draft

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We propose a set of measures to interpret level and timing of bereavement in a kinship network. This indicators reflects the implicit bereavement conditions in a certain population, not implying a specific shock or change.

Each measure is defined for a group or a single each kin type. Heterogeneity can be individual (by chance) or between groups.

Let's start by creating a kinship network, in this case for Sweden 1950.

```
library(DemoKin)
px <- swe_px[,"1950"]
fx <- swe_asfr[,'1950']
kin_net <- kin(px, fx)
head(kin_net$kin_full)
```

```
## # A tibble: 6 x 7
##   kin   age_kin age_focal living  dead cohort year
##   <chr>   <int>     <int>  <dbl> <dbl> <lgl>  <lgl>
## 1 d           0         0      0     0 NA     NA
## 2 d           0         1      0     0 NA     NA
## 3 d           0         2      0     0 NA     NA
## 4 d           0         3      0     0 NA     NA
## 5 d           0         4      0     0 NA     NA
## 6 d           0         5      0     0 NA     NA
```

Now focus on daughters and mothers, to show what means each measure.

Expected loss years, non-conditioned to Focal alive.

Prospective, years-kin to share, non-conditioned to Focal alive

$$\sum_{y=x}^{\omega-1}\sum_{z=0}^{\omega-1} d_k(y,z)\, e(z)$$

Expected loss years, conditioned to Focal alive.

Prospective, years-kin to share, conditioned to Focal alive

$$\sum_{y=x}^{\omega-1}\sum_{z=0}^{\omega-1} d_k(y,z)\, e(y,z)$$

Intensity of bereavement

Retrospective, portion died of accumulated perfect surviving kin, conditioned to Focal alive.

$$D_k(x)/L_k(x)$$

Loneliness bereavement scale:

Age of potential absolute more lost (age with more living kin) This age can be found in this terms: find the age x where $k(x)$ is maximum. Can be found empirically for each case, but let's take a look to the analytics.

Age of potential relative more lost (age with less living kin) This age can be found in this terms: find the age x where $k(x)$ is minimum.

Age of more death experience This age can be found in this terms: find the age x where $d_k(x)$ is maximum. Is related to Missov et.al (2015) but weighted for each subsidy cohort.

Time since lost

Being $\overline{a}_k(k)$ mean age at lost until age a:

$$\sum_{y=0}^{x-1} \frac{d_k(y)}{D_k(x)}(x-y) = x - \overline{a}_k(x)$$

Prevalence of unexpected accumulated dead

What is an unexpected death?

```
ex <- rev(cumsum(px))
```