$$
\mathbf{d}_{QALY} = \begin{array}{r} \mathrm{H} \\ \mathrm{S1} \\ \mathrm{S2} \\ \mathrm{DOC} \\ \mathrm{DS} \end{array} \begin{pmatrix} \texttt{uH}\Delta_t \\ \texttt{uS1}\Delta_t \\ \texttt{uS2}\Delta_t \\ 0 \\ 0 \end{pmatrix}
$$

$$
\mathbf{d}_{YLD} = \begin{array}{r} \mathrm{H} \\ \mathrm{S1} \\ \mathrm{S2} \\ \mathrm{DOC} \\ \mathrm{DS} \end{array} \begin{pmatrix} 0 \\ \texttt{dwS1}\frac{1}{r\Delta_t}(1-e^{-r\Delta_t})\Delta_t \\ \texttt{dwS2}\frac{1}{r\Delta_t}(1-e^{-r\Delta_t})\Delta_t \\ 0 \\ 0 \end{pmatrix}
$$

$$
\mathbf{d}_{YLL,t} = \begin{array}{r} \mathrm{H} \\ \mathrm{S1} \\ \mathrm{S2} \\ \mathrm{D} \\ \mathrm{trDS} \end{array} \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ \frac{1}{r}\left(1-e^{-rEx(a_t)}\right) \end{pmatrix}
$$

Let S be an $\omega \times k$ matrix, d be an $\omega \times k$ matrix, and c be an $\omega \times 1$ vector.

The Hadamard product of S and d is given by:

$$
S \odot d = \begin{bmatrix} s_{11}d_{11} & s_{12}d_{12} & \cdots & s_{1k}d_{1k} \\ s_{21}d_{21} & s_{22}d_{22} & \cdots & s_{2k}d_{2k} \\ \vdots & \vdots & \ddots & \vdots \\ s_{\omega 1}d_{\omega 1} & s_{\omega 2}d_{\omega 2} & \cdots & s_{\omega k}d_{\omega k} \end{bmatrix}
$$

Summing across the columns of $S \odot d$ to obtain a vector:

$$\operatorname{sum}(S \odot d) = \begin{bmatrix} \sum_{j=1}^{k} s_{1j} d_{1j} \\ \sum_{j=1}^{k} s_{2j} d_{2j} \\ \vdots \\ \sum_{j=1}^{k} s_{\omega j} d_{\omega j} \end{bmatrix}$$

Finally, performing the element-wise multiplication with vector c:

$$\operatorname{sum}(S \odot d) \odot c = \begin{bmatrix} \left(\sum_{j=1}^{k} s_{1j} d_{1j}\right) c_1 \\ \left(\sum_{j=1}^{k} s_{2j} d_{2j}\right) c_2 \\ \vdots \\ \left(\sum_{j=1}^{k} s_{\omega j} d_{\omega j}\right) c_\omega \end{bmatrix}$$