

**DRAFT**

**DISCLAIMER:** The updated nursing bed need formula, including the upper and lower bounds, contained within this document are currently in draft form as part of Iowa's administrative rulemaking process. This information will not become effective until the effective date of the proposed rules, currently noticed as ARC 0175D. You can access the proposed rules, including how and where to submit public comment, here: <https://www.legis.iowa.gov/docs/aco/arc/0175D.pdf>

## Bed Need Forecasting Formula Update

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Division of Compliance and Administration



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## Background

House File 1049 of the 90th Iowa General Assembly directed the Iowa Department of Health and Human Services to develop and implement a nursing bed facility forecasting formula utilizing recommendations for improvement as provided by the workgroup convened as part of the 2023 Iowa Acts, Chapter 158, section 11. The intent of the nursing facility bed forecasting formula is to ensure the availability of sufficient nursing facility needs to meet future demand for nursing facility beds. The formula is also to be used when completing formal Certificate of Need reviews as described in Iowa Code Section 135.61 through Iowa Code Section 135.79.

Iowa's bed need formula was originally developed based on the 1970 census. This formula, identified in 481 Iowa Administrative Rule 2203.5(3) states that the following formulas shall be used to project the approximate number of intermediate and skilled nursing care beds needed to serve the projected population five years into the future:

1. For rural Iowa counties:

$[.09(65 + \text{population}) + .0015(64 - \text{population}) ] \times 110\%$  equals total long-term care bed need  
Combined SNF and ICF bed need equals  $2/3$  (total long-term care bed need)  
Assumed RCF bed need equals  $1/3$  (total long-term care bed need).

2. For urban Iowa counties:

$[.07(65 + \text{population}) + .0015(64 - \text{population}) ] \times 110\%$  equals total long-term care bed need  
Combined SNF and ICF bed need equals  $2/3$  (total long-term care bed need)  
Assumed RCF bed need equals  $1/3$  (total long-term care bed need).

The 2023 Long Term Care Bed Need Formula Workgroup made the following recommendations with regard to updating these formulas:

- Use additional age tiers and update the weights for each age tier
- Use a three-year population projection
- Identify additional data sources for inclusion in the formula
- Review the formula a minimum of every 10 years and update if needed
- Seek the expertise of an actuary or forecasting specialty to assist a workgroup with developing and updating the statistical formula
- Update the definitions of rural and urban areas
- Remove references to Residential Care Facilities and Intermediate Care Facilities within the formula

- Update the CON application as needed and each time the formula is updated

## 2026 Update: Bed Need Forecasting Formula Development

To comply with House File 1049, Iowa HHS assembled a workgroup to review the 2023 formula update recommendations and develop an updated bed need forecasting formula. This workgroup consisted of membership from the Medicaid Division, Aging and Disability Services Division, and Compliance and Administration Division. Members included representatives from the Certificate of Need Program, Administrative Rules Program, Long Term Services and Supports Program, data Policy, Reporting and Research for the Aging and Disability Services Division, and the Iowa HHS Chief Data Officer. Additionally, as recommended in the 2023 report, the Agency utilized the skills of the Iowa HHS Health Economist to provide expertise in developing and updating the statistical formula. This workgroup provided feedback on key considerations for this body of work and assisted with plan development for updating the formula.

In accordance with recommendations from the 2023 report, Iowa HHS’s Health Economist created an updated statistical model that estimates county-by-month total bed day demand. The predicted number of bed days is calculated by summing the weighted values of the variables and then taking the exponential of that sum. Estimated bed demand is calculated by dividing the predicted bed days by the number of days in each period of time:

County-level bed need = County-level bed days / days in time period

County-level bed days = exp( Linear Predictor )

Linear Predictor = Intercept

+ Weight for Log of Total Population \* Log of Total Population

+ Weight for Percent age 65-74 \* Percent age 65-74

+ Weight for Percent age 75-84 \* Percent age 75-84

+ Weight for Percent age 85 plus \* Percent age 85 plus

+ Weight for Level of care \* Level of care

+ Weight for Time Trend \* Time Trend

+ Weight for COVID-19 Period \* COVID-19 Indicator

+ Weight for Post-COVID \* Post-COVID Indicator

+ Weight for Level of care x Time Trend \* Level of care x Time Trend

- + Month effect for applicable month
- + County effect for applicable county

This formula is based on the following:

1. Updated data sources, including Medicaid data, census data, and Iowa Department of Inspections and Licensing bed capacity data.
2. Updated methodology that considers number of bed need days as opposed to number of physical beds, anticipated higher needs for beds in winter months to account for increased seasonal illness, use of Medicaid data weighted to achieve relevance for the general population, and statistical modeling and regression to complete the forecasting and validate accuracy of data analyses methods
3. The following considerations from the 2023 recommendations:
  - a. Updated age tiers and weights
  - b. Used additional data sources (Medicaid member data, Census data, Department of Inspections and Licensing)
  - c. Included county-level predictions allowing demand to vary beyond urban and rural aggregated designations

Variable	Weight - Lower Bound	Weight - Upper Bound
Intercept	-2.44041491735	-2.29171422
Log of total population	0.68261262583	0.70333400
Percent age 65–74	5.10437808441	6.26657408
Percent age 75–84	13.58471588427	15.19419191
Percent age 85 and older	13.66387259203	15.13037793
County: Adams	-0.23950630682	-0.17202277
County: Allamakee	-0.40832893881	-0.35124293
County: Appanoose	-0.13785422486	-0.07890974
County: Audubon	-0.22563849281	-0.17106169
County: Benton	0.13613715674	0.19061771
County: Black Hawk	0.53194463759	0.62263290
County: Boone	0.44416226106	0.49887375

Variable	Weight - Lower Bound	Weight - Upper Bound
County: Bremer	0.17215413963	0.23079599
County: Buchanan	0.16610580267	0.22609961
County: Buena Vista	-0.32605088539	-0.26481051
County: Butler	0.15510857329	0.20833016
County: Calhoun	0.05322351517	0.10640230
County: Carroll	0.39356538966	0.44741893
County: Cass	0.20123181912	0.25963903
County: Cedar	-0.10003082245	-0.04605000
County: Cerro Gordo	0.18907451195	0.25544592
County: Cherokee	-0.13750318163	-0.08325669
County: Chickasaw	0.20069818640	0.25058536
County: Clarke	-0.16521510077	-0.10650404
County: Clay	0.05473242085	0.10914628
County: Clayton	0.03786730245	0.08848005
County: Clinton	0.07409888534	0.15142326
County: Crawford	-0.23483544293	-0.17185224
County: Dallas	0.13152046322	0.20139427
County: Davis	-0.24007127046	-0.18171921
County: Decatur	-0.13748766490	-0.08388214
County: Delaware	-0.04249684727	0.01486300
County: Des Moines	0.10153379266	0.17807140
County: Dickinson	-0.15564099485	-0.10106268
County: Dubuque	0.38450621302	0.46459102
County: Emmet	-0.21850437226	-0.16442000
County: Fayette	0.07477311594	0.12870812

Variable	Weight - Lower Bound	Weight - Upper Bound
County: Floyd	0.18202286078	0.23724372
County: Franklin	-0.18178109182	-0.12341223
County: Fremont	-0.18943500363	-0.13858808
County: Greene	0.11088576781	0.16855421
County: Grundy	-0.00067063086	0.05802987
County: Guthrie	0.14403239162	0.19277507
County: Hamilton	0.26299337380	0.32048884
County: Hancock	-0.22760608544	-0.17677575
County: Hardin	0.08752999514	0.14128087
County: Harrison	0.01435570140	0.06473459
County: Henry	0.31075221120	0.37179784
County: Howard	-0.29436496197	-0.23969592
County: Humboldt	-0.09129177733	-0.03606588
County: Ida	-0.24428011286	-0.19047511
County: Iowa	-0.32735165481	-0.26394412
County: Jackson	-0.08372425086	-0.02600341
County: Jasper	0.41900779974	0.48511688
County: Jefferson	-0.27596882321	-0.20889621
County: Johnson	0.05200757954	0.13855294
County: Jones	-0.29301016061	-0.22883691
County: Keokuk	-0.29936830567	-0.24008342
County: Kossuth	-0.27407638774	-0.21909703
County: Lee	0.13113812576	0.20227684
County: Linn	0.45099559811	0.54672275
County: Louisa	-0.25132945461	-0.18964559

Variable	Weight - Lower Bound	Weight - Upper Bound
County: Lucas	-0.44900461012	-0.38856683
County: Lyon	-0.39354774650	-0.32766821
County: Madison	-0.14275160408	-0.08526322
County: Mahaska	-0.21911413177	-0.15865017
County: Marion	0.24520522118	0.30389063
County: Marshall	0.37633252965	0.44417859
County: Mills	0.25550994839	0.31758180
County: Mitchell	-0.39938752131	-0.34032605
County: Monona	-0.29927428519	-0.24081872
County: Monroe	-0.15376251441	-0.09993853
County: Montgomery	0.11302753266	0.16793532
County: Muscatine	0.54547308139	0.61686274
County: O'Brien	0.13039246035	0.19388852
County: Osceola	-0.19201491680	-0.13175001
County: Page	0.05010957984	0.10555796
County: Palo Alto	-0.22672697203	-0.17411048
County: Plymouth	0.07093034186	0.12938421
County: Pocahontas	-0.07754511189	-0.02352230
County: Polk	0.46452965222	0.57596606
County: Pottawattamie	0.52510853592	0.60750268
County: Poweshiek	-0.18552489426	-0.12747013
County: Ringgold	-0.34368151168	-0.28580108
County: Sac	-0.05778539494	-0.00166167
County: Scott	0.26452684036	0.36376345
County: Shelby	-0.19324035632	-0.12998846

Variable	Weight - Lower Bound	Weight - Upper Bound
County: Sioux	0.00007719775	0.06326078
County: Story	0.33834018641	0.41059665
County: Tama	0.14145418068	0.20202211
County: Taylor	-0.25530522085	-0.19788657
County: Union	-0.06785089500	-0.01524946
County: Van Buren	-0.39735632735	-0.33603406
County: Wapello	0.09513424942	0.16620940
County: Warren	0.59130675454	0.65382196
County: Washington	0.31231976416	0.36795178
County: Wayne	-0.47021973824	-0.41272817
County: Webster	0.24301516395	0.31108565
County: Winnebago	-0.18300507387	-0.12690819
County: Winneshiek	-0.25343082167	-0.19655847
County: Woodbury	0.13019718534	0.22062918
County: Worth	-0.29979768368	-0.24334012
County: Wright	-0.14339509039	-0.08550373
Level of care: Hospital – Acute	0.37295368711	0.39408723
Level of care: Hospital – Specialty	-1.52452845498	-1.45534187
Level of care: Intermediate Care Facility	-0.63978334752	-0.59817967
Level of care: Residential	-1.89295915620	-1.38789358
Level of care: Skilled Nursing Facility	3.35464715958	3.37460403
Time trend (yearly)	0.04473421997	0.05042971
COVID-19 period	0.17912475235	0.19158245
Post-COVID period	-0.17375339892	-0.15104709
Month: February	-0.09172299062	-0.07547588

Variable	Weight - Lower Bound	Weight - Upper Bound
Month: March	0.00158005418	0.01742265
Month: April	-0.05328195131	-0.03752713
Month: May	-0.03409931551	-0.01844551
Month: June	-0.07154490454	-0.05601105
Month: July	-0.05277216045	-0.03667666
Month: August	-0.06529657409	-0.04928462
Month: September	-0.11219072761	-0.09623417
Month: October	-0.07773460624	-0.06165190
Month: November	-0.14722736284	-0.13120950
Month: December	-0.09878282732	-0.08280176
Acute care × time trend	-0.18857723774	-0.18527226
Specialty hospital × time trend	-0.19763060949	-0.18472428
ICF × time trend	-0.01808999397	-0.01184957
Residential × time trend	0.08822851906	0.15094023
SNF × time trend	-0.08806619765	-0.08507712