



**An Evaluation of the Maryland Hospital Discharge Pilot
Program: Calendar Years 2003 - 2005**

June 27, 2006



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Purpose

Pursuant to the Memorandum of Understanding between the Center for Health Program Development and Management (the Center) at the University of Maryland, Baltimore County and the Maryland Department of Health and Mental Hygiene (the Department), the Center has been asked to review existing data sources to determine whether the Maryland Hospital Discharge pilot project has had an impact on the discharge planning practices of acute care hospitals.



Background

In 2001, the Department was awarded a Real Choice Systems Change grant by the federal Centers for Medicare and Medicaid Services (CMS). The second of four goals enumerated by the Department in its grant application was to “provide information and assistance to consumers in acute care hospitals to aid decision-making and assist with transitions back to the community.” Beginning in 2003, the Department implemented a hospital discharge planning initiative to provide augmented discharge planning services for patients at risk of nursing facility placement. Grant funds were used to pay for nurses in two Maryland county hospitals (Atlantic General Hospital in Worcester County and Upper Chesapeake Hospital in Harford County) and two Baltimore City hospitals (St. Agnes and Mercy Hospitals). These nurses worked directly with patients with disabilities—regardless of age—and family members prior to discharge from an acute care stay in a hospital. The nurses sought to make arrangements or referrals for services that the patients would need when they return home, thus reducing unnecessary nursing home admissions and utilization. Grant funds were also used to develop educational materials to inform individuals about community-based programs in Maryland.

Grant funding for the Baltimore City sites ended on September 30, 2005, while the grant funds for Worcester and Harford Counties ended on December 31, 2005. The Department is committed to continuing the activities in Worcester and Harford Counties with non-grant funds and CMS has approved a favorable federal matching rate for services after January 1, 2006.



Methodology

The evaluative question the Center attempted to answer was whether there has been any perceptible change in discharge patterns from pilot site hospitals to nursing homes (e.g., a reduction in nursing home placements) relative to the rest of the state.

Data Sources

Throughout this project, the pilot sites provided the Department with tallies of how many clients were seen; their disability scores, based on the activities of daily living/instrumental activities of daily living (ADL/IADL) scale used in the Adult Evaluation and Review Services (AERS) program; their Medicaid eligibility status; and how many were discharged to their homes with assistance from the project nurses. Also, the Center has submitted data on hospital discharges reported by the Maryland Health Services Cost Review Commission (HSCRC) for the pilot site hospitals as well as for the entire state. Complete HSCRC data were provided for all years from 1999 through 2005. The critical data elements for analysis are the total discharges and the discharges to nursing homes.

A preliminary analysis of data through 2004 showed a great deal of variability in discharge rates to nursing homes, raising concerns about what inferences could be drawn from the data about the effectiveness of the Hospital Discharge pilot project. Thus, in addition to analyses of the HSCRC data on discharges, the Center sought to develop other secondary sources of information that (1) might provide some utilization and demographic context to the discharge-to-nursing-home data and (2) might help the Center draw possible inferences about the intervention's effectiveness.

Medicaid nursing facility utilization data, from the Department's Decision Support System, which the Center maintains, were analyzed to provide information about general utilization trends in Maryland.

The Center also identified all the licensed/certified nursing homes in a five-mile radius of the Baltimore City sites and a 20-mile radius of the county sites. Using their ZIP Codes, we extracted admission data from the Minimum Data Set (MDS) for those residents admitted during each of the years of the analysis for which data were available. Of particular interest is the item on the MDS that reports from where the resident was admitted to the nursing home (e.g., admitted from their own home, admitted from an acute care hospital, or admitted from a rehabilitation facility). The purpose of this analysis was to attempt to identify general trends in nursing home admissions from acute care hospitals within these catchment areas. While the analysis could not identify specific hospitals, it did provide better insight into the tendency toward (or away from) nursing home admissions from hospitals for those areas.

The Center then utilized "Melissa Data" to identify the demographic characteristics of the population in the immediate ZIP Codes of the subject hospitals (see www.melissadata.com), as well as the ZIP Codes surrounding the hospitals. The purpose of this analysis was to attempt to identify differences—particularly in racial composition, age, and households/families—among



the areas in which the subject hospitals reside, that might better explain differences in discharge-to-nursing-home data.

Data Limitations

Intuitively it would appear reasonable to compare rates of hospital discharges to nursing homes in the subject sites to those in the state as a whole. However, the number of intervening variables between the discharge data and the interventions of the nurses working to help patients return to their homes makes it very difficult to draw a line between the two. For example, except for scale scores of the individuals tallied in the pilot site reports, there is no available data on the diagnostic, age, or ADL/IADL characteristics of the individuals, nor is there information about the individuals' living arrangements and presence/absence of informal support networks. Thus, the demographic and diagnostic characteristics of these individuals could weigh heavily as factors that led to them returning to their homes or being admitted to a nursing home. In other words, one cannot know from the available data, without any intervention, how many would have returned to their homes anyway.

In addition, there are no data to indicate the length of nursing home stay for those for whom the HSCRC data and the pilot site tallies indicate were admitted to nursing homes from the hospital. For most Medicare beneficiaries, including those who are also eligible for Medicaid (dual eligibles), stays in a nursing home are for less than a month. So, for some portion of those individuals admitted to a nursing home from a hospital, a short stay, probably for rehabilitation and recovery, does not represent a failure of the effort to return an individual home, though the data shows it is a nursing home admission. Of greatest concern, then, are those individuals admitted to the nursing home – from whatever source – who transition into long-stay Medicaid nursing facility (NF) residents. Thus, the real question, which the available data cannot answer, is: As a result of the pilot site interventions, how many individuals were successfully returned to their homes after an in-patient hospital stay who would have otherwise become long-term Medicaid NF residents?



Data Analysis

Pilot Site Tallies

Table 1 provides a summary of the total number of clients with whom the hospital pilot site nurses sought to divert nursing home placement from the inception of the program in March 2003 through December 2005. Of the total number of clients seen (548) across all four hospitals, two-thirds (378, or 69 percent) were successfully discharged to their homes with assistance from the hospital outreach staff.

**Table 1: Real Choice Systems Change - Hospital Discharge Pilot Project
March 2003 - September 2005 Report Summary and Project Totals**

Worcester County – Atlantic General Hospital

Total Clients through 12-31-05	158
Number discharged home with HOI assistance	123 Percentage: 123/158 = 78%

Baltimore City – St. Agnes and Mercy Hospitals

Total Clients through 12-31-05	296 (Mercy=229, St. Agnes=67)
Number discharged home with HOI assistance	202 Percentage: 202/296 = 68%

Harford County – Upper Chesapeake Hospital

Total Clients through 12-31-05	94
Number discharged home with HOI assistance	53 Percentage: 53/94 = 56%

Totals

Total Clients through 12-31-05	548
Total number discharged home with HOI assistance	378 Project Total: 378/548 = 69%

As noted previously, there are no data that would allow the Center to determine what percentage of individuals would have returned home with no intervention. Nor is it possible to determine for the remaining individuals who presumably were admitted to a nursing home from the hospital the duration of their stay in the nursing home. Likewise, as will be noted below, the numbers of clients at each pilot site are small relative to the total reported hospital discharges from each of the pilot hospitals from HSCRC data.



Hospital Discharge Data

Tables 2 and 3 display the HSCRC data detailing the number of hospital discharges for the target hospitals and the number of discharges to nursing homes from calendar year 1999 through 2005.

Table 2 depicts discharges from each of the four pilot hospitals from 1999 through 2005. The second column is the total number of discharges each year from each hospital, the hospital's percentage of all hospital discharges in that county/city/area, and the hospital's percentage of all hospitals discharges in Maryland.

Table 2: Hospital Discharges

Worcester County – Atlantic General Hospital

Year	Number of Discharges	Percent of Eastern Shore* Discharges	Percent of Maryland Discharges
1999	2,527	5.5	.40
2000	2,512	5.3	.39
2001	2,747	5.7	.40
2002	2,797	5.6	.41
2003	2,923	5.8	.42
2004	3,002	5.8	.40
2005	3,186	6.4	.44

“Eastern Shore” includes Worcester, Talbot, Wicomico, Somerset, Caroline, Queen Anne’s, Kent, and Cecil Counties.

Baltimore City – St. Agnes Hospital

Year	Number of Discharges	Percent of Baltimore City Discharges	Percent of Maryland Discharges
1999	19,817	9.2	3.2
2000	19,930	9.3	3.1
2001	20,512	9.2	3.0
2002	21,031	9.7	3.0
2003	20,920	9.1	3.0
2004	21,738	9.1	3.0
2005	22,245	9.1	3.0



Baltimore City – Mercy Hospital

Year	Number of Discharges	Percent of Baltimore City Discharges	Percent of Maryland Discharges
1999	16,727	7.8	2.7
2000	17,670	8.2	2.7
2001	17,789	8.0	2.6
2002	17,434	8.0	2.5
2003	18,044	7.8	2.6
2004	19,003	8.0	2.7
2005	19,267	7.9	2.6

Harford County – Upper Chesapeake Hospital

Year	Number of Discharges	Percent of Harford County Discharges	Percent of Maryland Discharges
1999	7,314	48.8	1.2
2000	8,321	53.5	1.3
2001	11,856	67.7	1.7
2002	12,795	69.4	1.9
2003	13,390	69.8	1.9
2004	13,318	70.1	1.9
2005	13,672	70.3	1.9

Table 3 depicts discharges to nursing facilities from each of the four hospitals from 1999 through 2005. The second column is the total number of discharges to nursing facilities from each hospital; the third column is the hospital's percentage of all hospital discharges to nursing facilities in that county/city/area; and the last column is the hospital's percentage of all hospitals discharges to nursing facilities in Maryland.



Table 3: Hospital Discharges to Nursing Homes

Worcester County - Atlantic General Hospital

Year	Number of Hospital Discharges to Nursing Facilities	Percent of All Atlantic General Discharges	Percent of all Eastern Shore Hospital Discharges to Nursing Facilities	Percent of all Maryland Hospital Discharges to Nursing Facilities
1999	78	3.1	2.1	0.2
2000	1*	0.0	0.0	0.0
2001	8*	0.3	0.2	0.0
2002	3*	0.1	0.1	0.0
2003	151	5.2	3.4	0.3
2004	339	11.3	6.8	0.8
2005	392	12.4	8.4	.95

* These are apparently unexplained data anomalies and are therefore disregarded.

Baltimore City - St. Agnes Hospital

Year	Number of Hospital Discharges to Nursing Facilities	Percent of All St. Agnes Discharges	Percent of all Baltimore City Hospital Discharges to Nursing Facilities	Percent of all Maryland Hospital Discharges to Nursing Facilities
1999	1,273	6.4	12.1	3.8
2000	1,510	7.6	13.9	4.2
2001	1,585	7.7	13.3	4.2
2002	1,560	7.4	14.0	4.3
2003	1,806	8.6	13.7	4.4
2004	2,238	10.3	19.9	5.4
2005	2,405	10.8	23.5	5.9



Baltimore City – Mercy Hospital

Year	Number of Hospital Discharges to Nursing Facilities	Percent of All Mercy Discharges	Percent of all Baltimore City Hospital Discharges to Nursing Facilities	Percent of all Maryland Hospital Discharges to Nursing Facilities
1999	240	1.4	2.3	0.7
2000	360	2.0	3.3	1.0
2001	328	1.8	2.8	0.9
2002	360	2.1	3.2	1.0
2003	417	2.3	3.2	1.0
2004	420	2.2	3.7	1.0
2005	419	2.2	4.1	1.0

Harford County – Upper Chesapeake Hospital

Year	Number of Hospital Discharges to Nursing Facilities	Percent of All Upper Chesapeake Discharges	Percent of all Harford County Hospital Discharges to Nursing Facilities	Percent of all Maryland Hospital Discharges to Nursing Facilities
1999	294	4.0	44.6	0.8
2000	190	2.3	33.7	0.5
2001	184	1.6	30.5	0.5
2002	130	1.0	24.8	0.4
2003	103	0.8	35.5	0.3
2004	111	0.8	38.8	0.3
2005	214	1.6	50	0.5

The HSCRC data show that in each of the years during which the hospital discharge pilot project was operating, the absolute number of discharges to nursing homes increased from all of the pilot hospitals and the percentage of discharges to nursing homes relative to all discharges either stayed the same, slightly decreased, or, as in Atlantic’s and St. Agnes’ case, increased greatly. While the percentage of discharges to nursing homes compared to the statewide averages was higher for Atlantic and St. Agnes hospitals, Mercy and Upper Chesapeake accounted for a very small percentage of the state’s hospital discharges to nursing homes.

It is clear from a comparison of the tally figures in Table 1 to the hospital discharge data in Table 2 that there were thousands more discharges than there were interventions within the pilot project. Only a small subset of the total number of discharges would have included those individuals who were the intended targets of the pilot project. Likewise, while the number of hospital discharges to nursing homes increased throughout the pilot sites during the pilot project



period, it is possible, but again indiscernible, that the increases in nursing home placement would have been greater without the activities of the hospital discharge pilot project in these hospitals.

HSCRC data also include information about Medicaid fee-for-service (FFS) hospital discharges, but the Center’s review of these data suggested that it was un-useable in the context of this analysis.¹ The Center also reviewed HSCRC data on other placements at hospital discharge, including admission to on-site sub-acute care units, other sub-acute care units, and rehabilitation units, and found no data of interest that would contribute to an understanding of the effectiveness of the hospital discharge pilot project.

The comparison between the tally figures and the HSCRC hospital discharge data illustrates why it is not possible to draw any inferences from the HSCRC data to help answer the question as to whether or not the Maryland hospital discharge pilot project contributed to a reduction in the use of nursing home placements as a result of the interventions that led to patients returning home from a hospital stay. The use of HSCRC data was simply not discrete enough to answer the question, and the use of the tallies without other data about the individuals with whom the pilot project intervened was likewise not robust enough to draw any inferences about the program’s impact. The anomalous data on Atlantic General for 2000 to 2002 also raise questions about the reliability of the HSCRC discharge files.

Maryland Medicaid Nursing Facility Utilization Data

The Center explored the hospital discharge data in the context of the broader data on Medicaid NF utilization data. Data were available for calendar years 2000 – 2005. Figure 1 shows the statewide trend line for NF utilization. “Utilization” is defined as the presence of at least one NF claim for Medicaid payment per unduplicated beneficiary during a calendar year. The total number of NF users does not suggest that all users were residents of NFs the entire year, and the data represent only Medicaid claims (including dual eligibles).

¹ The Center chose not to include any FFS discharge data in this analysis for several reasons: (1) FFS data, by definition, exclude dual-eligibles for whom Medicare paid for the hospital stay, and likely, a Medicare stay in a skilled nursing facility (SNF) before Medicaid came into play; (2) FFS data excludes Medicaid enrollees in Maryland’s Medicaid managed care program (Health Choice), which is contractually obligated to pay the first 30 days of a nursing home stay out of capitation payments, not by FFS; and (3) the FFS data includes an unknown number of hospital discharges of individuals who would not likely be nursing home placements, including foster care children, for example, so it is not possible to identify within the FFS data the cohort that would be of interest in the pilot study.



**Figure 1:
Maryland Statewide Medicaid Nursing Home Utilization**

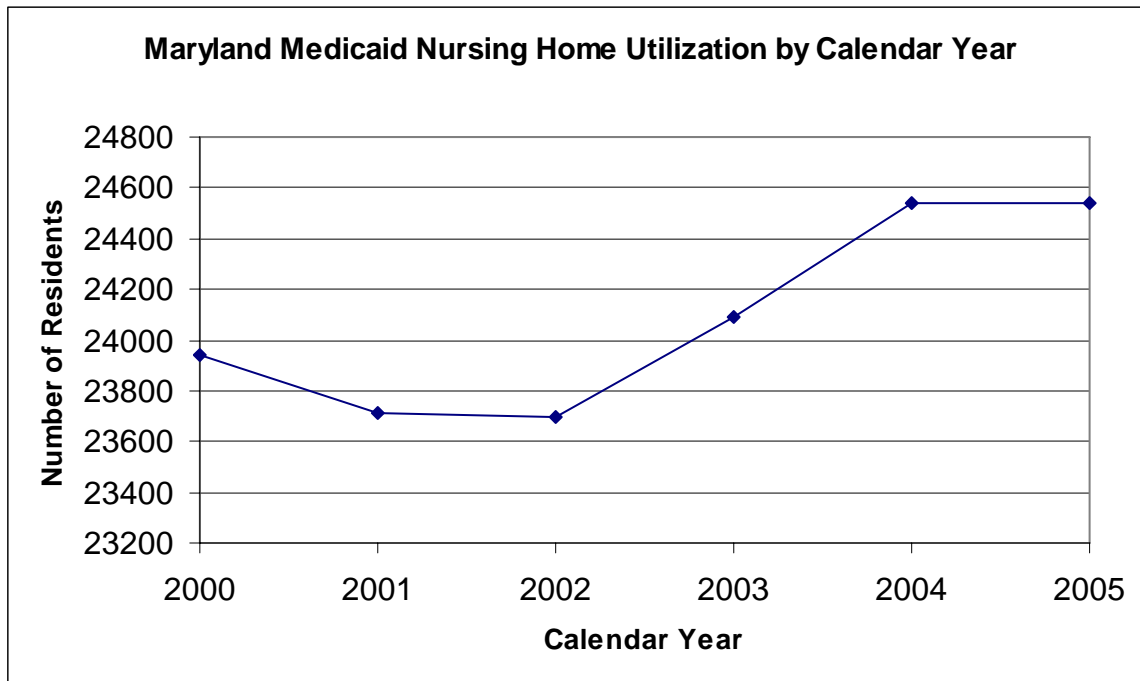
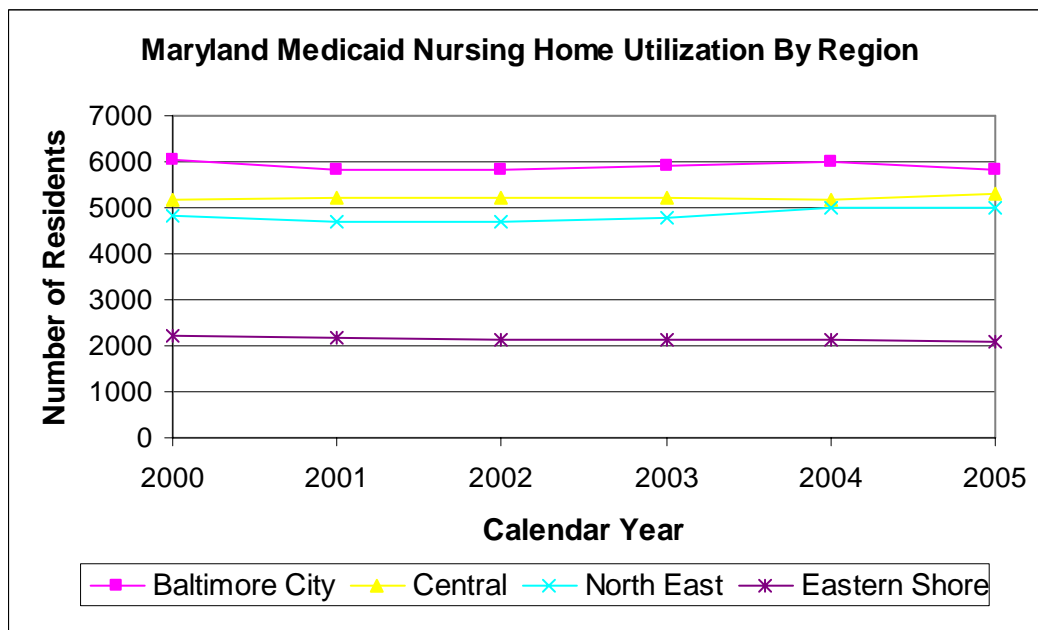


Figure 2



Note: “Central” is included because St. Agnes Hospital draws patients from southwestern Baltimore County, which is included in the “Central” region.



Table 4 is composed of two tables that display the same statewide and regional NF utilization data by numerical counts. The data suggest that beginning in 2004, the gradual slight downward trend in NF utilization that had been evident in prior years began to shift upward. Deeper analysis (not represented here) shows that much of the shift is caused by an annual increase in the number of persons under the age of 65 being admitted to NFs² and the prior downward shift in admissions of persons 65 and older flattening out. The net result in 2004 and 2005 was a slight increase statewide in the total number of persons residing in NFs at some point during the year. As with other data reviewed, NF utilization data are not discrete enough to help answer the question about the effectiveness of the pilot site interventions. These data provide further indication of the challenges the pilot sites faced in helping individuals return home from an acute care hospital stay.

**Table 4:
Medicaid Nursing Facility Utilization Statewide and by Pilot Site Regions
CY2000-2005**

Calendar Year	Maryland Medicaid Nursing Home Utilization
2000	23,938
2001	23,710
2002	23,696
2003	24,093
2004	24,537
2005	24,541

Calendar	Central	Baltimore City	North East	Eastern Shore
2000	5195	6026	4812	2204
2001	5226	5837	4713	2154
2002	5228	5828	4674	2144
2003	5214	5926	4783	2146
2004	5182	6003	4997	2121
2005	5325	5822	5021	2095

² In a separate, ongoing analysis of NF utilization data, the Center has noted that, while only approximately 20 percent of NF residents are under the age of 65, the increase relative to those over 65 has been about 35 percent from CY2000 – 2004, effectively canceling out, and now beginning to reverse, the overall downward trend in NF utilization since 2000. The Center has noted a national trend in increases in under-65 admissions as well.



Minimum Data Set (MDS) Data

Nursing homes are required by federal law to administer the MDS to all residents of nursing homes, no matter their source of pay or how short their stay may be. The MDS is a standardized assessment tool used for a variety of reasons for both Medicare and Medicaid beneficiaries, including assessment for care-planning, Medicare prospective pay, Medicare and Medicaid quality management, and as a tool for consumers to use (via “Nursing Home Compare” at www.Medicare.gov) to help them choose a high-quality nursing home. The law requires that a complete MDS be administered within 14 days of admission. All MDS data are reported electronically to the state and to CMS. One item on the MDS is “Admitted From (At Entry),” which captures the route the individual took to nursing home admission. One choice is “acute care hospital.” The Center decided that it might be useful to attempt to look at the extent to which new admissions to nursing homes in Maryland originated from an acute care hospital stay.

The Center identified all nursing homes in the ZIP Codes surrounding the pilot hospitals and extracted the MDS item identifying the percentage of individuals admitted to those nursing homes from acute care hospitals. Over 40 nursing homes were identified in the ZIP Codes surrounding the pilot site hospitals. It is important to note that the data reflect admissions from multiple hospitals, so no inference should be drawn that the admissions were solely from the pilot site hospitals.

It is clear from the data in Table 5 that the vast majority of admissions to nursing homes across Maryland (about 88 percent of all admissions statewide from 1999 – 2005) originate from an acute hospital stay. Likewise, it is evident that while the trend is slight, it is an upward trend both in the combined pilot site ZIP Code analysis and Maryland statewide. Within the ZIP Codes surrounding the pilot hospitals, there has been an almost five-percent increase in admissions to nursing homes from acute care hospitals from 1999 through 2005, as reported on the MDS, and about a three-percent increase statewide during the same period.³

While the MDS data analysis is not useful in helping to discern whether the interventions in the pilot site hospitals successfully diverted individuals from nursing home admissions, it does consistently illustrate (across time and across the state) the state’s daunting task of helping individuals return to their homes from a hospital stay. While this analysis could not identify what percentage of these nursing home admissions from acute care hospitals were Medicaid or dually-eligible individuals, it is known that a substantial percentage of nursing home admissions are publicly funded stays.

³ The Department has raised some questions about the accuracy of the MDS data, suggesting the percent of admissions to nursing homes from hospitals was more in the range of 60 percent, rather than the statewide average of 88 percent indicated from MDS records. Further study of this issue is needed.



**Table 5:
Percentage of Nursing Home Admissions from Acute Care Hospitals
(Including, but Not Limited to Pilot Site Hospitals) to Nursing Homes
in ZIP Codes Surrounding Pilot Site Hospitals**

ZIPs Around Hospital	1999	2000	2001	2002	2003	2004	2005	Number of Nursing Facilities
Worcester- Atlantic	82.4	78.5	85.9	84.5	85.8	83.5	88.3	6
Baltimore – St. Agnes	81.7	83.6	85.3	85.2	88.0	88.1	88.7	13
Baltimore - Mercy	87.3	87.3	87.6	88.2	90.5	90.9	91.7	19
Harford – Upper Chesapeake	80.7	86.1	88.1	89.6	88.3	88.0	90.2	5
All Pilot Hospitals	84.6	85.4	86.9	87.5	89.1	89.1	90.2	43
Statewide	85.8	87.0	87.6	88.6	88.7	89.1	89.5	404*

*Total number of nursing facilities is based on the total number of current provider ID codes in the Center’s provider file.

Melissa Data

Melissa Data is a commercially available database of addresses and ZIP Codes recognized by the United States Postal Service (USPS). Melissa Data provides an online search tool that allows individuals to obtain information (such as demographics) by ZIP Code or address derived from the 2000 census data. The Center believed that it might be helpful to get some basic demographic information about the people who live in the immediate ZIP Codes of the pilot site hospitals as well as ZIP Codes surrounding the pilot sites. The Center was hopeful that such a demographic analysis might lend some context to the other data used in this analysis.

The demographic data include racial composition, gender by age, median age by gender, and household and family composition. The Center attempted to roll-up these demographic data from the various ZIP Codes around the pilot site hospitals and then relate these data to the other data used in this analysis.

Appendix A contains four charts that summarize Melissa Data for the ZIP Codes of the pilot hospitals and the ZIP Codes of their surrounding areas. The Center sought to provide descriptive demographic data about the populations in and around the pilot sites, hopefully to give some context to the tally data reported from each site and the HSCRC data on hospital discharges to nursing homes. Again, while the descriptive demographic data (based on the 2000 census) were



interesting, they provided no help in understanding the dynamics surrounding the pilot site experiences.



Summary

As noted in the introductory section of this report, the evaluative question the Department asked the Center to attempt to answer is whether there has been any perceptible change in discharge patterns from pilot site hospitals to nursing homes relative to the rest of the state. The Center was not able to discern any perceptible change in the negative (e.g., reduced nursing home admissions from the pilot site hospitals) in discharge patterns to nursing homes relative to the rest of the state from the data available for the analysis. In fact, from the data sources available for this analysis, the opposite is likely indicated: the number of admissions to nursing homes from the pilot site hospitals during the pilot period increased. The number of admissions to nursing homes from acute care hospitals increased statewide as well from 1999 to 2005.

While the Center was not able to answer the evaluative question affirmatively, the Center hastens to add that the analysis of the available data does not suggest the interventions at the pilot sites were not successful in diverting individuals from nursing home admissions who would have otherwise been admitted. The Center has concluded that the evaluative measures built into the original evaluation plan of the Real Choice Systems Change Grant in 2001 utilized data sources that were insufficient to determine whether the interventions, which were the subject of this pilot project, altered the discharge practices of acute care hospitals.



Appendix A

Demographic Data of Pilot Site Hospitals' ZIP Codes and Surrounding ZIP Codes Derived from 2000 Census Data

Worcester County – Atlantic Hospital – 21811, 21813, 21841, 21842

Total Population in Catchment Area	32,726
By Race	Percent
White	88
African-American	10
Asian	1
Hispanic/Latino	1
Percent Males	49
Percent Females	51
Percent Males 60+	14
Percent Females 60+	30

Baltimore City – St. Agnes Hospital – 21229, 21223, 21227, 21228

Total Population in Catchment Area	163,180
By Race	Percent
White	51
African-American	44
Asian	3
All Other	2
Percent Males	46
Percent Females	54
Percent Males 60+	17
Percent Females 60+	22

Baltimore City – Mercy Hospital – 21202, 21201, 21230

Total Population in Catchment Area	71,767
By Race	Percent
White	45
African-American	51
Asian	3
All Others	1
Percent Males	53
Percent Females	47
Percent Males 60+	11
Percent Females 60+	18



Harford County – Upper Chesapeake Hospital – 21014, 21015, 21047, 21050

Total Population in Catchment Area	82,942
By Race	Percent
White	95
African-American	3
All Others	2
Percent Males	49
Percent Females	51
Percent Males 60+	13
Percent Females 60+	16

