction term; DUS\*DYearDecade\*DAgecategories while the bottom set have the total US sums.

The folder /ComparativeMortality/output/Figures contains two subfolders: LagVars and NoLagVars. Each of these is split into TripleInOnly and US Summed, which contain the relevant coefficient graphs for each gender.