eAppendix 1

Table 1. Comparison of Models Predicting Fall-Related Injuries Using AIC and BIC

Model	AIC[a]	Change in AIC	BIC[b]	Change in BIC
Base model (age, gender)	2156.4		–11088.0	
1) Base + Elixhauser comorbidity count	2133.7	–22.7[c]	–11099.7	–11.7[c]
2) Base + Elixhauser comorbidity count + prior FRI	2126.1	–7.6[d]	–11101.8	–2.1[d]
3) Base + Elixhauser comorbidity count + screening question	2115.4	–18.3[d]	–11112.5	–12.8[d]
4) Base + Elixhauser comorbidity count + screening question + prior FRI	2112.3	–3.1[e]	–11110.1	+2.4[e]

AIC indicates Akaike information criterion; BIC, Bayesian information criterion; FRI, fall-related injury.
[a]Akaike Information Criterion (AIC) is a likelihood measure in which lower values indicate better fit and a penalty is paid for increasing the number of variables in the model.[1]
[b]Bayesian Information Criterion (BIC) is a likelihood measure in which lower values indicate better fit, and a stronger penalty is paid for increasing the model parameters than with AIC.[2]
[c]Change in AIC or BIC from the base model.
[d]Change in AIC or BIC from model 1.
[e]Change in AIC or BIC from model 3.

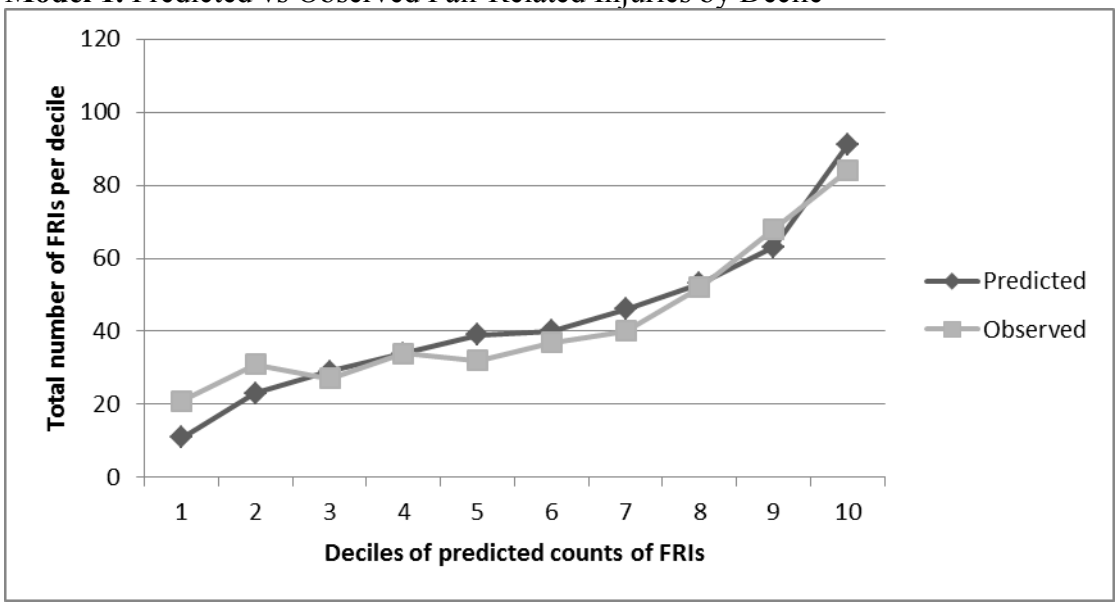
Table 2. Comparison of Models Predicting Fall-Related Injuries by Relative Likelihood of Better Fit

Model	AIC[a]	Change in AIC	Relative Likelihood of Better Fit[b]
Base	2156.4		
1	2133.7	–22.7[c]	0.00001 (base model compared with model 1)
2	2126.1	–7.6[d]	0.02 (model 1 compared with model 2)
3	2115.4	–18.3[d]	0.0001 (model 1 compared with model 3)
4	2112.3	–3.1[e]	0.21 (model 3 compared with model 4)

AIC indicates Akaike information criterion; FRI, fall-related injury.
[a]Akaike Information Criterion (AIC) is a likelihood measure in which lower values indicate better fit and a penalty is paid for increasing the number of variables in the model.[1]
[b]Relative likelihood of better fit of the model = $\exp((AIC_{min}-AIC)/2)$ where AIC_{min} is the minimum AIC.[3]
[c]Change in AIC from base model.
[d]Change in AIC from model 1.
[e]Change in AIC from model 3.

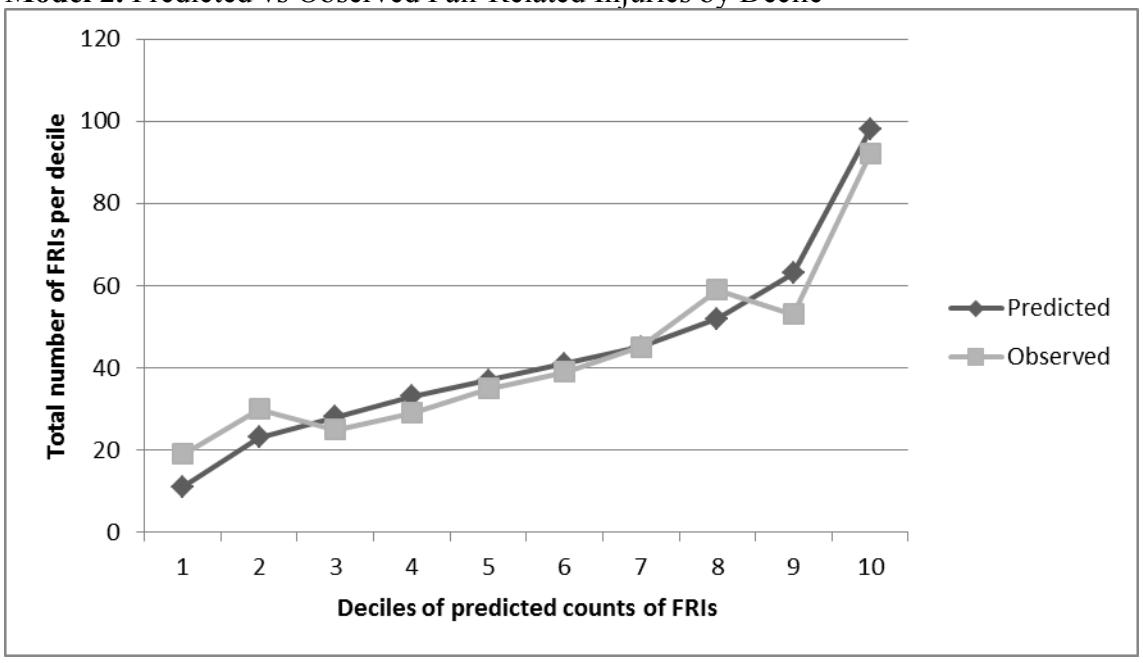
eAppendix 2

Model 1. Predicted vs Observed Fall-Related Injuries by Decile



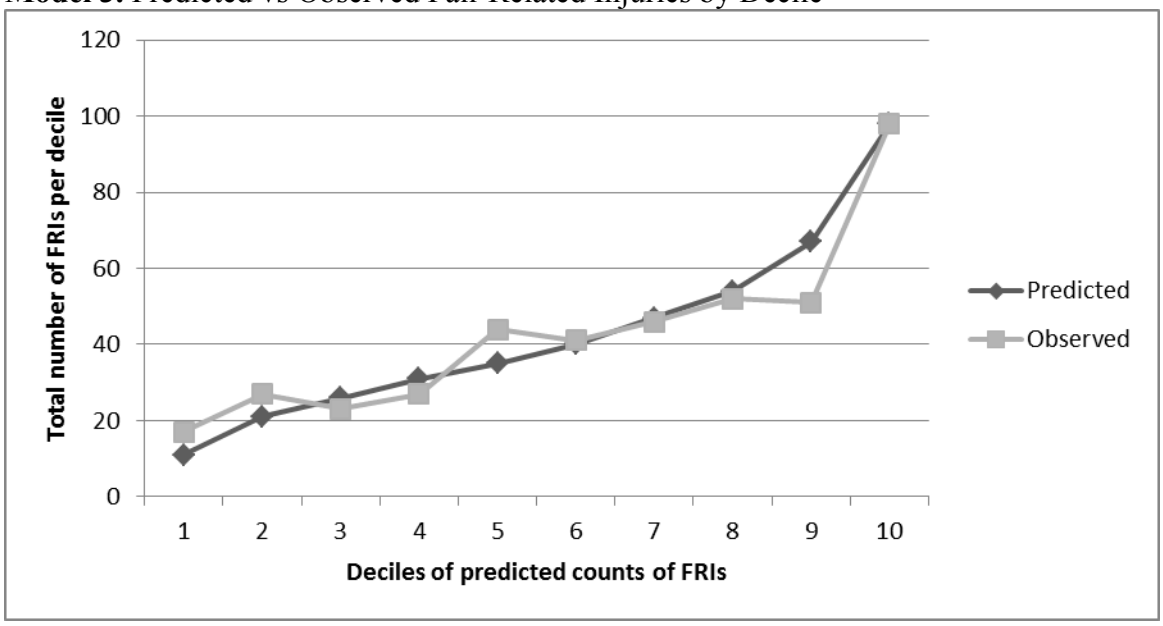
FRI indicates fall-related injury.
Predicted and observed counts calculated using model that includes age, gender, and Elixhauser comorbidity count (Model 1 in Table 3).

Model 2. Predicted vs Observed Fall-Related Injuries by Decile



FRI indicates fall-related injury.
Predicted and observed counts calculated using model that includes age, gender, Elixhauser comorbidity count, and prior claim for FRI (Model 2 in Table 3).

Model 3. Predicted vs Observed Fall-Related Injuries by Decile



FRI indicates fall-related injury.
Predicted and observed counts calculated using model that includes age, gender, Elixhauser comorbidity count, and screening question (≥2 falls in the past year) (Model 3 in Table 3).

Table 3. Comparison of Observed vs Predicted Fall-Related Injuries by Model

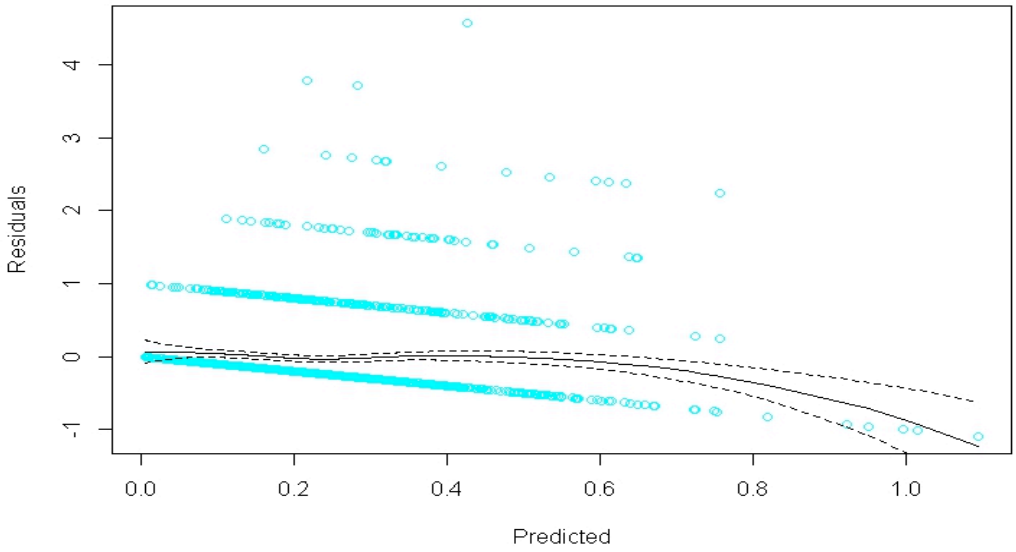
Model		**Hosmer-Lemeshow χ^2 Test Statistics**	***P***
1	Base (age, gender) + comorbidity count	15.25	.05
2	Base + comorbidity count + prior FRI	12.41	.13
3	Base + comorbidity count + screening question	12.43	.13
4	Base + comorbidity count + screening question + prior FRI	18.74	.02

Graphically, observed and predicted fall-related injuries are similar in all models. Significant or near-significant Hosmer-Lemeshow test statistics for Models 1 and 4 may be in part related to large sample size.[4]

eAppendix 3

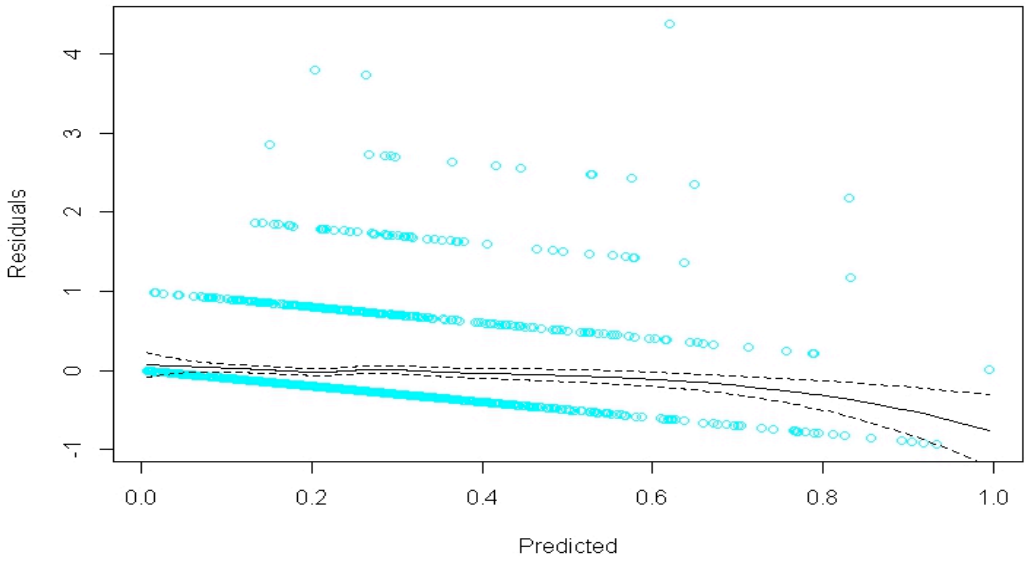
The eAppendix Figures show scatter plots of residual values versus predicted fall-related injuries for individual patients (blue circles) as well as locally weighted polynomial regression (LOESS) smoothing curves (solid black lines) with 95% CIs (dashed lines) for each model.[5] For all models, the LOESS curves show residuals centered around 0 except for the few subjects with high predicted values.

Model 1



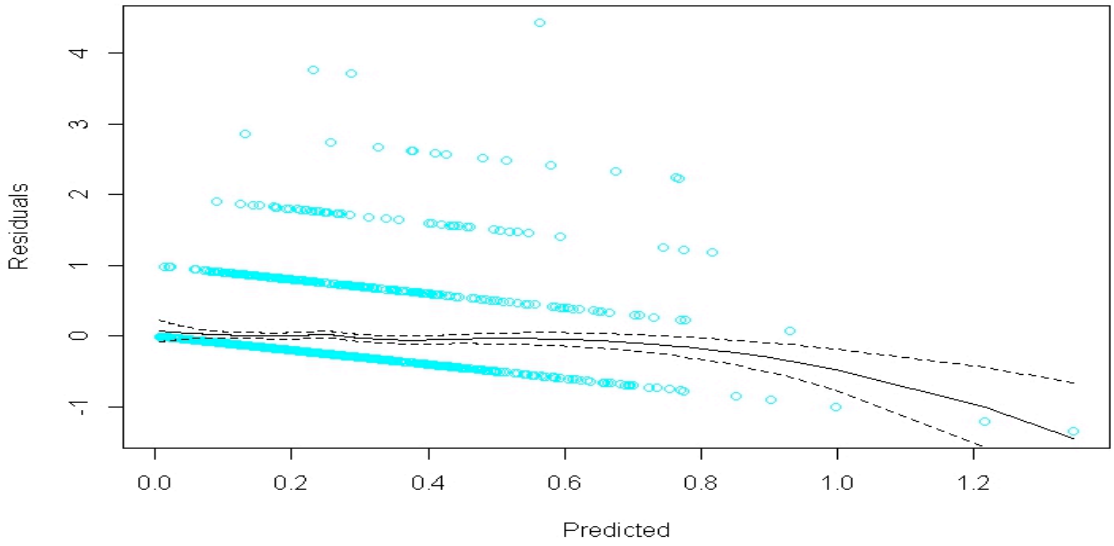
Predicted counts and residuals calculated using model that includes age, gender, and Elixhauser comorbidity count (Model 1 in Table 3).

Model 2



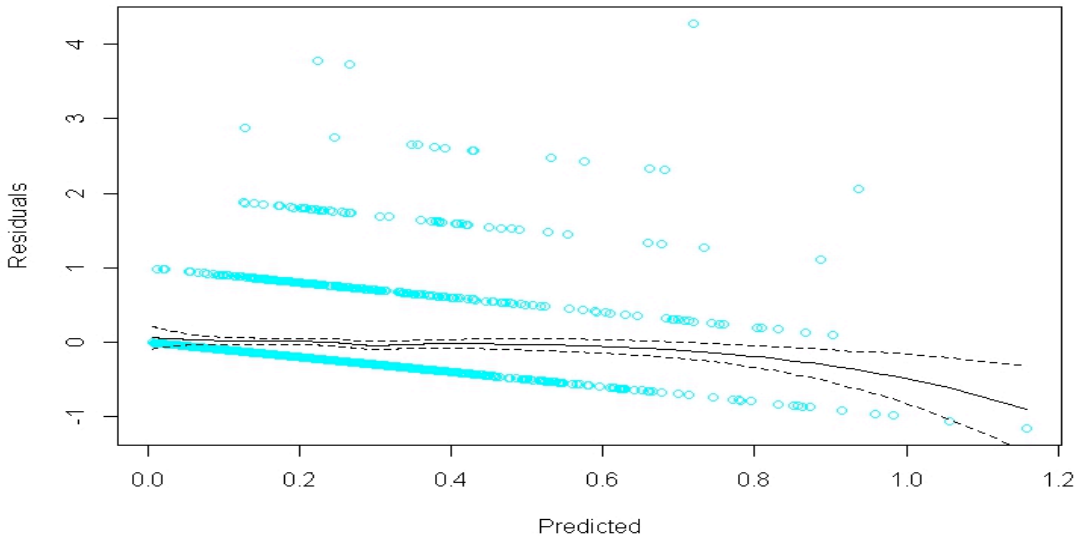
Predicted counts and residuals calculated using model that includes age, gender, Elixhauser comorbidity count, and prior claim for fall-related injury (Model 2 in Table 3).

Model 3



Predicted counts and residuals calculated using model that includes age, gender, Elixhauser comorbidity count, and screening question (≥2 falls in the past year) (Model 3 in Table 3).

Model 4



Predicted counts and residuals calculated using model that includes age, gender, Elixhauser comorbidity count, screening question (≥2 falls in the past year), and prior claim for fall-related injury (Model 4 in Table 3).

eAPPENDIX REFERENCES

1. Akaike H. A new look at the statistical model identification. *IEEE Trans Automat Contr.* 1974;19(6):716-723.

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5. Cleveland WS. Robust locally weighted regression and smoothing scatterplots. *JASA.* 1979;74(368):829-836.