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## Trends in rooming-in practices among hospitals in the United States, 2007–2015

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### Abstract

**Background**—Rooming-in, or keeping mothers and infants together throughout the birth hospitalization, increases breastfeeding initiation and duration, and is one of the *Ten Steps to Successful Breastfeeding*.

**Methods**—The Centers for Disease Control and Prevention's (CDC) Maternity Practices in Infant Nutrition and Care (mPINC) survey is a biennial census of all birth facilities in the United States and its territories. Data from the 2007–2015 mPINC surveys were used to assess trends in the prevalence of hospitals with most (90%) infants rooming-in more than 23 hours per day (ideal practice). Hospital practices among breastfed infants not rooming-in at night and reasons why hospitals without ideal rooming-in practices removed healthy, full-term, breastfed infants from their mothers' rooms were also analyzed.

**Results**—The percentage of hospitals with ideal practice increased from 27.8% in 2007 to 51.4% in 2015. Most breastfed infants who were not rooming-in were brought to their mothers at night for feedings (91.8% in 2015). Among hospitals without ideal rooming-in practices, the percentage removing 50% or more of infants from their mothers' rooms at any point during the hospitalization decreased for all reasons surveyed during 2007–2015; however, in 2015, hospitals still reported regularly removing infants for hearing tests (73.2%), heel sticks (65.5%), infant baths (40.2%), pediatric rounds (35.5%), and infant photos (25.4%).

**Conclusions**—Hospital implementation of rooming-in increased 23.6 percentage points during 2007–2015. Continued efforts are needed to ensure that all mothers who choose to breastfeed receive optimal lactation support during the first days after giving birth.

### Keywords

breastfeeding; maternity care practices; rooming-in

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## 1 | INTRODUCTION

Breastmilk is well documented as the best source of infant nutrition, and breastfeeding provides numerous health benefits to both the mother and infant.<sup>1,2</sup> The American Academy of Pediatrics recommends that infants be breastfed exclusively for about the first 6 months of life<sup>1</sup>; however, only 25% of infants in the United States meet this recommendation.<sup>3</sup> Hospitals have long been known to play an important role in breastfeeding outcomes; mothers who experience evidence-based maternity care practices are more likely to initiate<sup>4</sup> and continue breastfeeding.<sup>5,6</sup>

Acknowledging the need for hospital practices supportive of breastfeeding, the World Health Organization and the United Nations Children's Fund developed the *Ten Steps to Successful Breastfeeding* (*Ten Steps*), which are evidence-based maternity care practices and policies influencing breastfeeding initiation and supporting lactation physiology.<sup>7</sup> One study found that women who delivered in hospitals that implemented 6 or 7 of the steps were 6 times more likely to meet their breastfeeding goals than women who delivered in hospitals that practiced none or one of the steps.<sup>8,9</sup>

Step 7 is to “facilitate rooming-in and encourage all mothers and newborns to remain together during their hospital stay”<sup>10</sup> (ie, being together 24 hours per day).<sup>10</sup> Rooming-in is recommended for all healthy, full-term infants who are receiving routine care, regardless of feeding method.<sup>10,11</sup> Mothers who room-in are better able to learn and detect their infants' hunger cues<sup>12</sup> and are more likely to be exclusively breastfeeding at hospital discharge.<sup>13,14</sup> Studies have also suggested that rooming-in facilitates mother-infant bonding, which, in turn, positively influences breastfeeding.<sup>15</sup> Furthermore, rooming-in promotes family-centered care as the infant is not taken away for pediatric rounds and other routine procedures.<sup>16</sup>

Given the benefits of rooming-in, it is important to understand the prevalence of this practice in the United States. Therefore, the aim of this study was to report national trends from 2007 to 2015 of rooming-in practices. This study also examined hospital practices among breastfed infants not rooming-in at night, and reasons why hospitals without ideal rooming-in practices separate healthy, full-term, breastfed infants from their mothers during the hospital stay.

## 2 | METHODS

The purpose of the Maternity Practices in Infant Nutrition and Care (mPINC) survey is to monitor maternity care practices related to breastfeeding. Launched in 2007, the survey has been administered every 2 years through 2015. Every maternity hospital and birth center in the United States and its territories is invited by the Centers for Disease Control and Prevention (CDC) to participate. The survey is sent to the person(s) at the facility most knowledgeable about routine infant feeding practices and policies, most frequently the mother-baby unit manager. Response rates were 82%–83% for each survey cycle. Detailed methods of the mPINC survey are published elsewhere.<sup>17</sup>

The prevalence of facilities implementing rooming-in was calculated for each survey year from 2007 to 2015 by using the question, “Approximately what percentage of healthy full-term infants, regardless of feeding method, remain with their mothers for at least the following number of hours per day?” Response options included “8 or fewer hours per day,” “9–15 hours per day,” “16–23 hours per day,” and “more than 23 hours per day”; answers were expected to sum to 100%. A facility was considered to have ideal rooming-in practices if 90% or more of healthy, full-term infants were rooming-in more than 23 hours per day. In free-standing birth centers, few mother-infant dyads remain at the facility for more than 24 hours; therefore, these facilities were excluded from the analysis (range: 118–170 facilities per survey year). Results were examined by hospital type (private, government, nonprofit, or military), teaching status (yes, no), hospital size (annual number of births), and geographic region (Mid-Atlantic, Midwest, Mountain Plains, Northeast, Southeast, Southwest, and Western). Geographic regions were based on the United States Department of Agriculture’s Food and Nutrition Service regional offices.<sup>18</sup>

Hospital practices for breastfed infants who did not room-in overnight were assessed for each survey. Hospitals were asked, “Among mother-infant couplets that do not room-in at night, approximately how many healthy, full-term, breastfed infants are brought to their mothers at night for feedings?” This question was on a Likert scale of “Few (0%–9%),” “Some (10%–49%),” “Many (50%–89%),” and “Most (90% +)” with the ideal response being “Most.”

Among the subset of hospitals that did not have ideal rooming-in practices, reasons why breastfed infants were removed from the mothers’ rooms at any point during the birth hospitalization were examined. The questions used were “Approximately how many healthy, full-term, breastfed infants are taken from their mothers’ rooms for: (1) pediatric rounds, (2) hearing test, (3) heel stick, (4), infant photos, and (5) infant’s bath.” These questions were on a Likert scale of “Few (0%–9%),” “Some (10%–49%),” “Many (50%–89%),” and “Most (90% +).” We combined responses “Many” and “Most” to describe trends in reasons breastfed infants were regularly (≥ 50% of infants) removed from the mothers’ rooms. By using 2015 mPINC data, these results were further examined by hospital type, teaching status, hospital size, and geographic region.

mPINC is a census, not a sample, so no inferential statistics were calculated. All analyses were conducted by using SAS software v9.3 (Cary, NC).<sup>19</sup>

### 3 | RESULTS

The percentage of hospitals that reported most (≥ 90%) infants roomed-in more than 23 hours a day was 27.8% in 2007, 30.2% in 2009, 33.6% in 2011, 41.2% in 2013, and 51.4% in 2015, an increase of 23.6 percentage points from 2007 to 2015 (Figure 1). There was a notable distribution shift with the percentage of hospitals reporting <10% of infants rooming-in decreasing from 46.8% in 2007 to 22.8% in 2015, a reduction of 24.0 percentage points.

Rooming-in increased across all survey years regardless of hospital type, teaching status, size, and geographic region (Table 1). Notably, the percentage of military hospitals and hospitals in the Western region reporting most infants were rooming-in was substantially higher across all survey years compared with other hospital characteristics (range: 74.1%–85.7% and 61.4%–80.8%, respectively; Table 1). The percentage of hospitals bringing most (90%) healthy, full-term, breastfed infants, who were not rooming-in overnight, to their mothers for nighttime feedings increased each survey year, from 73.6% in 2007 to 91.8% in 2015, an increase of 18.2 percentage points (Figure 2).

Among hospitals not implementing ideal rooming-in practices, all surveyed reasons for removing most (50%) infants from their mothers' rooms declined from 2007 to 2015 (Table 2). Across all survey cycles, the most common reasons given for hospitals removing infants from their mothers' rooms were for the infant to receive a hearing test or for a heel stick to be performed. In 2007, 86.5% of hospitals removed most infants for a hearing test, declining to 73.2% in 2015, and 84.2% of hospitals removed most infants to perform a heel stick, declining to 65.6% in 2015 (Table 2).

However, upon reviewing 2015 data among hospitals who did not have ideal rooming-in practices, there was wide variation in the frequency of routinely removing infants from their mothers' rooms by hospital characteristics (Table 3). Teaching hospitals were less likely than nonteaching hospitals to remove most infants from their mothers' rooms for the 5 surveyed reasons. In addition, in 2015, smaller hospitals were more likely to remove most infants for hearing tests and to perform heel sticks compared with larger hospitals (Table 3). Removal of most infants for infant photos was highest among government hospitals (35.3%) but was similar for all other hospital types, ranging from 17.7% to 23.3%. Hospitals with the lowest proportion of routine removal for photos include teaching hospitals (3.8%) and those with 1000–1999 births (9.8%), 2000–4999 births (3.6%), and 5000 or more births (6.3%) (Table 3). Military hospitals had the lowest routine removal for infant baths (5.3%); for other hospital types, routine removal ranged from 35.6% to 54.7%. By size, hospitals with 5000 or more births had the lowest proportion of routine removal for baths (9.7%) (Table 3). Routine removal for pediatric rounds ranged from 10.5% (military hospitals) to 56.5% (private hospitals). Hospitals with the highest proportion of infants being removed for pediatric rounds include those with 250–499 births (37.8%), 500–999 births (43.7%), and 1000–1999 births (37.4%) (Table 3). By geographic region, hospitals in the Western region were least likely to routinely remove infants for pediatric rounds (14.7%); whereas, hospitals in the Southeast more often removed infants (60.9%). Most hospitals in all geographic regions removed infants for hearing test (range: 56.4% of hospitals in the Western region to 86.9% of hospitals in the Mountain Plains region) and to perform heel sticks (range: 52.6% of hospitals in the Western region to 70.5% of hospitals in the Mountain Plains region). Hospitals in the Northeast were least likely to routinely remove infants for infant photos (9.4%) and infant's bath (26.2%); whereas, hospitals in the Southeast (30.5% and 56.7%, respectively) were more likely (Table 3).

## 4 | DISCUSSION

In the United States, the prevalence of hospitals reporting that most mother-infant dyads were rooming-in during the birth hospitalization increased markedly from 27.8% in 2007 to 51.4% in 2015. Implementation of rooming-in increased among all survey years regardless of hospital type, teaching status, size, and geographic region.

The increase in rooming-in (Step 7) may be related, in part, to an increase in the number of hospitals participating in the Baby-Friendly Hospital Initiative (Baby-Friendly), which includes the *Ten Steps* as a core component.<sup>7,20</sup> In 2007, only 1.8% of births in the United States occurred in facilities designated as Baby-Friendly,<sup>21</sup> compared with 13.4% of births in 2015, increasing to 22.2% of births in 2017.<sup>22</sup> Multiple national and state initiatives have been launched to increase the number of hospitals implementing the *Ten Steps*. For example, from 2013 through 2016, the CDC-funded Best Fed Beginnings project worked with 96 hospitals on implementation of the *Ten Steps*, of which 79% (76) achieved Baby-Friendly designation.<sup>23</sup> In addition, CDC's mPINC survey serves as an intervention to improve maternity care practices as each participating facility receives an individualized benchmark report comparing their practices to facilities of similar size, facilities within the same state, and all facilities that participated in the survey. These reports help facilities identify areas of care that are strengths, and areas of care where potential improvements could be made.<sup>17</sup> Several states have developed recognition programs rewarding hospitals that adopt evidence-based maternity practices, including rooming-in.<sup>24–26</sup> Hospitals may also be trying to improve their maternity care practices in response to The Joint Commission's addition of reporting exclusive breast-feeding to their perinatal care core evaluation indicators.<sup>27</sup>

Most healthy mother-infant dyads do not have a medical indication to be separated; therefore, most routine newborn procedures can be performed while the infant is in the mother's room.<sup>16</sup> However, we found that among hospitals not implementing ideal rooming-in practices in 2015, more than half were removing 50% or more of infants for hearing tests and heel sticks and approximately one-third for infant baths and pediatric rounds. Newborn teaching rounds and newborn assessments have previously been cited as reasons for removing infants from their mothers' rooms, yet have been overcome by obtaining portable equipment to perform newborn assessments in the mothers' rooms.<sup>13</sup>

Physician reluctance to perform routine procedures in the mothers' room has also been cited as a barrier to rooming-in, but rooming-in has been found to actually save time because staff are able to provide parental education during bedside procedures.<sup>28</sup> Efforts to conduct newborn assessments and physician rounds at the bedside, among others, have been documented to increase rooming-in, from a rare occurrence, to occurring among 98% of mother-infant dyads in one hospital.<sup>13</sup>

Teaching hospitals have been found to provide better care than nonteaching hospitals.<sup>29</sup> Our study found that, in 2015, teaching hospitals implemented rooming-in about as frequently as nonteaching hospitals; and among hospitals not implementing ideal rooming-in practices, teaching hospitals routinely removed infants from their mothers' rooms less frequently for all reasons examined compared with nonteaching hospitals. Among hospitals without ideal

rooming-in practices, the greatest disparities in regularly removing infants from their mothers' rooms between teaching and nonteaching hospitals were heel sticks (38.0% compared with 68.0%, respectively) and infant photos (3.8% compared with 27.2%, respectively).

Our study also found little difference in implementation of ideal rooming-in practices by hospital size; however, in 2015, among hospitals not implementing ideal rooming-in practices, smaller hospitals removed infants from their mothers' rooms more frequently for all examined reasons, compared with larger hospitals, with the exception of pediatric rounds. The greatest disparities between small and large hospitals were removal for hearing tests (90.4% compared with 40.6%, respectively) and infant baths (49.9% compared with 9.7%, respectively). These data may suggest smaller hospitals are not as up-to-date on newer evidence-based practices as larger hospitals, or that they have limited financial resources to implement practices that limit removal, such as purchasing mobile equipment.

Hospitals in the Western region of the United States more frequently implemented rooming-in when compared with hospitals in other regions of the country. Women in the Western region have higher breastfeeding initiation rates, and breastfeed for longer durations, than women in other regions of the country.<sup>30</sup> As breastfeeding becomes the normative for infant feeding, hospitals may be driven to change their practices and policies by women's desires to have increased support for breastfeeding. Our observations may also be explained by the unique efforts that Western states have made to improve hospital support for breastfeeding. For example, California passed legislation requiring all hospitals with a perinatal unit to adopt the *Ten Steps* by 2025.<sup>31</sup>

Several challenges have been cited by hospitals when attempting implementation of rooming-in. For example, one hospital with shared maternity rooms observed that when one mother would send her baby to the nursery, the other would often do the same to avoid inconveniencing her roommate.<sup>12</sup> Family members and hospital staff also may suggest an infant be sent to the nursery to allow the mother to sleep.<sup>13</sup> One study has found, however, that mothers get as much sleep when their baby is in their room as when their baby is in the nursery.<sup>32</sup> One hospital began routinely keeping the baby with the mother rather than asking if she would like her baby moved to the nursery. To help, nurses in this hospital learned to assist families to rest while their infant was sleeping.<sup>28</sup> In addition, one hospital renamed its nursery the "newborn observation area" and began welcoming partners to stay overnight, a practice previously prohibited.<sup>12</sup> Despite these and other barriers hospitals have faced, challenges to rooming-in may often be overcome by implementing creative solutions, such as described, and by explaining the benefits of<sup>12,13,28</sup> and providing educational materials on rooming-in to mothers and their families.<sup>12,28</sup>

Despite the benefits of rooming-in, as it has become more of a common practice, safety issues have been raised<sup>33</sup> because of the potential concern for infant falls<sup>34,35</sup> and accidental suffocation.<sup>36</sup> Labor and delivery are arduous processes, often leaving the new mother exhausted. In addition, she may be receiving medications that are sedating; as a result, a mother may inadvertently fall asleep while holding her newborn or while breastfeeding,<sup>36</sup> which could potentially result in the mother accidentally dropping or suffocating her infant.



In 2016, the American Academy of Pediatrics released a clinical report identifying mothers who may be at particularly high risk of falling asleep with their newborn during rooming-in or during skin-to-skin care, which is the practice of placing the infant in direct skin-to-skin contact with their mother. This report provided recommendations on safer implementation of these practices, such as use of risk assessment tools, to make the practices of skin-to-skin care and rooming-in safer.<sup>16</sup>

Strengths of this study include that mPINC is a census of all maternity facilities and has a high response rate; thus, these data are reflective of maternity care practices and policies in the United States. Furthermore, consistent questions were asked across survey years to allow examination of trends. Limitations of this study include that mPINC is a self-reported survey, and although a standard protocol is implemented to identify a key informant at each hospital, responses may not accurately represent all hospital practices. In addition, we could not define rooming-in by using the same definition used in the *Ten Steps* (allowing mothers and infants to remain together 24 hours per day) because the mPINC survey only asks hospitals for the percentage of infants who room-in “more than 23 hours per day.” Finally, participation bias may have occurred as participation in mPINC is voluntary and hospitals with better maternity care practices may have been more likely to participate.

#### 4.1 | Conclusions

Although rooming-in practices have been improving nationally, infants are still commonly removed from their mothers’ rooms for avoidable reasons. Hospitals may consider evaluating their maternity care practices to determine barriers to keeping infants with their mothers throughout their hospital stay. Continued efforts to improve infant feeding-related maternity practices, including increasing rooming-in practices and decreasing unnecessarily separating mothers and infants for routine procedures, will help hospitals provide optimal care to mothers and infants.

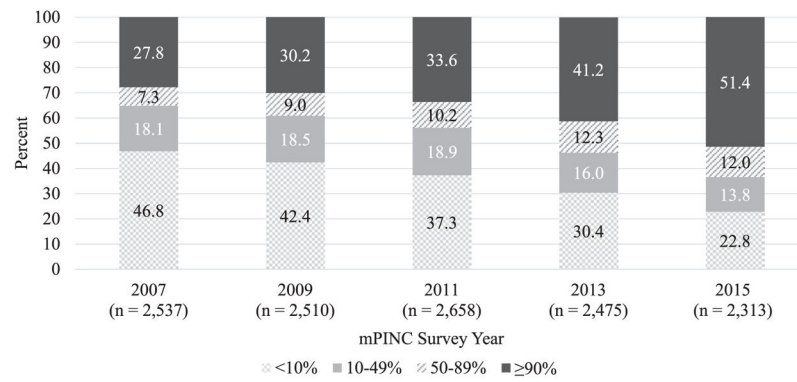
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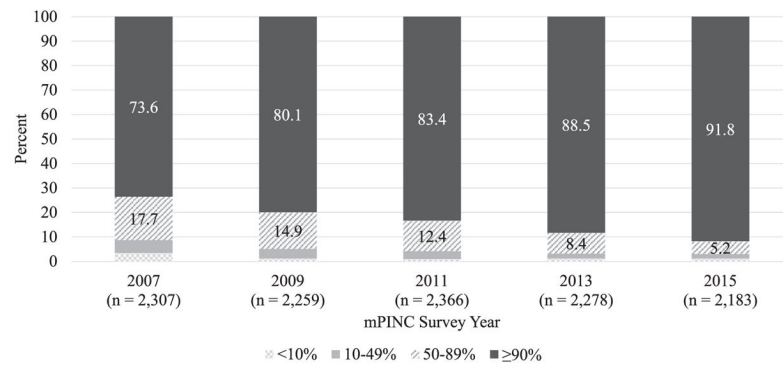
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**FIGURE 1.**  
 Percentage of hospitals with full-term healthy infants rooming-in >23 h a day, mPINC survey 2007–2015



**FIGURE 2.**

Among healthy full-term breastfed infants not rooming-in at night, percentage brought to their mothers at night for feedings, mPINC survey 2007–2015

Characteristics of hospitals with ideal<sup>a</sup> rooming-in practices, mPINC survey 2007–2015

TABLE 1

Hospital characteristics	Number of hospitals (5-y range)	Percentage of hospitals reporting most infants are rooming-in >23 h a day				Percentage point change (2007–2015)
		2007	2009	2011	2013	2015
Total	2233–2568	27.8	30.2	33.6	41.2	51.4
Hospital type						
Private (for profit)	296–341	25.6	26.9	29.3	44.3	48.3
Government	444–526	34.8	34.8	37.1	39.6	53.8
Nonprofit/nongovernment	1473–1692	25.3	28.6	33.0	40.6	50.9
Military	17–26	74.1	85.7	76.5	76.9	85.0
Teaching hospital						
Yes	174–208	20.3	31.0	29.8	35.7	50.3
No	2048–2360	28.4	30.1	34.0	41.7	51.5
Size (annual number of births)						
1–249	403–513	32.4	35.1	33.5	40.1	50.1
250–499	431–462	28.8	26.4	30.5	41.5	52.9
500–999	475–564	27.9	29.8	36.1	41.3	49.1
1000–1999	493–560	23.4	27.1	35.4	42.1	52.7
2000–4999	438–458	26.9	32.7	33.0	42.3	52.3
5000	51–70	27.1	30.7	26.2	31.2	47.1
Geographic region						
Mid-Atlantic	227–250	14.0	14.9	20.7	26.8	38.1
Midwest	504–532	16.5	19.5	24.1	27.9	43.5
Mountain Plains	383–387	25.1	27.2	28.4	33.9	46.9
Northeast	224–237	19.6	21.1	27.5	33.6	47.9
Southeast	414–438	23.5	22.7	27.1	38.9	45.9
Southwest	304–327	30.6	35.1	29.1	45.2	51.3
Western	385–397	61.4	65.0	71.9	78.0	80.8

<sup>a</sup>Ideal defined as 90% of infants rooming-in >23 h per day.

Among hospitals not implementing ideal<sup>a</sup> rooming-in practices, reasons healthy full-term breastfed infants are removed from their mothers' room, mPINC 2007–2015

TABLE 2

Reasons	Number of hospitals (5-y range)	Percentage of hospitals reporting removing >50% of infants for the following reasons					Percentage point change (2007–2015)
		2007	2009	2011	2013	2015	
Pediatric rounds	1742–2250	60.0	58.9	46.9	42.1	35.5	–24.5
Heating test	1758–2277	86.5	85.3	80.6	77.1	73.2	–13.3
Heel stick	1763–2266	84.2	83.8	76.1	71.3	65.6	–18.6
Infant photos	1705–2184	61.8	54.5	41.9	34.1	25.4	–36.4
Infant's bath	1746–2257	65.4	64.0	52.5	46.3	40.2	–25.2

<sup>a</sup>Ideal defined as 90% of infants rooming-in >23 h per day.

Among hospitals not implementing ideal<sup>a</sup> rooming-in practices, reasons healthy full-term breastfed infants are removed from their mothers' room by hospital characteristics, mPINC 2015

TABLE 3

Hospital characteristic	Number of hospitals <sup>b</sup>	Percentage of hospitals reporting removing >50% of infants for the following reasons				
		Pediatric rounds	Hearing test	Heel stick	Infant photos	Infant's bath
Total	1755–1888	35.5	73.2	65.5	25.4	40.2
Hospital type						
Private (for profit)	227–238	56.5	63.7	72.3	22.5	54.7
Government	334–349	36.0	76.8	66.7	35.3	48.6
Nonprofit/nongovernment	1177–1212	31.2	74.3	64.2	23.3	35.6
Military	17–19	10.5	68.4	63.2	17.7	5.3
Teaching hospital						
Yes	132–137	19.0	56.2	38.0	3.8	22.8
No	1623–1688	36.6	74.8	68.0	27.2	41.6
Size (annual number of births)						
1–249	326–345	24.5	90.4	77.3	44.2	49.9
250–499	376–393	37.8	88.3	76.8	41.0	45.2
500–999	389–408	43.7	76.2	70.1	28.8	41.0
1000–1999	389–400	37.4	63.0	57.4	9.8	35.7
2000–4999	302–310	32.0	47.4	45.0	3.6	31.2
5000	31–32	28.1	40.6	43.8	6.3	9.7
Geographic region						
Mid-Atlantic	184–187	41.7	75.4	63.6	21.7	42.7
Midwest	402–417	27.7	83.2	69.6	29.6	29.6
Mountain Plains	297–306	32.6	86.9	70.5	32.3	41.5
Northeast	171–185	23.4	75.1	60.3	9.4	26.2
Southeast	302–313	60.9	66.7	70.3	30.5	56.7
Southwest	218–228	44.3	59.0	63.2	25.2	54.2
Western	223–236	14.7	56.4	52.6	16.6	29.1

<sup>a</sup>Ideal defined as 90% of infants rooming-in >23 h per day.



Number of hospitals varies due to missing response.  
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