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# Using Benchmarking Techniques and the 2011 Maternity Practices Infant Nutrition and Care (mPINC) Survey to Improve Performance among Peer Groups across the United States

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## Abstract

**Background—**A substantial proportion of US maternity care facilities engage in practices that are not evidence-based and that interfere with breastfeeding. The CDC Survey of Maternity Practices in Infant Nutrition and Care (mPINC) showed significant variation in maternity practices among US states.

**Objective—**The purpose of this article is to use benchmarking techniques to identify states within relevant peer groups that were top performers on mPINC survey indicators related to breastfeeding support.

**Methods—**We used 11 indicators of breastfeeding-related maternity care from the 2011 mPINC survey and benchmarking techniques to organize and compare hospital-based maternity practices across the 50 states and Washington, DC. We created peer categories for benchmarking first by region (grouping states by West, Midwest, South, and Northeast) and then by size (grouping states by the number of maternity facilities and dividing each region into approximately equal halves based on the number of facilities).

**Results—**Thirty-four states had scores high enough to serve as benchmarks, and 32 states had scores low enough to reflect the lowest score gap from the benchmark on at least 1 indicator. No state served as the benchmark on more than 5 indicators and no state was furthest from the benchmark on more than 7 indicators. The small peer group benchmarks in the South, West, and Midwest were better than the large peer group benchmarks on 91%, 82%, and 36% of the indicators, respectively. In the West large, the Midwest large, the Midwest small, and the South large peer groups, 4–6 benchmarks showed that less than 50% of hospitals have ideal practice in all states.



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**Conclusion—**The evaluation presents benchmarks for peer group state comparisons that provide potential and feasible targets for improvement.

### Keywords

assessment; benchmark; breastfeeding; hospital practices; maternity; quality improvement; United States

## Well-Established

Given the many important health advantages associated with breastfeeding, interventions that successfully improve breastfeeding-related hospital practices could have a major impact on infant and maternal health in the United States.[1] State summaries of hospitals' and birth centers' Maternity Practices in Infant Nutrition and Care (mPINC) survey results provide a snapshot of the extent to which evidence-based practices that help mothers achieve their breastfeeding goals have been adopted in the state.

## Newly Expressed

To our knowledge, benchmarking techniques based on state peer groups using achievable, realistic reference points for quality improvement efforts have not previously been used to advance the quality of maternity care provided to breastfeeding mothers and to catalyze change.

## Background

The Baby-Friendly Hospital Initiative (BFHI), developed by the World Health Organization and the United Nations Children's Fund, recognizes hospitals worldwide that consistently utilize evidence-based practices that support breast-feeding.[2] To be designated as Baby-Friendly, hospitals must meet specific designation criteria and demonstrate to external assessors their adherence to the Ten Steps to Successful Breastfeeding,[2] as well as abide by the International Code of Marketing of Breast-milk Substitutes (the Code),[3] which includes requiring hospitals to pay fair market value for infant formula. As of June 2013, only 7.2% of US births occurred at Baby-Friendly facilities[4] and fewer than 1% of the over 20 000 hospitals worldwide ever designated were located in the United States.[4] Furthermore, limited progress has been made throughout the United States in adherence to American Academy of Pediatrics (AAP) breastfeeding guidelines;[5] only 16.4% of US infants born in 2010 were breastfed exclusively for 6 months.[6]

Improving hospital maternity practices is a recognized area of need,[7–9] as experiences in the hospital affect breastfeeding duration and exclusivity after the hospital stay.[1] In 2008, the National Quality Forum, an independent, not-for-profit organization dedicated to setting national priorities and standards for health care quality improvement, endorsed 17 perinatal standards related to aspects of the care provided to mothers and their babies, including the measurement of exclusive breastfeeding at hospital discharge. These standards were based on work accomplished by state-level activities. Subsequently, in April 2010, the Joint Commission, an independent, nonprofit organization that accredits and certifies over 20 000 health care organizations and programs in the United States, implemented a new set of

Perinatal Care Core Measure Set, which includes an indicator regarding the percentage of infants who receive only breast milk before hospital discharge. This measure set becomes mandatory for hospitals with 1100 or more births/year on January 1, 2014.[10]

The Centers for Disease Control and Prevention (CDC) national survey of Maternity Practices in Infant Nutrition and Care (mPINC) documents infant feeding practices and policies in hospitals and birth centers throughout the United States and territories. Results from 2007, 2009, and 2011 indicate that a substantial proportion of facilities used maternity practices that are not evidence-based and are known to interfere with breastfeeding.[11] Every facility that participates in the mPINC survey receives an overall mPINC score, ranging from 0 to 100, with 100 being the best possible score and higher prevalence of maternity care practices that are supportive of breastfeeding. An overview of the mPINC scoring algorithm can be found at: www.cdc.gov/breastfeeding/data/mpinc/scoring.htm. Among the 50 states and Washington, DC, (henceforth "states"), regional variation in practices across the United States is evident. In 2011, scores ranged from 51 in Mississippi to 88 in New Hampshire; the United States overall mPINC score was 70.[12]

A more thorough understanding of how states compare on key practices known to impede breastfeeding success would be helpful for policy makers who are interested in improving exclusive breastfeeding rates in their states, as it would allow them to more effectively focus their efforts. The concept of a benchmark as a reference point has been widely used[13] to determine what and where improvements are called for, to analyze how others achieve high performance levels, and to use this information to improve performance. They provide a pathway to setting "achievable" goals for improving care.[14,15] Given the preeminent role of states in regulating medical care through requirements for facilities, professional licensure, and payments, state-level benchmarks provide a wide variety of stakeholders with information that can be useful in facilitating policy and social change.[16] The significance and meaning of a benchmark is directly related to the level of similarity of the peers to which it is compared. When obtained by a peer similar enough to be considered a realistic comparison, a benchmark serves as a goal that other peers strive to achieve. The purpose of this article is to use benchmarking techniques to identify states within relevant peer groups that were top performers on mPINC survey indicators related to breastfeeding support.

## Methods

The mPINC survey was designed as a national census of facilities (hospitals and birth centers) routinely providing maternity care. The survey implementation plan was based on input from experts in evaluation of hospital maternity care practices and assessment of stakeholders' needs.[17] An expert panel advised on the content included in the survey, and the survey questions were based on expert input, relevant literature, and previously fielded analogous surveys of maternity care practices across regions and states to reflect practices known to affect breastfeeding outcomes. The 2011 survey includes 56 questions; a copy of the survey is available online at http://www.cdc.gov/breastfeeding/data/mpinc/pdf/2011-mPINC-hospital-survey.pdf.

We used the overall mPINC score and 11 key questions from the 2011 mPINC survey to serve as indicators of hospital best practices for breastfeeding. The 11 key questions that were selected were consistent with those selected by the CDC for their MMWR Vital Statistics report.[8] Among the 11 questions, 10 were reflective of the Ten Steps to Successful Breastfeeding, and 1 was consistent with the Code. Table 1 summarizes these indicators and the evidence of the influence they have on breastfeeding. We extracted the proportion of facilities in each state with ideal practice on the 11 indicators and compared them. Our approach was inspired by the Commonwealth Fund's "Why Not the Best" (http://www.whynotthebest.org/about) quality improvement resource, which provides states with comparative information about their hospitals' performance relative to best-performing states.

Peer categories for benchmarking were created first by grouping states by region (West, Midwest, South, and Northeast), and then by size, dividing each region into 2 approximately equal halves based on the number of facilities (median state number of facilities provided a cutoff for "large" and "small"). The Northeast group had only 9 facilities, and it was felt this was not enough to divide the region into 2 groups; therefore, they were kept together as a single peer group. Members of each peer group are listed in descending order based on the number of maternity facilities in the state. This created 7 peer groups with 6 to 9 states per group.

The top score/percentage for each indicator from within each peer group was considered to be the benchmark for that group. As no single state performed consistently best or worst for all indicators, a composite hypothetical benchmark state was created for each of the 7 peer categories by using the top score/percentage for each of the 11 indicators. In addition, within each peer group, we identified the "lowest score gap" in the peer group reflecting distance from the benchmark.

Institutional review board approval was not necessary for this study because, per US Department of Health and Human Services Exemption 4, the research involved the study of existing data and the facilities could not be identified directly or through identifiers linked to the facilities. The data used for the evaluation are also publically available and may be utilized by readers to create alternate benchmarks and peer groups for their own analyses if desired.

## Results

Table 2 shows each state's overall mPINC score, the proportion of hospitals that scored favorably on each of the indicators used in the analysis, and the percentage of eligible facilities that participated in the survey (response rate).

States' benchmarks varied significantly. Thirty-four states earned scores that served as the benchmark (ie, the best score/percentage from within each peer group, shown across the top row within each state peer group), and 32 states had scores that represented the lowest score in the peer group on at least 1 indicator. No state served as the benchmark on more than 5 indicators, and no state was lowest on more than 7 indicators. Table 3 shows the 14 states

that served as benchmarks on 4 to 5 indicators (Washington, Idaho, Arkansas, Hawaii, Ohio, Wisconsin, North Dakota, Florida, Virginia, Washington, DC, Delaware, Maine, New Hampshire, and Rhode Island), 7 states that were lowest on 4 to 7 indicators (Utah, Nevada, Illinois, Michigan, North Dakota, Mississippi, and Vermont), and 19 states that had at least 1 indicator where they served as a benchmark and 1 indicator where they had the score furthest from the benchmark (Washington, Oregon, Arizona, Arkansas, Wyoming, Hawaii, Minnesota, Michigan, Iowa, Missouri, Kansas, Nebraska, South Dakota, North Dakota, Texas, Louisiana, New Jersey, Connecticut, and Vermont). This "lowest score gap," presented in the bottom row of the table for each state peer group and for each indicator in Table 2, reflects the difference in scores between the lowest- and highest-performing states. The items with the lowest score gap (> 50 percentage points difference between the highest and lowest scores) in state performance in at least 1 of the peer groups were (1) assessment of staff competency in assessing breast-feeding, (2) < 10% of breastfeeding infants are supplemented with something other than breast milk, (3) ≥ 90% of infants remain in the same room with their mother ≥ 23 hours per day during the childbirth stay, (4) < 10% of infants are given pacifiers in the hospital during the childbirth stay, and (5) hospital routinely provides all 3 modes of postdischarge breastfeeding support to mothers. Larger gaps were more common in the small peer groups compared to the large peer groups. The benchmarks in the South small peer group were better than those in the South large peer group on 91% of the indicators and the total mPINC score. Benchmarks in the West small peer groups were better than those in the West large peer groups on 81% of the indicators. In the Midwest, benchmarks in the small peer groups were better than those in the large peer groups in only 36% of the indicators.

## Discussion

The benchmarks highlight the interstate variation in maternity practices and the fact that, within each peer group, no 1 state performed best on all indicators. While 14 states achieved benchmarks on 4 to 5 indicators, those same states had substantial room for improvement on other indicators, including 4 states (Washington, Arkansas, Hawaii, and North Dakota) that had at least 1 indicator furthest from the benchmark. In the West large, the Midwest large, the Midwest small, and the South large peer groups, 4 to 6 benchmarks showed that less than 50% of hospitals have ideal practice in all states, indicating opportunities for improvement in all of those states. In addition, those states seeking mentorship in improving maternity practices have a systematic way of identifying colleagues in other states that are doing well on specific indicators and who may be able to provide effective guidance. To our knowledge, benchmarking techniques, the use of achievable, realistic reference points for quality improvement efforts, have not yet been used to advance maternity quality of care for breastfeeding mothers and catalyze change at the state level based on state peer groups.

The benchmarks identified in this analysis highlight potential feasible targets for state-level change. Community-level actions are also needed to stimulate improvement efforts, as has occurred in other areas of health, such as medication safety.[18] Health care performance differences are partially attributed to discretionary decisions by physicians, nurses, and other health professionals, and are influenced by the local availability of resources, incentives, leadership, and culture. The problem of geographic variation (geographic disparities) in

quality of care that is related to a fundamental health behavior like infant feeding should be an important target for decision makers.

An alternative peer group based on geographic region alone or size alone or some other characterization may provide a different benchmark and perspective on goals for state efforts. The choice of benchmarks depends on the specific circumstances of the individual states. Some states may choose to exclude certain states as members of a peer group for a variety of reasons. The data in Table 2 provide the raw data that enable states to create different peer groups. In addition, the CDC Web site includes state reports and the raw data for each question included in the calculation of the mPINC score, stratified by state, so that states can also examine different measures of performance, if desired.[19]

Other factors for grouping categories are also possible and may be preferable to the chosen strategy for other purposes. Other variables to consider related to mPINC performance are deliveries per hospital (states with multiple large vs smaller facilities), numbers of level 3 tertiary care facilities, and numbers of academic versus community hospitals.

Comparisons with benchmarks motivate change[20] and many opportunities exist to protect, promote, and support breastfeeding mothers and children at the decision-maker level. To take action on this critical need, states may consider several related activities. State and local regulations might intentionally or unintentionally influence various processes of care. Since these regulations often form the basis for hospital practices, they can be examined, evaluated for their evidence base, and revised if necessary. For example, if a state treats formula giveaways as it treats pharmaceutical giveaways, then the implications of restrictions/bans would be more visible. Lower-performing states trying to improve could examine the regulations of high performing states to identify any components that affect actions.

A statewide summit of key decision-making staff at maternity facilities[21] could be sponsored to highlight the importance of evidence-based hospital practices that support breastfeeding; indeed, breastfeeding summits have already occurred in many states. Links could be established among maternity facilities and community breastfeeding support networks to enhance continuity of care and support for breastfeeding families. State-level hospital collaboratives have been used effectively already to improve maternity practices and could be expanded.[22] Hospital staff across the state might be incentivized to participate in training courses in breastfeeding through various government and continuing education channels. Best-performing states on specific indicators provide examples of what is possible.

## Conclusions

The mPINC survey results provide states and maternity facilities with a comprehensive baseline for subsequent intervention efforts to support breastfeeding, an important health behavior. These benchmarking results offer realistic targets for states to measure impacts of interventions. Changes in maternity care practices related to infant feeding are being implemented through the use of the quality improvement techniques, but to a lesser degree than those that have been effectively applied to address other health care facility practices such as medication errors and infection control.[23] Actions by states and public awareness

campaigns based on these benchmark results can help draw attention to infant feeding-related maternity practices.

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## Table 1

Description of Maternity Care Practices Related to Breastfeeding Support, as Derived from the Centers for Disease and Control (CDC) Maternity Practices in Infant Nutrition and Care (mPINC) Survey.

| mPINC Measure | BFHI Measure | Explanation of How the Practice Influences Breastfeeding | References |
|---|---|---|---|
| Has written breastfeeding policy including all 10 elements | Step 1: Have a written breastfeeding policy that is routinely communicated to all health care staff. | The American Academy of Pediatrics (AAP) recommends inclusion of specific elements in facility breastfeeding policies to establish a standard for all births. The Academy of Breastfeeding Medicine's (ABM) clinical protocol lists components of a model breastfeeding policy. | AAP, 2012[24]; ABM Protocol Committee, 2007[25] |
| Staff breastfeeding competency assessed at least annually | Step 2: Train all health care staff in skills necessary to implement this policy. | Like other critical nursing competencies, it improves delivery of care. | O'Hearne, 2006[26]; Whelan, 2006[27]; Arcand & Neumann, 2005[28] |
| Breastfeeding education included as routine part of prenatal classes | Step 3: Inform all pregnant women about the benefits and management of breastfeeding. | Patient education about breastfeeding improves breastfeeding rates. | Benson 2001[29] |
| ≥ 90% of breastfed infants initiate breastfeeding within 1 hour of vaginal birth | Step 4: Help mothers initiate breastfeeding within 1 hour of birth. | Early skin-to-skin contact right after birth has positive effects on breastfeeding at 1 to 3 months. | Anderson et al 2003[30] |
| ≥ 90% breastfeeding mothers are taught breastfeeding techniques | Step 5: Show mothers how to breastfeed and how to maintain lactation, even if they are separated from their infants. | Patient education provides information that enables them to understand how to establish breastfeeding. | Cakmak & Kuguoglu 2007[31]; Benson 2001[29]; Howard et al 2003[32] |
| < 10% of breastfeeding infants are supplemented | Step 6: Give newborn infants no food or drink other than breast milk, unless medically indicated. | The AAP & American College of Obstetrics and Gynecology (ACOG) Guidelines for Perinatal Care and ABM guidelines for supplementing feedings in healthy neonates all recommend against routine supplementation with formula, glucose water, or water because supplementation can prevent the establishment of maternal milk supply and have adverse effects on breastfeeding. | AAP & ACOG Guidelines for Perinatal Care 2007[33]; ABM Protocol Committee, 2006[34] & 2007[25] |
| ≥ 90% infants remain with mothers ≥ 23h/day | Step 7: Practice "rooming in"—allow mothers and infants to remain together 24 hours a day. | Keeping the infant and mother together reduces chances the infant will receive supplemental feeds. | Svensson et al 2005[35]; Ball et al 2006[36]; Lindenberg et al 1990[37] |
| ≥ 90% breastfeeding mothers taught to recognize/respond to infant feeding cues | Step 8: Encourage breastfeeding on demand. | Effective breastfeeding relies on feeding in direct response to specific infant cues rather than scheduled frequency or duration of feedings. | Bystrova et al 2007[38] |
| < 10% breastfeeding infants are given pacifiers in hospital | Step 9: Give no pacifiers or artificial nipples to breastfeeding infants. | In-hospital pacifier use reduces duration of exclusive breastfeeding. | Ball et al 2006[36] |
| Hospitals routinely provide all 3 modes of postdischarge breastfeeding support to mothers | Step 10: Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic. | The AAP clinical practice guidelines recommend examination of all infants by a qualified health care professional within 48 hours of hospital discharge to assess breastfeeding; discharge planning may also include active reaching out to patients through telephone calls and referrals to support groups, lactation consultants/ specialists, WIC, or outpatient clinics. | Ingram et al 2005[39]; Chapman et al 2004[40]; AAP Subcommittee on Hyperbilirubinemia, 2004[41] |
| Hospital does not accept free formula | International Code of Marketing of Breast-milk Substitutes | Shown to reduce exclusive breastfeeding rates and implies health care professional endorsement of specific commercial items. | Bliss et al 1997[42]; Snell et al 1992[43]; Taveras et al 2004[44]; AAP, 2012[24]; Committee on Healthcare for Underserved Women; 2007[45] |

Abbreviation: WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.

**Table 2**

Benchmark Results by Peer Group for 2011 mPINC Survey Indicators and Total mPINC Score.

| State | Eligible Facilities (n) | Response Rate (%) | Average Total mPINC Score[a] | Percentage of Facilities That Met Each Indicator from the 2011 mPINC Survey | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Step 1[b] (%) | Step 2[c] (%) | Step 3[d] (%) | Step 4[e] (%) | Step 5[f] (%) | Step 6[g] (%) | Step 7[h] (%) | Step 8[i] (%) | Step 9[j] (%) | Step 10[k] (%) | Code[l] (%) |
| West, large facilities | | | | | | | | | | | | | | |
| Hypothetical benchmark | | | 80 | 29 | 71 | 98 | 78 | 98 | 46 | 83 | 94 | 54 | 35 | 37 |
| CA | 272 | 81 | 79 | 29* | 66 | 90 | 61 | 94 | 21 | 73 | 87 | 52 | 28 | 37* |
| WA | 76 | 89 | 77 | 16 | 50 | 84 | 78* | 96 | 46* | 83* | 94* | 43 | 31 | 31 |
| OR | 62 | 85 | 80* | 12 | 46 | 96 | 62 | 98* | 38 | 68 | 91 | 49 | 23 | 29 |
| CO | 53 | 81 | 77 | 23 | 71* | 96 | 71 | 96 | 27 | 57 | 88 | 54* | 35* | 17 |
| AZ | 53 | 77 | 73 | 13 | 55 | 98* | 56 | 90 | 28 | 73 | 78 | 44 | 20 | 13 |
| UT | 45 | 93 | 69 | 17 | 53 | 93 | 74 | 79 | 20 | 48 | 68 | 14 | 24 | 17 |
| Lowest score gap | | | 11 | 17 | 25 | 14 | 19 | 19 | 26 | 35 | 26 | 40 | 15 | 24 |
| West, small facilities | | | | | | | | | | | | | | |
| Hypothetical benchmark | | | 78 | 33 | 44 | 100 | 75 | 100 | 58 | 95 | 100 | 100 | 61 | 55 |
| ID | 34 | 79 | 73 | 33* | 44* | 100* | 63 | 100* | 26 | 70 | 85 | 41 | 33 | 11 |
| MT | 32 | 88 | 69 | 8 | 32 | 93 | 50 | 89 | 39 | 62 | 82 | 52 | 29 | 19 |
| NM | 31 | 84 | 69 | 13 | 42 | 85 | 69 | 77 | 27 | 69 | 65 | 44 | 24 | 27 |
| AK | 26 | 77 | 78* | 16 | 35 | 75 | 75* | 90 | 58* | 95* | 95 | 55 | 35 | 55* |
| WY | 22 | 86 | 70 | 6 | 33 | 81 | 67 | 89 | 53 | 50 | 89 | 28 | 61* | 6 |
| NV | 18 | 83 | 60 | 7 | 40 | 93 | 33 | 67 | 20 | 60 | 67 | 13 | 13 | 7 |
| HI | 10 | 70 | 76 | 0 | 43 | 100 | 43 | 100* | 29 | 71 | 100* | 100* | 43 | 29 |
| Lowest score gap | | | 18 | 33 | 12 | 25 | 42 | 33 | 38 | 45 | 35 | 87 | 48 | 49 |
| Midwest, large facilities | | | | | | | | | | | | | | |
| Hypothetical benchmark | | | 76 | 21 | 64 | 100 | 65 | 99 | 46 | 33 | 91 | 39 | 44 | 33 |
| IL | 123 | 89 | 66 | 11 | 53 | 98 | 49 | 89 | 19 | 29 | 82 | 27 | 23 | 5 |

| State | Eligible Facilities (n) | Response Rate (%) | Average Total mPINC Score[a] | Percentage of Facilities That Met Each Indicator from the 2011 mPINC Survey | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Step 1[b] (%) | Step 2[c] (%) | Step 3[d] (%) | Step 4[e] (%) | Step 5[f] (%) | Step 6[g] (%) | Step 7[h] (%) | Step 8[i] (%) | Step 9[j] (%) | Step 10[k] (%) | Code[l] (%) |
| OH | 113 | 83 | 71 | 21* | 64* | 99 | 65* | 96 | 17 | 27 | 90 | 28 | 44* | 11 |
| WI | 104 | 84 | 76* | 19 | 54 | 97 | 65* | 99* | 46* | 24 | 91* | 38 | 39 | 27 |
| MN | 100 | 89 | 72 | 19 | 41 | 98 | 58 | 87 | 32 | 26 | 85 | 39* | 42 | 33* |
| IN | 99 | 95 | 68 | 18 | 51 | 96 | 58 | 96 | 21 | 19 | 88 | 29 | 28 | 13 |
| MI | 89 | 87 | 67 | 20 | 44 | 100* | 55 | 83 | 12 | 33* | 74 | 34 | 21 | 9 |
| Lowest score gap | | | 10 | 10 | 23 | 4 | 16 | 16 | 34 | 14 | 17 | 12 | 23 | 28 |
| Midwest, small facilities | | | | | | | | | | | | | | |
| Hypothetical benchmark | | | 72 | 55 | 73 | 99 | 82 | 94 | 37 | 31 | 87 | 29 | 51 | 27 |
| IA | 78 | 91 | 67 | 13 | 37 | 99* | 59 | 92 | 16 | 10 | 85 | 28 | 51* | 1 |
| MO | 75 | 87 | 66 | 12 | 47 | 94 | 50 | 94* | 27 | 22 | 87* | 28 | 24 | 3 |
| KS | 73 | 84 | 64 | 7 | 33 | 93 | 55 | 89 | 27 | 31* | 82 | 24 | 31 | 8 |
| NE | 56 | 88 | 64 | 15 | 25 | 98 | 64 | 92 | 22 | 27 | 75 | 29* | 30 | 8 |
| SD | 23 | 87 | 63 | 21 | 35 | 85 | 45 | 80 | 37* | 5 | 75 | 25 | 30 | 0 |
| ND | 13 | 85 | 72* | 55* | 73* | 82 | 82* | 73 | 27 | 0 | 73 | 27 | 36 | 27* |
| Lowest score gap | | | 9 | 48 | 48 | 17 | 37 | 21 | 21 | 31 | 14 | 5 | 27 | 27 |
| South, large facilities | | | | | | | | | | | | | | |
| Hypothetical benchmark | | | 69 | 24 | 75 | 98 | 53 | 92 | 32 | 53 | 91 | 43 | 33 | 16 |
| TX | 283 | 77 | 66 | 15 | 57 | 81 | 52 | 88 | 19 | 40 | 86 | 33 | 23 | 16* |
| FL | 133 | 67 | 69* | 17 | 67 | 92 | 53* | 91 | 18 | 53* | 83 | 40 | 33* | 16* |
| NC | 88 | 89 | 67 | 16 | 66 | 96 | 42 | 91 | 10 | 31 | 86 | 38 | 22 | 15 |
| GA | 90 | 83 | 65 | 16 | 59 | 93 | 49 | 91 | 11 | 37 | 77 | 22 | 14 | 4 |
| TN | 72 | 83 | 62 | 22 | 58 | 97 | 50 | 80 | 15 | 24 | 80 | 25 | 10 | 12 |
| VA | 63 | 70 | 67 | 11 | 52 | 98* | 48 | 89 | 32* | 33 | 91* | 43* | 30 | 11 |
| LA | 61 | 84 | 65 | 24* | 75* | 84 | 47 | 92* | 16 | 20 | 80 | 29 | 16 | 2 |
| OK | 61 | 80 | 62 | 9 | 47 | 84 | 50 | 82 | 8 | 25 | 78 | 23 | 22 | 6 |

| State | Eligible Facilities (n) | Response Rate (%) | Average Total mPINC Score[a] | Percentage of Facilities That Met Each Indicator from the 2011 mPINC Survey | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Step 1[b] (%) | Step 2[c] (%) | Step 3[d] (%) | Step 4[e] (%) | Step 5[f] (%) | Step 6[g] (%) | Step 7[h] (%) | Step 8[i] (%) | Step 9[j] (%) | Step 10[k] (%) | Code[l] (%) |
| Lowest score gap | | | 7 | 15 | 28 | 17 | 11 | 12 | 24 | 33 | 14 | 21 | 23 | 14 |
| South, small facilities | | | | | | | | | | | | | | |
| Hypothetical benchmark | | | 79 | 50 | 74 | 100 | 63 | 100 | 33 | 67 | 100 | 50 | 40 | 40 |
| AL | 55 | 84 | 63 | 13 | 74* | 94 | 50 | 91 | 13 | 13 | 91 | 13 | 20 | 2 |
| KY | 51 | 88 | 60 | 10 | 53 | 84 | 38 | 84 | 17 | 11 | 84 | 16 | 9 | 7 |
| SC | 51 | 75 | 67 | 11 | 50 | 100* | 63* | 90 | 26 | 32 | 79 | 34 | 32 | 14 |
| AR | 41 | 68 | 55 | 22 | 36 | 82 | 32 | 75 | 7 | 14 | 68 | 25 | 21 | 7 |
| MS | 41 | 54 | 51 | 9 | 29 | 96 | 48 | 81 | 0 | 10 | 60 | 10 | 18 | 0 |
| MD | 35 | 86 | 70 | 10 | 67 | 90 | 57 | 97 | 20 | 37 | 87 | 43 | 30 | 10 |
| WV | 30 | 93 | 60 | 12 | 36 | 93 | 50 | 96 | 25 | 29 | 86 | 30 | 4 | 0 |
| DC | 8 | 63 | 79* | 20 | 60 | 100* | 60 | 100* | 20 | 60 | 100* | 40 | 40* | 40* |
| DE | 6 | 100 | 77 | 50* | 67 | 100* | 50 | 83 | 33* | 67* | 83 | 50* | 33 | 33 |
| Lowest score gap | | | 28 | 41 | 45 | 18 | 31 | 25 | 33 | 57 | 40 | 40 | 36 | 40 |
| Northeast, all facilities | | | | | | | | | | | | | | |
| Hypothetical benchmark | | | 88 | 44 | 85 | 100 | 91 | 100 | 70 | 52 | 100 | 83 | 71 | 44 |
| NY | 131 | 83 | 73 | 38 | 68 | 95 | 52 | 94 | 23 | 20 | 94 | 54 | 35 | 12 |
| PA | 106 | 88 | 66 | 17 | 46 | 96 | 51 | 96 | 17 | 19 | 87 | 21 | 34 | 7 |
| NJ | 52 | 85 | 71 | 25 | 77 | 93 | 51 | 100* | 9 | 9 | 93 | 41 | 16 | 11 |
| MA | 49 | 94 | 84 | 42 | 85* | 96 | 82 | 100* | 30 | 37 | 100* | 54 | 35 | 30 |
| ME | 31 | 87 | 83 | 44* | 65 | 100* | 73 | 96 | 48 | 44 | 100* | 82 | 59 | 44* |
| CT | 27 | 89 | 76 | 35 | 67 | 100* | 50 | 88 | 22 | 25 | 88 | 54 | 25 | 33 |
| NH | 24 | 88 | 88* | 38 | 67 | 100* | 91* | 100* | 52 | 52* | 91 | 62 | 71* | 43 |
| VT | 12 | 83 | 76 | 30 | 10 | 90 | 70 | 80 | 70* | 30 | 80 | 70 | 40 | 10 |
| RI | 7 | 86 | 81 | 33 | 50 | 100* | 67 | 100* | 20 | 33 | 100* | 83* | 17 | 33 |
| Lowest score gap | | | 22 | 27 | 75 | 10 | 41 | 20 | 61 | 43 | 20 | 62 | 55 | 37 |

[a] The total mPINC score is on a scale of 0 to 100.

[b] Hospital has written Breastfeeding Policy including all 10 elements (mPINC question B11).

[c] Staff assessed for level of competency in breastfeeding management and support at least once a year (mPINC question B3).

[d] Breastfeeding is included as routine part of prenatal classes (mPINC question A01).

[e] ≥ 90% of healthy full-term breastfed infants are put to the breast within 1 hour after delivery for uncomplicated vaginal births (mPINC question A06).

[f] ≥ 90% of breastfeeding, or intending to breastfeed, mothers are taught breastfeeding techniques (mPINC question A15).

[g] < 10% of healthy full-term breastfed infants are supplemented with something other than breast milk (mPINC question A20).

[h] ≥ 90% of healthy full-term infants remain with mothers at least 23 hours per day (mPINC question A31).

[i] ≥ 90% of mothers are taught to recognize and respond to infant's first signs of hunger (mPINC question A16).

[j] < 10% of healthy full-term breastfed infants are given pacifiers by maternity care staff (mPINC question A24).

[k] Hospital routinely provides all 3 modes of postdischarge breastfeeding support to mothers (mPINC question A33).

[l] Hospital does not accept free infant formula (mPINC question A25).

[*] Indicates states meeting the benchmark for each indicator.

**Table 3**

States Most Frequently Meeting the Benchmarks for Their Peer Group and Those Furthest from the Benchmarks across 11 Indicators of Maternity Care, CDC Maternity Practices in Infant Nutrition and Care (mPINC) Survey, 2011.

| | West Large (No. of Indicators) | West Small (No. of Indicators) | Midwest Large (No. of Indicators) | Midwest Small (No. of Indicators) | South Large (No. of Indicators) | South Small (No. of Indicators) | Northeast (No. of Indicators) |
|---|---|---|---|---|---|---|---|
| Meets benchmark on 4–5 indicators | Washington (4) | Idaho (4), Alaska (4), Hawaii (4) | Ohio (4), Wisconsin (4) | North Dakota (4) | Virginia (5), Florida (4) | Washington, DC (5), Delaware (5) | Maine (4), New Hampshire (5), Rhode Island (4) |
| Furthest from benchmark on 4–7 indicators | Utah (5) | Nevada (5) | Illinois (4), Michigan (4) | North Dakota (4) | — | Missouri (7) | Vermont (4) |
| At least 1 indicator at the benchmark and 1 furthest from the benchmark | Washington, Oregon, Arizona | Alaska, Wyoming, Hawaii | Minnesota, Michigan | Iowa, Missouri, Kansas, Nebraska, South Dakota, North Dakota | Texas, Louisiana | — | New Jersey, Connecticut, Vermont |

Excludes overall mPINC score indicator; states with overall mPINC score benchmark in each category were Oregon (West large): 80; Arkansas (West small): 78; Wisconsin (Midwest large): 76; North Dakota (Midwest small): 72; Florida (South large): 69; Washington, DC (South small): 79; New Hampshire (Northeast): 88.