BM2_HW2

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Problem_1

(a)

```
df =
  tibble(
  dozens = c(rep(0, 30), rep(1,30), rep(2,30), rep(3,30), rep(4, 30)),
  dying = c(rep(1,2), rep(0,28), rep(1,8), rep(0,22), rep(1,15), rep(0,15), rep(1,23), rep(0,7), rep(1,1
```

```
fit_logit =
  df |>
  glm(dying~dozens,family=binomial(link='logit'), data = _) |>
  summary()
fit_logit
```

```
##
## Call:
## glm(formula = dying ~ dozens, family = binomial(link = "logit"),
##     data = df)
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -2.3238     0.4179  -5.561 2.68e-08 ***
## dozens        1.1619     0.1814   6.405 1.51e-10 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 207.94  on 149  degrees of freedom
## Residual deviance: 143.56  on 148  degrees of freedom
## AIC: 147.56
##
## Number of Fisher Scoring iterations: 4
```

```
fit_probit =
  df |>
  glm(dying~dozens,family=binomial(link='probit'), data = _) |>
  summary()
fit_probit
```

```
##
## Call:
## glm(formula = dying ~ dozens, family = binomial(link = "probit"),
```

```
##     data = df)
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -1.37709    0.22780  -6.045 1.49e-09 ***
## dozens       0.68638    0.09676   7.093 1.31e-12 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 207.94  on 149  degrees of freedom
## Residual deviance: 143.49  on 148  degrees of freedom
## AIC: 147.49
##
## Number of Fisher Scoring iterations: 4
```

```
fit_cloglog =
  df |>
  glm(dying~dozens,family=binomial(link='cloglog'), data = _) |>
  summary()
fit_cloglog
```

```
##
## Call:
## glm(formula = dying ~ dozens, family = binomial(link = "cloglog"),
##     data = df)
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -1.9942     0.3126  -6.379 1.78e-10 ***
## dozens        0.7468     0.1094   6.825 8.82e-12 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 207.94  on 149  degrees of freedom
## Residual deviance: 145.41  on 148  degrees of freedom
## AIC: 149.41
##
## Number of Fisher Scoring iterations: 5
```