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Effect of State Medicaid Payment Policies for Medicare Cost Sharing on Access to Care for Dual Eligibles

Final Report

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EXECUTIVE SUMMARY

Background

Medicaid programs are not required to pay the full Medicare coinsurance and deductibles for Medicaid enrollees dually enrolled in Medicare. Some states make full payment to providers for Medicare cost sharing amounts anyway, so the provider receives the same amount for services rendered to Medicare-Medicaid enrollees and Medicare-only enrollees in the state, an amount equivalent to the full Medicare-approved payment (called "full payment" policy). However, increasing numbers of states have adopted policies to pay less for individuals who are dually eligible. In this case, the provider never receives more than the Medicaid-approved rate (called a "lesser of" payment policy).

The shift away from full payment policies could pose an access barrier for Medicare-Medicaid enrollees. Providers might respond to lower payments by ending their participation in Medicaid or by accepting fewer new Medicare-Medicaid patients, making it more difficult for these individuals to find a provider to see them. If this happens, we would expect to see fewer patients having at least one provider visit. Providers might also respond to lower payments by seeing Medicare-Medicaid patients less often, in which case we would expect fewer visits for Medicare-Medicaid enrollees who were able to see a provider.

MACPAC contracted with the RTI International to examine variation in Medicaid payments for Medicare cost sharing across states and to address the following question:

- Do state Medicaid payment policies for Medicare cost sharing have an impact on access to care for Medicare-Medicaid beneficiaries?

- Do these policies have an impact on place of care or type of provider seen?

Data and Methods

The study used 2009 Medicare and Medicaid Analytic eXtract (MAX) enrollment and claims data to examine the association between the percentage of Medicare cost sharing covered by state Medicaid program payments and Medicare-Medicaid beneficiaries' service access to care. The study outcomes were a number of commonly accepted claims-based indicators of realized access to outpatient provider care in the Medicare population. Multivariate analyses were used to estimate the effect of cost sharing payments on the percentage of Medicare-Medicaid beneficiaries using a service and the number of visits for those using a service. Medicare-only beneficiaries were used as a comparison group to control for state factors other than cost sharing payment policy that might influence utilization differences across states. Twenty states were included in the analyses of E&M, preventive, and safety net provider services; 18 states were included in the analyses of outpatient psychotherapy.

Findings: State Policy and Payment Variation

- Even in states with a full payment policy, Medicaid payments typically covered less than 100% of the full Medicare cost sharing amount for office-based E&M services.

Payments in most states with a lesser of payment policy covered 50% or less of the Medicare cost sharing amount.

  - Payments in 2009 ranged from 65-98% in full payment states and 11–93% in states with a lesser of payment policy.

- State payments covered a lower percentage of the Medicare cost sharing for outpatient psychotherapy services, ranging from 15-71% in full payment states and 2-70% in states with a lesser of payment policy in 2009.

Findings: Office and Other Outpatient Visits

- State policies that pay a higher percentage of the Medicare cost sharing amount significantly increase the likelihood that a Medicare-Medicaid beneficiary will have any office or other outpatient E&M visits.

  - Relative to Medicare-only beneficiaries, the predicted percentage of Medicare-Medicaid beneficiaries with an office or other outpatient E&M visit was 2.3 percentage points higher at 100% coverage of the Medicare cost sharing amount compared to 66%.

  - Similar results were found for E&M visits from primary care providers (3.5 percentage point increase) and specialists (1.7 percentage point increase).

Findings: Preventive Services

- A state's cost sharing payment policy for an office visit can affect access to preventive services because they typically are provided or ordered during an office visit.

  - Relative to Medicare-only beneficiaries, the predicted percentage of Medicare-Medicaid beneficiaries receiving a flu shot was 2.8 percentage points higher at 100% coverage of the Medicare cost sharing amount compared to 66% coverage.

  - The impact on female beneficiaries having a mammogram was smaller (0.8 percentage point increase).

Findings: Safety Net Provider Services

- State policies paying a lower reimbursement percentage increased the likelihood of Medicare-Medicaid beneficiaries receiving care at a safety net provider, presumably because it was more difficult to access care from office-based providers.

  - Relative to Medicare-only beneficiaries, covering 66% (vs. 100%) of the Medicare cost sharing increased Medicare-Medicaid beneficiaries' likelihood of receiving care at a federally qualified health center or rural health center and at a hospital outpatient department each by 1.4 percentage points.

Findings: Outpatient Psychotherapy

- Covering a higher percentage of the Medicare cost sharing increased the likelihood of a Medicare-Medicaid beneficiary receiving outpatient psychotherapy.
  - Relative to Medicare-only beneficiaries, the predicted percentage of Medicare-Medicaid beneficiaries with an outpatient psychotherapy visit was 1.2 percentage points higher at 100% coverage of the Medicare cost sharing amount compared to coverage of 66%.
  - Higher payment increased the relative likelihood that Medicare-Medicaid beneficiaries who received outpatient psychotherapy would have a visit with a psychiatrist or psychologist (5.0 and 4.7 percentage point increase, respectively), but decreased the relative likelihood of a visit with a licensed clinical social worker (4.5 percentage point increase).

Findings: Number of Visits

- Impacts of cost sharing payments on the number of visits for those using a service differed by outcome.
  - Effects on the number of E&M visits and safety net provider visits were small or not statistically significant.
  - Higher cost sharing increased the number of outpatient psychotherapy visits overall and with psychiatrists specifically.
  - Results for the number psychologist and licensed clinical social worker visits differed depending on the analytic model.

SECTION 1
INTRODUCTION

In 2011, there were 10.2 million low-income seniors and younger persons with disabilities enrolled in both the Medicare and Medicaid programs (Medicaid and CHIP Payment and Access Commission [MACPAC], 2014). Medicare-Medicaid enrollees have high needs for health care services, accounting for only 19% of Medicare enrollees and 14% of Medicaid enrollees, but 34% of Medicare and Medicaid spending in 2009 (MACPAC, 2013). The scope of Medicaid benefits varies by category of Medicare-Medicaid enrollees, but approximately 87% qualify for Medicaid coverage of Medicare cost sharing (deductibles and coinsurance) (MACPAC, 2013). Typically, providers first bill Medicare (and any other third-party payers) before billing Medicaid for any deductibles or coinsurance amounts; the billings for deductibles and coinsurance are commonly referred to as crossover claims.

States historically have had flexibility in how Medicaid reimburses the Medicare cost sharing for Medicare-Medicaid enrollees, but there was confusion about this until the Balanced Budget Act of 1997 (BBA) clarified that Medicaid programs are not required to pay the full Medicare coinsurance and deductibles if the total provider payment would exceed the state's Medicaid payment rate. A recent study (MACPAC, 2013) surveyed states about their crossover payment policies in 2012 for four types of providers (inpatient hospitals, outpatient hospitals, skilled nursing facilities, and physicians), and identified, by provider type, whether the state pays (1) the full amount of Medicare deductibles and coinsurance, so that the provider receives the full Medicare-approved amount (full payment); (2) the lesser of the full Medicare cost sharing or the difference between the Medicaid rate and the amount already paid by Medicare, so the provider never receives more than the Medicaid-approved rate (lesser of payment); or (3) some other amount. Since passage of the BBA, there has been a shift away from full payment policies and toward lesser of policies. For physician services, for example, only 11 states reported paying the full amount of Medicare cost sharing in 2012, down from 31 states in 1997; in contrast, 39 states used a lesser of policy in 2012, up from 12 states in 1997 (MACPAC, 2013).

Policymakers have long been concerned that state limits on cost sharing payments might impede access to care for Medicare-Medicaid enrollees when providers are unwilling to serve them if they are not reimbursed the full Medicare-approved payment (Mitchell & Haber, 2004). An earlier analysis found that Medicaid cost sharing payments fell in six of nine study states from 1996 to 1998 following passage of the BBA, and access to outpatient physician services for Medicare-Medicaid enrollees was reduced relative to Medicare-only enrollees in these states (Mitchell & Haber, 2004). The impact of Medicare cost sharing limitations was especially pronounced for access to mental health services, which required greater beneficiary cost sharing than other Medicare Part B services (Mitchell & Haber, 2003).

This report updates these analyses using more current data and expanding them to a larger number of states. The current analyses address the following questions:

- How much do Medicaid payments for Medicare cost sharing vary across states? Do states' actual cost sharing payments correspond to their written policies? Have Medicaid payments for Medicare cost sharing fallen over time?

- Are state Medicaid payment policies regarding payment of crossover claims associated with Medicare-Medicaid enrollees' access to outpatient services? Has access changed over time?

- Does the association between states' cost sharing payment policies and utilization by Medicare-Medicaid enrollees vary by type of service (evaluation and management [E&M] visits, preventive services, safety net provider services, outpatient psychotherapy) or provider specialty (primary care, specialist, type of mental health provider)?

SECTION 2
METHODS

2.1 Study Design

Our analytic approach used variation across states in Medicaid policy for payment of Medicare cost sharing for Medicare-Medicaid beneficiaries, and resulting differences across states in the average proportion of Medicare cost sharing covered by Medicaid payments, to examine the impact of Medicaid payment of Medicare cost sharing on Medicare-Medicaid beneficiaries' utilization of selected Medicare outpatient services. The analyses used Medicare-only beneficiaries as a comparison group to control for state-specific factors other than Medicaid cost sharing payment policy (such as provider practice patterns) that might influence state differences in utilization by Medicare-Medicaid beneficiaries. If lower Medicaid payments for Medicare cost sharing reduce access to services, then utilization is expected to be lower for dually eligible beneficiaries, as compared to their non-dual counterparts, in states that pay a smaller proportion of the Medicare cost sharing amount. Additional detail on the study design and other aspects of the methods used in these analyses are provided in ***Appendices A–C***.

The outcomes in our analyses were a number of commonly accepted claims-based indicators of realized access to outpatient provider care in the Medicare population (Kennell and Associates, 2011). Medicare bad debt payments reimburse hospitals and skilled nursing facilities for a portion of the cost sharing that cannot be collected from the beneficiaries or from Medicaid programs on the beneficiaries' behalf, which insulates these providers from the effects of Medicaid cost sharing payment policies. Therefore, our analyses focused on services in outpatient settings.

As shown in ***Table 1***, the outcomes included measures of utilization of office and other outpatient E&M services, utilization of Medicare-covered preventive services, utilization of safety net provider services, and utilization of outpatient psychotherapy services. While Medicare does not require cost sharing for many preventive services, utilization of these services could still be impacted by Medicaid cost sharing payment policy because these services are typically provided or ordered during an office visit. We examined the use of services in federally qualified health centers (FQHCs), rural health centers (RHCs), and hospital outpatient departments to determine whether limitations on cost sharing payments result in greater use of safety net providers, which might be indicative of problems with access to office-based services (Rosenbaum & Shin, 2011). We also looked at the type of provider seen for outpatient psychotherapy to examine whether lower cost sharing payments led to greater use of lower-priced providers, such as psychologists or licensed clinical social workers, compared to psychiatrists.

For each outcome measure, we created an indicator for receiving any services in that category. In addition, except for utilization of preventive services, we created counts of the number of visits for each service that were limited to beneficiaries who had at least one visit. Receipt of any services provides information on beneficiaries' ability to gain access to services, while number of visits is an indicator of intensity of service use.

Table 1
Indicators of Access to Care

Utilization of Office and Other Outpatient E&M Services	Utilization of Medicare-Covered Preventive Services	Utilization of Safety Net Provider Services	Utilization of Outpatient Psychotherapy Services
▪ All office and outpatient E&M visits: any visit, # of visits ▪ E&M visits with primary care providers: any visit, # of visits ▪ E&M visits with specialists: any visit, # of visits	▪ Flu shot ▪ Mammography screening (women, age 50–69 only)	▪ Federally qualified health center/rural health center visits: any visit, # of visits ▪ Hospital outpatient department E&M visits: any visit, # of visits	▪ All outpatient psychotherapy visits: any visit, # of visits ▪ Psychiatrist visits: any visit[a], # of visits ▪ Clinical psychologist visits: any visit[a], # of visits ▪ Licensed clinical social worker visits: any visit[a], # of visits

NOTES: E&M = evaluation and management.

[a] Among beneficiaries with any outpatient psychotherapy visit.

We measured Medicaid payments for Medicare cost sharing in three ways:

(1) Statewide average percentage of Medicare cost sharing covered by Medicaid payments for office E&M visits: the key explanatory variable for utilization of Medicare-covered office and other outpatient E&M services, preventive services, and safety net provider services.

(2) Statewide average percentage of Medicare cost sharing covered by Medicaid payments for outpatient psychotherapy: the key explanatory variable for utilization of Medicare-covered outpatient psychotherapy services.

(3) States' written policies regarding payment of Medicare cost sharing for physician services documented in a survey conducted by NORC at the University of Chicago for MACPAC (MACPAC, 2013): used to validate the calculated statewide average percentage of Medicare cost sharing covered by Medicaid payments for office E&M visits and outpatient psychotherapy and as the key explanatory variable in an alternate specification of our analytic model.

2.2 Data Sources and Study Population

The main data sources for the analyses were Medicare and Medicaid Analytic eXtract (MAX) enrollment and claims data, which were used to establish eligibility for the study population, to calculate the percentage of the Medicare cost sharing amount paid by Medicaid, and to construct measures of service utilization. Our primary analyses of the impact of Medicaid cost sharing payment policies on service utilization used Medicare and MAX data for 2009, which was the most current year of MAX data available when the analyses began. Some

components of the analyses incorporated Medicare and MAX data from 2005. The Area Resource File (ARF) provided data on county-level market factors expected to influence service utilization. Finally, information on state Medicaid program policies regarding payment of Medicare cost sharing in 2012 was obtained from the NORC survey.

The study population included Medicare-Medicaid beneficiaries who were eligible for at least 1 month of Medicaid coverage of Medicare cost sharing and a 20% random national sample of Medicare-only beneficiaries. To qualify for the study population, beneficiaries also were required to be eligible for Medicare Part B and not enrolled in a Medicare Advantage plan for at least 1 month during the year. We further required that qualifying Medicare-Medicaid beneficiaries had at least one month where they met these requirements and were not enrolled in a medical or comprehensive Medicaid managed care plan, a Program of All-Inclusive Care for the Elderly plan, or, for analyses of outpatient psychotherapy, a Medicaid behavioral managed care plan.

Analyses were limited to selected states. We excluded states with high enrollment in Medicare or Medicaid managed care because managed care enrollees were not eligible for the analyses and the remaining beneficiaries might not be a representative population. We also excluded states with data quality problems for key variables in the MAX data used to calculate the percentage of the Medicare cost sharing paid by Medicaid. In addition, Maine was excluded because the state did not submit claims to MAX in 2009.

Table 2 shows the states that met the criteria for analyses related to utilization of office and other outpatient E&M services, preventive services, and safety net provider services. Three states categorized as full payment by NORC, 16 lesser of states, and 1 other state satisfied the criteria for inclusion for 2009; for 2005, 4 full payment states, 12 lesser of states, and 1 other state satisfied the inclusion criteria. Two full payment states, 12 lesser of states, and 1 other state satisfied the criteria in both years. Additional states were excluded from the analyses related to utilization of outpatient psychotherapy due to the exclusion of enrollees in Medicaid behavioral managed care plans. As shown in ***Table 2,*** for these analyses, 2 full payment states, 15 lesser of states, and 1 other state satisfied the criteria for inclusion for 2009; for 2005, 3 full payment states, 11 lesser of states, and 1 other state were included. One full payment state, 11 lesser of states, and 1 other state qualified in both years.

Table 2
States Selected for the Analyses

		Analyses Related to Utilization of Office and Other Outpatient E&M Services, Preventive Services, and Safety Net Providers		Analyses Related to Utilization of Outpatient Psychotherapy	
Payment Type[a]	State	2005	2009	2005	2009
Full Payment	HI	x		x	
	MS		x		x

(continued)

Table 2 (continued)
States Selected for the Analyses

		Analyses Related to Utilization of Office and Other Outpatient E&M Services, Preventive Services, and Safety Net Providers		Analyses Related to Utilization of Outpatient Psychotherapy	
Payment Type[a]	State	2005	2009	2005	2009
	NE	x	x		
	VT	x	x	x	x
	WY	x		x	
Lesser Of	AL		x		x
	AK	x	x	x	x
	CT	x	x	x	x
	FL		x		x
	GA	x	x	x	x
	IL	x	x	x	x
	KY		x		x
	LA	x	x	x	x
	MD	x	x	x	x
	MA	x	x	x	x
	MI	x	x		
	MT	x	x	x	x
	NM	x	x	x	x
	ND		x		x
	SC	x	x	x	x
	WV	x	x	x	x
Other	NY	x	x	x	x

NOTES: The table includes states that met the study inclusion criteria for either year. E&M = evaluation and management.

[a] States are grouped on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey.

2.3 Analytic Methods

We used descriptive and multivariate analyses to examine the relationship between Medicaid payment of Medicare cost sharing for Medicare-Medicaid beneficiaries and service utilization for these dually eligible beneficiaries. The main analyses used 2009 data. In addition to the main regression model, we used five alternative regression model specifications to check the robustness of the findings. The specifications and interpretation of findings are included in ***Appendix A***.

We used t-tests to compare mean utilization between Medicare-Medicaid beneficiaries and Medicare-only beneficiaries within each state. States were classified in tables based on the percentage of the Medicare cost sharing covered by Medicaid payments (high, median and low).[1] Multivariate analyses used logistic regression for models where the outcome was the probability of using a service; negative binomial regression was used for models where the outcome was the number of visits. Both descriptive and multivariate analyses of service utilization were weighted using the number of months during the year the beneficiary was eligible for the analyses. The weights for Medicare-only beneficiaries also took consideration of the 20% sampling probability for this population.

Multivariate models included a variable indicating whether an individual was a dually eligible Medicare-Medicaid beneficiary (versus Medicare-only), a variable representing the percentage of the Medicare cost sharing paid by Medicaid in the state where the beneficiary resided, and a third variable that was the interaction of these two terms. The multivariate models also included several individual-level and county-level covariates to control for individual and market characteristics expected to influence service utilization.[2]

The interaction between the Medicare-Medicaid indicator and the percentage of Medicare cost sharing paid was the key variable of interest in our multivariate analyses. A positive coefficient for the interaction term indicates that paying a higher percentage of the Medicare cost sharing amount is associated with higher utilization among Medicare-Medicaid beneficiaries relative to Medicare-only beneficiaries, while a negative coefficient indicates that Medicare-Medicaid beneficiaries have lower utilization compared to Medicare-only beneficiaries. We expected that covering a higher percentage of the Medicare cost sharing would increase Medicare-Medicaid beneficiaries' utilization of most of the services analyzed, compared to Medicare-only beneficiaries. We expected the opposite effect for safety net provider services and for psychologist and licensed clinical social worker services for outpatient psychotherapy.

The effect of the percentage of the cost sharing amount paid cannot be derived directly from the coefficient for the interaction of the cost sharing payment variable and the indicator for Medicare-Medicaid eligibility (the main variable of interest in our models). Therefore, we used estimated coefficients from each model to predict outcomes for Medicare-Medicaid beneficiaries and Medicaid-only beneficiaries assuming a hypothetical high level of cost sharing reimbursement and a hypothetical low level of reimbursement, with all other variables set to the average value for the study population. We then calculated the difference between predicted utilization for Medicare-Medicaid beneficiaries and for Medicare-only beneficiaries at the high cost sharing reimbursement level and at the low level. The difference between Medicare-Medicaid and Medicaid-only beneficiaries at the high payment level minus the difference at the low payment level (the difference-in-difference [DD] estimate) represents the estimated effect of the higher cost sharing reimbursement percentage on Medicare-Medicaid beneficiaries' service utilization.

We also used the multivariate regression results to predict utilization for Medicare-Medicaid and Medicare-only beneficiaries in each state based on our calculation of the percentage of the Medicare cost sharing amount paid by Medicaid in that state; again, all other variables were set to the average value for the study population. These predictions identify utilization differences between Medicare-Medicaid and Medicare-only beneficiaries across states

that are attributable to state differences in Medicaid payments for Medicare cost sharing, factoring out effects due to any differences in beneficiary or market characteristics.

SECTION 3
RESULTS

3.1 State Medicaid Program Payments for Medicare Cost Sharing

Table 3 shows the average percentage of Medicare cost sharing covered by Medicaid payments by state, categorizing states by their written policies for Medicaid payment of Medicare cost sharing in 2012 (full payment, lesser of, or other).[3] Medicaid payments generally were less than the full cost sharing amount, although there was substantial variation across states in the percentage of Medicare-Medicaid beneficiaries' Medicare cost sharing covered. State payments typically represented a smaller percentage of the Medicare cost sharing amount for outpatient psychotherapy than for office E&M services.

States with a written policy of reimbursing the full Medicare cost sharing liability generally covered a high percentage of the cost sharing amount for office E&M services, although Nebraska in 2005 and Mississippi in 2009 each covered only about 65%. When the percentage of the Medicare cost sharing paid by Medicaid was calculated only for Medicare services where there was a corresponding Medicaid crossover claim, the Medicaid payment in full payment states was approximately equal to, and in some cases greater than, the full Medicare cost sharing liability.[4] The percentage of Medicare cost sharing covered by Medicaid payments varied substantially among states with a lesser of payment policy, ranging from Connecticut, which covered about 10% in 2005 and 11% in 2009, to Alaska, which covered 81% in 2005, and Montana, which covered 93% in 2009. However, payments in most lesser of states covered 50% or less of the Medicare cost sharing amount. New York, which had a policy of paying some other amount, covered about 16% of the Medicare cost sharing amount in 2005 and 25% in 2009.

Among states that met the study inclusion criteria in both years, the percentage of cost sharing for office E&M visits covered by Medicaid payments increased from 2005 to 2009 in most cases, although the percentage decreased in a few states (i.e., Vermont, Georgia, Illinois, and New Mexico). Seven states (i.e., Louisiana, Maryland, Massachusetts, Montana, Nebraska, New York, and South Carolina) showed a substantial increase in the percentage of the cost sharing amount covered (greater than 25%). Although this study did not allow us to determine the reasons for this increase, in some states (e.g., Louisiana, Montana, and South Carolina) it appears to be due in large part to a substantial increase in the percentage of Medicare services with a Medicaid crossover claim.

During the time period covered by our analyses, outpatient mental health services were subject to a much higher cost sharing rate than other services and Medicare paid only 50% of the fee schedule amount. According to Medicare regulations, only 12.5% of the fee schedule amount was considered coinsurance that qualified for reimbursement by Medicaid programs for Medicare-Medicaid beneficiaries. Nonetheless, some state Medicaid programs may have made payments based on the full 50% that was not reimbursed by Medicare. As expected, given these Medicare limitations on coverage of outpatient mental health services, with a few exceptions the percentage of the Medicare cost sharing amount covered by Medicaid payments for outpatient psychotherapy was lower than that for office E&M services. In addition, the pattern of full payment states paying a higher percentage than lesser of states was less clear than it was for

Table 3
Average Percentage of Medicare Cost Sharing Paid by Medicaid, by State and Year

		Average Percentage of Medicare Cost Sharing Paid for Office E&M Visits			Average Percentage of Medicare Cost Sharing Paid for Outpatient Psychotherapy		
Payment Type[a]	State	2005	2009	Percent Change	2005	2009	Percent Change
Full Payment	HI	91.4			82.5		
	MS		65.4			15.2	
	NE	64.5	85.5	32.6			
	VT	103.7	98.1	-5.4	72.5	71.1	-1.9
	WY	94.1			63.8		
Lesser Of	AL		26.9			13.5	
	AK	81.4	91.2	12.0	53.3	69.5	30.4
	CT	9.7	11.3	16.5	1.9	2.3	21.1
	FL		16.0			1.5	
	GA	30.6	21.9	-28.4	18.6	21.1	13.4
	IL	16.9	13.8	-18.3	3.1	2.5	-19.4
	KY		24.2			18.3	
	LA	19.9	42.1	111.6	27.9	12.0	-57.0
	MD	61.0	79.8	30.8	34.6	27.4	-20.8
	MA	17.0	23.9	40.6	8.2	15.4	87.8
	MI	11.1	13.1	18.0			
	MT	55.2	92.9	68.3	44.1	46.3	5.0
	NM	42.8	31.8	-25.7	46.2	21.9	-52.6
	ND		71.2			46.6	
	SC	16.6	23.0	38.6	18.2	20.0	9.9
	WV	24.3	28.5	17.3	29.4	36.6	24.5
Other	NY	16.3	24.9	52.8	14.4	27.8	93.1

NOTES: The table includes states that met the study inclusion criteria for either year; states that met the criteria for 1 year only do not have values for the other year and for percent change. E&M = evaluation and management.

[a] States are grouped on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey.

office E&M services. For 2005, payments in the four full payment states covered 27–83% of the Medicare cost sharing for outpatient psychotherapy services. The percentage of cost sharing covered in the lesser of states ranged from about 2% for Connecticut to 53% for Alaska. New York (other payment policy) covered about 14% of the cost sharing amount for outpatient psychotherapy in 2005. Among the full payment states in 2009, payments in Mississippi covered 15% of the Medicare cost sharing while payments in Vermont covered 71%. The percentage of cost sharing covered by payments in the lesser of states ranged from about 2% for Florida to 70% for Alaska in 2009, while New York's payments covered about 28%.

Similar to office E&M services, the average proportion of Medicare cost sharing covered by Medicaid payments for outpatient psychotherapy services increased from 2005 to 2009 in most states. Three states (i.e., Alaska, Massachusetts, and New York) showed a substantial increase (greater than 25% change).

3.2 Relationship Between Cost Sharing Payments and Use of Evaluation and Management Services

3.2.1 Descriptive Results

In almost all the states, regardless of the level of Medicaid payment for Medicare cost sharing, Medicare-Medicaid beneficiaries had different patterns of using office and other outpatient E&M services, preventive services, and safety net provider services from their Medicare-only counterparts in 2009 (***Table 4)***. Compared to Medicare-only beneficiaries, a smaller percentage of Medicare-Medicaid beneficiaries had office or other outpatient E&M visits (including both visits to primary care providers [PCPs] and specialists), despite the higher prevalence of a variety of chronic illnesses among Medicare-Medicaid beneficiaries (Kaiser Commission on Medicaid and the Uninsured, 2012). Medicare-Medicaid beneficiaries are also less likely than Medicare-only beneficiaries to use preventive services (e.g., flu shot and mammography for females age 50–69 only). On the other hand, a larger percentage of Medicare-Medicaid beneficiaries had FQHC or RHC visits and hospital outpatient department E&M visits, compared to Medicare-only beneficiaries.

We also examined the annualized number of visits for E&M services and to safety net providers among beneficiaries who used these services (***Appendix Table E-1***). The difference in the annualized number of visits for E&M services (all office and other outpatient E&M visits, visits with PCPs, and visits with specialists) between Medicare-Medicaid and Medicare-only beneficiaries was statistically significant in almost all the states, but the magnitude of the difference was typically small (less than one visit) and the direction of the difference varied across states. The difference in the annualized number of visits to safety net providers was significant in all the states and Medicare-Medicaid beneficiaries consistently had more visits to safety net providers than their Medicare-only counterparts, although the difference was generally small.

Table 4
Utilization of Office and Other Outpatient Evaluation and Management Services, Preventive Services, and Safety Net Provider Services, 2009

State	Beneficiary Group	Had at Least One Office or Other Outpatient E&M Visit (%)			Had a Preventive Service (%)		Had at Least One Visit to Safety Net Provider (%)	
		Any Visit	Visit With PCP	Visit With Specialist	Flu Shot	Mammography (female only)	FQHC or RHC Visit	Hospital Outpatient Department E&M Visit
	High Medicaid Payment [a]							
AK [LO]	Medicare-Medicaid	76.7	65.2	46.5**	14.1**	20.3**	15.2**	27.8**
	Medicare-only	76.6	64.6	51.7	28.7	35.0	6.4	16.5
MD [LO]	Medicare-Medicaid	78.0**	62.1**	59.0**	24.2**	24.0**	7.0**	12.7**
	Medicare-only	87.1	75.2	72.4	44.4	42.7	1.9	10.0
MT [LO]	Medicare-Medicaid	70.7**	54.7**	46.2**	17.9**	19.1**	25.5**	31.1**
	Medicare-only	80.2	65.4	59.5	33.1	41.7	16.4	34.0
NE [FP]	Medicare-Medicaid	82.7**	67.6**	57.8**	28.0**	21.1**	20.6**	17.6**
	Medicare-only	85.0	69.8	64.1	43.9	40.0	17.8	16.7
VT [FP]	Medicare-Medicaid	72.8**	52.7**	54.0**	13.2**	24.8**	28.7**	38.9**
	Medicare-only	81.2	62.9	63.3	20.8	48.5	18.4	45.1
	Medium Medicaid Payment [a]							
AL [LO]	Medicare-Medicaid	77.4**	61.7**	56.6**	19.4**	22.0**	15.5**	6.1
	Medicare-only	88.1	76.8	71.9	38.5	42.1	6.3	5.9
LA [LO]	Medicare-Medicaid	80.7**	62.8**	59.2**	17.8**	23.6**	13.1**	13.2**
	Medicare-only	86.5	72.3	71.1	37.6	40.2	5.9	8.2
MS [FP]	Medicare-Medicaid	78.6**	57.2**	55.8**	19.5**	19.6**	29.9**	8.8**
	Medicare-only	85.4	70.3	68.3	39.2	37.5	15.3	6.2

(continued)

Table 4 (continued)
Utilization of Office and Other Outpatient Evaluation and Management Services, Preventive Services, and Safety Net Provider Services, 2009

State	Beneficiary Group	Had at Least One Office or Other Outpatient E&M Visit (%)			Had a Preventive Service (%)		Had at Least One Visit to Safety Net Provider (%)	
		Any Visit	Visit With PCP	Visit With Specialist	Flu Shot	Mammography (female only)	FQHC or RHC Visit	Hospital Outpatient Department E&M Visit
NM [LO]	Medicare-Medicaid	78.9**	65.1**	50.6**	14.5**	18.6**	21.9**	27.9**
	Medicare-only	80.2	67.1	60.3	27.4	35.3	10.0	20.8
ND [LO]	Medicare-Medicaid	73.9**	57.1**	46.9**	20.8**	20.9**	23.1	38.7**
	Medicare-only	83.7	68.4	60.1	36.0	45.2	22.2	44.9
WV [LO]	Medicare-Medicaid	76.2**	56.0**	56.8**	18.3**	21.6**	28.7**	15.6**
	Medicare-only	82.3	67.0	63.9	33.9	38.2	17.1	13.4
	Low Medicaid Payment [a]							
CT [LO]	Medicare-Medicaid	75.8**	54.8**	60.8**	20.4**	25.4**	12.9**	13.4**
	Medicare-only	89.2	79.0	74.5	44.9	45.5	0.9	10.0
FL [LO]	Medicare-Medicaid	78.7**	60.9**	61.4**	17.5**	21.6**	7.7**	11.2**
	Medicare-only	89.8	77.3	78.1	46.7	47.6	2.9	10.7
GA [LO]	Medicare-Medicaid	80.6**	65.5**	59.7**	21.4**	23.1**	9.9**	13.0**
	Medicare-only	88.2	76.0	72.7	43.0	42.2	3.7	7.6
IL [LO]	Medicare-Medicaid	73.3**	54.0**	54.3**	20.1**	22.0**	14.9**	17.1**
	Medicare-only	85.9	72.2	67.3	42.7	41.0	8.2	14.6
KY [LO]	Medicare-Medicaid	77.9**	59.8**	57.1**	20.9**	19.8**	23.9**	8.2**
	Medicare-only	86.1	74.7	67.0	43.0	39.1	10.6	7.9
MA [LO]	Medicare-Medicaid	80.1**	65.4**	61.2**	18.5**	31.0**	11.0**	33.0**
	Medicare-only	87.8	76.4	73.0	39.2	48.9	1.6	28.0

(continued)

Table 4 (continued)
Utilization of Office and Other Outpatient Evaluation and Management Services, Preventive Services, and Safety Net Provider Services, 2009

State	Beneficiary Group	Had at Least One Office or Other Outpatient E&M Visit (%)			Had a Preventive Service (%)		Had at Least One Visit to Safety Net Provider (%)	
		Any Visit	Visit With PCP	Visit With Specialist	Flu Shot	Mammography (female only)	FQHC or RHC Visit	Hospital Outpatient Department E&M Visit
MI [LO]	Medicare-Medicaid	76.1**	59.5**	55.2**	20.5**	23.0**	15.2**	19.3**
	Medicare-only	86.7	75.0	67.2	39.7	41.6	7.9	17.5
NY [OT]	Medicare-Medicaid	78.9**	63.7**	60.4**	22.6**	24.5**	5.3**	21.7**
	Medicare-only	85.4	70.4	71.7	40.9	40.8	1.5	14.6
SC [LO]	Medicare-Medicaid	77.6**	57.5**	58.6**	20.8**	23.3**	24.1**	13.2**
	Medicare-only	88.4	76.1	72.9	44.1	43.4	8.6	10.1

NOTES: The table includes states that met the study inclusion criteria for 2009. E&M = evaluation and management; FP = full payment on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey; FQHC = federally qualified health center; LO = Lesser of; OT = Other; PCP = primary care provider; RHC = rural health center.

[a] High Medicaid payment = Average percentage of Medicare cost sharing paid > 75%; Medium Medicaid payment = Average percentage of Medicare cost sharing paid > 25% and ≤ 75%; Low Medicaid payment = Average percentage of Medicare cost sharing paid ≤ 25%.

** Significantly different from Medicare-only at 0.01 level.

* Significantly different from Medicare-only at 0.05 level.

SOURCE: Data for table comes from descriptives for outcomes by dual status 2009 (Program: \\wallsas03.waltham.rti.org\vol3\project\0213459\002_Dual_Cost_Sharing\pgm\bbaker\programs\ntz18_v4.sas).

Table 4
Utilization of Office and Other Outpatient Evaluation and Management Services, Preventive Services, and Safety Net Provider Services, 2009

State	Beneficiary Group	Had at Least One Office or Other Outpatient E&M Visit (%)			Had a Preventive Service (%)		Had at Least One Visit to Safety Net Provider (%)	
		Any Visit	Visit With PCP	Visit With Specialist	Flu Shot	Mammography (female only)	FQHC or RHC Visit	Hospital Outpatient Department E&M Visit
	High Medicaid Payment [a]							
AK [LO]	Medicare-Medicaid	76.7	65.2	46.5**	14.1**	20.3**	15.2**	27.8**
	Medicare-only	76.6	64.6	51.7	28.7	35.0	6.4	16.5
MD [LO]	Medicare-Medicaid	78.0**	62.1**	59.0**	24.2**	24.0**	7.0**	12.7**
	Medicare-only	87.1	75.2	72.4	44.4	42.7	1.9	10.0
MT [LO]	Medicare-Medicaid	70.7**	54.7**	46.2**	17.9**	19.1**	25.5**	31.1**
	Medicare-only	80.2	65.4	59.5	33.1	41.7	16.4	34.0
NE [FP]	Medicare-Medicaid	82.7**	67.6**	57.8**	28.0**	21.1**	20.6**	17.6**
	Medicare-only	85.0	69.8	64.1	43.9	40.0	17.8	16.7
VT [FP]	Medicare-Medicaid	72.8**	52.7**	54.0**	13.2**	24.8**	28.7**	38.9**
	Medicare-only	81.2	62.9	63.3	20.8	48.5	18.4	45.1
	Medium Medicaid Payment [a]							
AL [LO]	Medicare-Medicaid	77.4**	61.7**	56.6**	19.4**	22.0**	15.5**	6.1
	Medicare-only	88.1	76.8	71.9	38.5	42.1	6.3	5.9
LA [LO]	Medicare-Medicaid	80.7**	62.8**	59.2**	17.8**	23.6**	13.1**	13.2**
	Medicare-only	86.5	72.3	71.1	37.6	40.2	5.9	8.2
MS [FP]	Medicare-Medicaid	78.6**	57.2**	55.8**	19.5**	19.6**	29.9**	8.8**
	Medicare-only	85.4	70.3	68.3	39.2	37.5	15.3	6.2

(continued)

Table 4 (continued)
Utilization of Office and Other Outpatient Evaluation and Management Services, Preventive Services, and Safety Net Provider Services, 2009

State	Beneficiary Group	Had at Least One Office or Other Outpatient E&M Visit (%)			Had a Preventive Service (%)		Had at Least One Visit to Safety Net Provider (%)	
		Any Visit	Visit With PCP	Visit With Specialist	Flu Shot	Mammography (female only)	FQHC or RHC Visit	Hospital Outpatient Department E&M Visit
NM [LO]	Medicare-Medicaid	78.9**	65.1**	50.6**	14.5**	18.6**	21.9**	27.9**
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ND [LO]	Medicare-Medicaid	73.9**	57.1**	46.9**	20.8**	20.9**	23.1	38.7**
	Medicare-only	83.7	68.4	60.1	36.0	45.2	22.2	44.9
WV [LO]	Medicare-Medicaid	76.2**	56.0**	56.8**	18.3**	21.6**	28.7**	15.6**
	Medicare-only	82.3	67.0	63.9	33.9	38.2	17.1	13.4
	Low Medicaid Payment [a]							
CT [LO]	Medicare-Medicaid	75.8**	54.8**	60.8**	20.4**	25.4**	12.9**	13.4**
	Medicare-only	89.2	79.0	74.5	44.9	45.5	0.9	10.0
FL [LO]	Medicare-Medicaid	78.7**	60.9**	61.4**	17.5**	21.6**	7.7**	11.2**
	Medicare-only	89.8	77.3	78.1	46.7	47.6	2.9	10.7
GA [LO]	Medicare-Medicaid	80.6**	65.5**	59.7**	21.4**	23.1**	9.9**	13.0**
	Medicare-only	88.2	76.0	72.7	43.0	42.2	3.7	7.6
IL [LO]	Medicare-Medicaid	73.3**	54.0**	54.3**	20.1**	22.0**	14.9**	17.1**
	Medicare-only	85.9	72.2	67.3	42.7	41.0	8.2	14.6
KY [LO]	Medicare-Medicaid	77.9**	59.8**	57.1**	20.9**	19.8**	23.9**	8.2**
	Medicare-only	86.1	74.7	67.0	43.0	39.1	10.6	7.9
MA [LO]	Medicare-Medicaid	80.1**	65.4**	61.2**	18.5**	31.0**	11.0**	33.0**
	Medicare-only	87.8	76.4	73.0	39.2	48.9	1.6	28.0

(continued)

Table 4 (continued)
Utilization of Office and Other Outpatient Evaluation and Management Services, Preventive Services, and Safety Net Provider Services, 2009

State	Beneficiary Group	Had at Least One Office or Other Outpatient E&M Visit (%)			Had a Preventive Service (%)		Had at Least One Visit to Safety Net Provider (%)	
		Any Visit	Visit With PCP	Visit With Specialist	Flu Shot	Mammography (female only)	FQHC or RHC Visit	Hospital Outpatient Department E&M Visit
MI [LO]	Medicare-Medicaid	76.1**	59.5**	55.2**	20.5**	23.0**	15.2**	19.3**
	Medicare-only	86.7	75.0	67.2	39.7	41.6	7.9	17.5
NY [OT]	Medicare-Medicaid	78.9**	63.7**	60.4**	22.6**	24.5**	5.3**	21.7**
	Medicare-only	85.4	70.4	71.7	40.9	40.8	1.5	14.6
SC [LO]	Medicare-Medicaid	77.6**	57.5**	58.6**	20.8**	23.3**	24.1**	13.2**
	Medicare-only	88.4	76.1	72.9	44.1	43.4	8.6	10.1

NOTES: The table includes states that met the study inclusion criteria for 2009. E&M = evaluation and management; FP = full payment on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey; FQHC = federally qualified health center; LO = Lesser of; OT = Other; PCP = primary care provider; RHC = rural health center.

[a] High Medicaid payment = Average percentage of Medicare cost sharing paid > 75%; Medium Medicaid payment = Average percentage of Medicare cost sharing paid > 25% and ≤ 75%; Low Medicaid payment = Average percentage of Medicare cost sharing paid ≤ 25%.

** Significantly different from Medicare-only at 0.01 level.

* Significantly different from Medicare-only at 0.05 level.

SOURCE: Data for table comes from descriptives for outcomes by dual status 2009 (Program: \\wallsas03.waltham.rti.org\vol3\project\0213459\002_Dual_Cost_Sharing\pgm\bbaker\programs\ntz18_v4.sas).

Comparable patterns of utilization differences between Medicare-Medicaid and Medicare-only beneficiaries were also observed in 2005 (***Appendix Table E-2*** and ***Appendix Table E-3***). Among the states included in the analyses for 2005 and 2009, the percentage of Medicare-Medicaid beneficiaries using E&M services almost always increased from 2005 to 2009, while Medicare-only beneficiaries' utilization of these services decreased in many states. Similarly, the percentage of Medicare-Medicaid and Medicare-only beneficiaries receiving flu shots and mammography (female only) increased from 2005 to 2009 in most states, as did the percentage of both Medicare-Medicaid and Medicare-only beneficiaries using FQHC or RHC and hospital outpatient department services. However, the annualized number of FQHC or RHC visits for both Medicare-Medicaid and Medicare-only beneficiaries decreased in most states, while the annualized number of hospital outpatient department visits increased for both groups.

3.2.2 Multivariate Results

Main Model

The multivariate analyses show that paying a higher percentage of the Medicare cost sharing increased Medicare-Medicaid beneficiaries' likelihood, relative to Medicare-only beneficiaries, of having office and other outpatient E&M visits and their likelihood of using preventive services, but decreased their likelihood of using safety net provider services. ***Table 5*** shows the magnitude of the effect of differences in the percentage of the cost sharing amount covered by Medicaid on the probability of Medicare-Medicaid beneficiaries using office and other outpatient E&M services, preventive services, and safety net provider services estimated from the main logistic regression model using 2009 data. (Results for covariates in the main logistic regression model are presented in ***Appendix Table E-4***.) Because the effect of the percentage of the cost sharing amount paid cannot be derived directly from the coefficient for the interaction of the cost sharing payment variable and the dual indicator (the main variable of interest in our models), we used estimated coefficients from each model to predict outcomes for Medicare-Medicaid beneficiaries and Medicaid-only beneficiaries assuming a high cost sharing payment amount (100%) and a low cost sharing payment amount (66%), setting all covariates at the sample mean. The high percentage represents full reimbursement of the Medicare cost sharing amount, while the low cost sharing payment amount is approximately the median percentage of the Medicaid cost sharing covered in states with a lesser of payment policy based on Medicare claims with a corresponding Medicaid crossover claim (see ***Appendix D***).

As shown in ***Table 5***, at 100% payment of the Medicare cost sharing liability, Medicare-Medicaid beneficiaries have a slightly higher predicted likelihood of having an office or other outpatient E&M visit compared to Medicare-only beneficiaries (84.8% vs. 84.2%), but their likelihood was lower at 66% payment (83.9% vs. 85.6%). The difference between Medicare-Medicaid and Medicaid-only beneficiaries at 100% payment minus the difference at 66% payment represents a statistically significant increase of 2.3 percentage points in the likelihood of Medicare-Medicaid beneficiaries having an office or other outpatient E&M visit relative to Medicare-only beneficiaries.

Table 5
Impact of Percentage of Medicare Cost Sharing Paid by Medicaid on Medicare-Medicaid Beneficiaries' Utilization of Office and Other Outpatient Evaluation and Management Services, Preventive Services, and Safety Net Provider Services, 2009

	Cost Sharing Payment = 100%				Cost Sharing Payment = 66%					
	Medicare-Medicaid Beneficiaries	Medicare-Only Beneficiaries	Difference	% Difference	Medicare-Medicaid Beneficiaries	Medicare-Only Beneficiaries	Difference	% Difference	Difference in Difference (DD)	% DD
Had at Least One Office or Other Outpatient E&M Visit (%)										
Any Visit	84.8	84.2	0.5	0.6	83.9	85.6	-1.7	-2.1	2.3**	2.7
Visit With PCP	68.8	70.0	-1.2	-1.7	67.2	71.8	-4.6	-6.9	3.5**	5.0
Visit With Specialist	64.1	67.3	-3.3	-5.1	63.9	68.8	-4.9	-7.7	1.7**	2.6
Had a Preventive Service (%)										
Flu Shot	27.7	36.0	-8.3	-29.9	26.4	37.5	-11.1	-42.1	2.8**	10.1
Mammography (female only)	26.4	39.5	-13.0	-49.3	26.5	40.3	-13.8	-52.2	0.8**	3.0
Had at Least One Safety Net Provider Visit (%)										
FQHC or RHC Visit	7.4	6.3	1.2	15.8	7.5	5.0	2.6	34.1	-1.4**	-18.8
Hospital Outpatient Department E&M Visit	16.6	17.1	-0.5	-2.8	16.1	15.2	1.0	5.9	-1.4**	-8.5

NOTES: E&M = evaluation and management; FQHC = federally qualified health center; PCP = primary care provider; RHC = rural health center.
** Statistically significant at 0.01 level.
SOURCE: RTI analysis /vol3/project/0213459/002_Dual_Cost_Sharing/pgm/ykaganova/programs/sh_request1_1a2_0.66_1.log.

Medicare-Medicaid beneficiaries are less likely than Medicare-only beneficiaries to have a visit with a PCP and to have a visit with a specialist at both 100% cost sharing payment and 66%, but the gap is smaller at 100% payment. Similar to the finding for the likelihood of having any office E&M visit, paying 100% of the Medicare cost sharing compared to 66% payment is associated with a statistically significant increase in the likelihood that, relative to Medicare-only beneficiaries, Medicare-Medicaid beneficiaries will have a PCP visit (3.5 percentage points) and a specialist visit (1.7 percentage points). Paying 100% of the cost sharing amount, rather than 66%, is also associated with a statistically significant increase in the relative likelihood that Medicare-Medicaid beneficiaries will receive preventive services. Although they are substantially less likely than Medicare-only beneficiaries to receive a flu shot and a mammogram at both 100% and 66% payment, the gap between the groups is smaller at 100% payment. The gap between Medicare-Medicaid beneficiaries and Medicare-only beneficiaries in the likelihood of receiving a flu shot is 2.8 percentage points smaller at 100% payment than at 66%. Although the gap between Medicare-Medicaid and Medicare-only beneficiaries in the likelihood of females having a mammogram is also reduced at 100% payment, the impact is smaller (0.8 percentage points).

In contrast, higher cost sharing payment was associated with a significant decrease in the likelihood of Medicare-Medicaid beneficiaries using safety net provider services relative to Medicare-only beneficiaries. Although Medicare-Medicaid beneficiaries are more likely than Medicare-only beneficiaries to use FQHC or RHC services regardless of the percentage of the cost sharing reimbursed, the relative difference was larger at 66% cost sharing payment. The difference between Medicare-Medicaid beneficiaries and Medicaid-only beneficiaries in the likelihood of having an FQHC or RHC visit is 1.4 percentage points lower at 100% reimbursement of the Medicare cost sharing compared to 66%. The likelihood of Medicare-Medicaid beneficiaries having a hospital outpatient department E&M visit relative to Medicare-only beneficiaries is also 1.4 percentage points lower at 100% payment than at 66%. While Medicare-Medicaid beneficiaries are more likely than Medicare-only beneficiaries to have a hospital outpatient department visit at 66% cost sharing payment, they are less likely at 100% cost sharing payment.

Summary of Findings from Other Models

As discussed earlier, we ran alternative models to check the robustness of findings from the main model using 2009 data. Coefficients and the significance levels for the interaction of the Medicare-Medicaid eligibility indicator and the Medicare cost sharing payment variable estimated from the main model and the alternative logistic regression models for the probability of using E&M, preventive, and safety net provider services are presented in ***Appendix Table E-5***. The direction and magnitude of estimated effects from the alternative models are consistent with those from the 2009 model with two exceptions. First, results from the model that used the states' written policies in 2012 as the Medicare cost sharing payment variable (alternative model 1) suggest that living in a state that pays the full amount of Medicare cost sharing (relative to living in a state with a lesser of payment policy) decreases Medicare-Medicaid beneficiaries' likelihood of receiving office and other outpatient E&M services and decreases female Medicare-Medicaid beneficiaries' likelihood of receiving mammography. Second, alternative model 5 (where the key explanatory variable was based on the change from 2005 to 2009 in the average percentage of Medicare cost sharing paid by Medicaid for office

E&M visits) showed no significant relationship between the magnitude of the change from 2005 and 2009 in the percentage of the Medicare cost sharing paid by Medicaid and Medicare-Medicaid beneficiaries' utilization of E&M and preventive services, and a positive impact on the utilization of FQHC and RHC services.

Appendix Table E-6 summarizes the coefficients and significance level for the interaction of the cost sharing payment variable and the Medicare-Medicaid eligibility indicator estimated from negative binomial regression models for the annualized number of E&M visits and safety net provider visits using the main model and the alternative models. Across all models, the impact is either not statistically significant or statistically significant but too small to be meaningful.

Predicted Probability of Utilization

Table 6 shows the predicted probability of using E&M services, preventive services, and safety net provider services for Medicare-Medicaid and Medicare-only beneficiaries for each state based on estimates from the main model. The predicted probabilities illustrate utilization differences between Medicare-Medicaid and Medicare-only beneficiaries that are the result of state variation in the percentage of the Medicare cost sharing covered by Medicaid payments for office E&M services, holding constant beneficiary and market characteristics. As an example, the predicted probability of having an office or other outpatient E&M visit is lower for Medicare-Medicaid beneficiaries than for Medicare-only beneficiaries in all states. However, in Vermont (the state with the highest average percentage of Medicare cost sharing covered by Medicaid for office E&M visits), Medicare-Medicaid beneficiaries were 3% less likely than Medicare-only beneficiaries to have an office or other outpatient E&M visit whereas they were 10% less likely in Connecticut (the state with the lowest average percentage of Medicare cost sharing covered by Medicaid payments for office E&M visits). On the other hand, Medicare-Medicaid beneficiaries have a higher predicted probability of using safety net services than do Medicare-only beneficiaries, and this gap is larger in states where the percentage of the Medicare cost sharing covered by Medicaid payments is lower. Medicare-Medicaid beneficiaries in Vermont were 47% more likely than Medicare-only beneficiaries to have an FQHC or RHC visit; in Connecticut, they were 182% more likely.

Table 6
Predicted Probability of Using Evaluation and Management Services, Preventive Services, and Safety Net Provider Services, 2009

State	Beneficiary Group	Had at Least One Office or Other Outpatient E&M Visit (%)			Had a Preventive Service (%)		Had at Least One Safety Net Provider Visit (%)	
		Any Visit	Visit With PCP	Visit With Specialist	Flu Shot	Mammography (female only)	FQHC or RHC Visit	Hospital Outpatient Department E&M Visit
	High Medicaid Payment [a]							
AK [LO]	Medicare-Medicaid	80.6	67.2	53.7	21.3	20.1	9.7	25.0
	Medicare-only	84.8	73.0	65.0	38.9	39.6	5.4	18.4
MD [LO]	Medicare-Medicaid	80.5	65.0	59.2	23.0	24.3	7.2	18.6
	Medicare-only	85.7	72.8	69.4	40.7	42.5	4.5	16.6
MT [LO]	Medicare-Medicaid	80.7	63.7	57.7	22.5	21.8	19.3	21.7
	Medicare-only	83.7	68.2	66.2	37.8	39.8	13.9	18.0
NE [FP]	Medicare-Medicaid	81.3	64.6	59.3	23.9	22.4	18.4	18.2
	Medicare-only	85.4	71.0	68.0	40.8	40.5	13.1	16.1
VT [FP]	Medicare-Medicaid	82.0	63.3	60.9	25.0	24.0	18.2	19.4
	Medicare-only	84.4	67.7	67.8	39.2	42.6	12.4	18.8
	Medium Medicaid Payment [a]							
AL [LO]	Medicare-Medicaid	77.0	59.0	56.5	18.5	22.4	21.0	15.2
	Medicare-only	85.7	72.2	69.0	38.5	41.8	8.2	12.8
LA [LO]	Medicare-Medicaid	76.2	58.9	55.0	17.6	22.5	17.1	16.8
	Medicare-only	84.8	71.5	67.7	37.8	41.2	7.8	13.9
MS [FP]	Medicare-Medicaid	76.1	57.7	52.3	17.0	20.9	32.0	14.2
	Medicare-only	83.4	68.8	64.5	35.4	39.3	16.6	12.7

(continued)

Table 6 (continued)
Predicted Probability of Using Evaluation and Management Services, Preventive Services, and Safety Net Provider Services, 2009

State	Beneficiary Group	Had at Least One Office or Other Outpatient E&M Visit (%)			Had a Preventive Service (%)		Had at Least One Safety Net Provider Visit (%)	
		Any Visit	Visit With PCP	Visit With Specialist	Flu Shot	Mammography (female only)	FQHC or RHC Visit	Hospital Outpatient Department E&M Visit
NM [LO]	Medicare-Medicaid	75.6	58.0	53.9	15.9	21.2	22.0	20.0
	Medicare-only	84.5	70.3	67.2	36.1	40.5	10.2	14.3
ND [LO]	Medicare-Medicaid	81.5	64.5	58.9	24.2	21.3	21.2	19.5
	Medicare-only	86.3	71.9	68.7	42.0	41.1	14.3	15.5
WV [LO]	Medicare-Medicaid	78.9	60.2	59.7	21.1	24.3	20.1	16.7
	Medicare-only	85.9	71.7	69.8	39.5	42.5	9.1	13.6
	Low Medicaid Payment [a]							
CT [LO]	Medicare-Medicaid	79.5	62.6	61.7	22.4	23.8	6.2	18.4
	Medicare-only	88.7	76.6	73.9	45.9	43.7	2.2	14.0
FL [LO]	Medicare-Medicaid	78.2	61.3	60.3	20.0	24.5	10.8	16.8
	Medicare-only	88.4	75.8	74.5	44.4	46.1	5.1	11.9
GA [LO]	Medicare-Medicaid	76.8	59.7	55.3	18.4	22.0	17.8	14.5
	Medicare-only	86.1	73.6	68.6	39.5	41.0	6.5	11.5
IL [LO]	Medicare-Medicaid	78.4	61.6	58.5	20.5	23.6	11.7	15.0
	Medicare-only	88.1	76.0	71.7	43.9	42.5	4.7	11.4
KY [LO]	Medicare-Medicaid	78.5	59.3	58.0	20.5	22.9	25.9	14.7
	Medicare-only	86.1	72.1	69.1	39.5	41.6	9.6	12.4
MA [LO]	Medicare-Medicaid	79.2	62.6	61.6	21.9	24.9	5.4	20.4
	Medicare-only	88.6	76.4	74.4	46.0	44.3	2.1	15.3

(continued)

Table 6 (continued)
Predicted Probability of Using Evaluation and Management Services, Preventive Services, and Safety Net Provider Services, 2009

State	Beneficiary Group	Had at Least One Office or Other Outpatient E&M Visit (%)			Had a Preventive Service (%)		Had at Least One Safety Net Provider Visit (%)	
		Any Visit	Visit With PCP	Visit With Specialist	Flu Shot	Mammography (female only)	FQHC or RHC Visit	Hospital Outpatient Department E&M Visit
MI [LO]	Medicare-Medicaid	77.1	59.8	58.2	19.0	23.3	12.3	16.6
	Medicare-only	86.9	74.0	71.1	41.1	41.6	5.0	12.9
NY [OT]	Medicare-Medicaid	78.4	61.9	59.7	21.8	23.5	6.6	19.4
	Medicare-only	87.0	74.5	71.9	42.4	42.8	2.9	16.1
SC [LO]	Medicare-Medicaid	76.5	58.8	56.1	17.7	22.6	18.6	14.8
	Medicare-only	86.5	73.4	70.0	40.0	42.8	6.9	11.8

NOTES: The table includes states that met the study inclusion criteria for 2009. E&M = evaluation and management; FP = Full payment on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey; FQHC = federally qualified health center; LO = Lesser of; OT = Other; PCP = primary care provider; RHC = rural health center.

[a] High Medicaid payment = Average percentage of Medicare cost sharing paid > 75%; Medium Medicaid payment = Average percentage of Medicare cost sharing paid > 25% and ≤ 75%; Low Medicaid payment = Average percentage of Medicare cost sharing paid ≤ 25%.

SOURCE: RTI analysis \\wallsas03.waltham.rti.org\vol3\project\0213459\002_Dual_Cost_Sharing\pgm\bbaker\programs\ntz20_v4.sas.

3.3 Relationship Between Cost Sharing Payments and Use of Outpatient Psychotherapy Services

3.3.1 Descriptive Results

In all the states, regardless of the level of Medicaid payment for Medicare cost sharing for outpatient psychotherapy, more Medicare-Medicaid beneficiaries received outpatient psychotherapy compared to Medicare-only beneficiaries in 2009 (***Table 7***). This may reflect the higher prevalence of mental illness among Medicare-Medicaid beneficiaries compared to the Medicare-only population (Kaiser Commission on Medicaid and the Uninsured, 2012). Among beneficiaries who used outpatient psychotherapy services, there are no clear patterns in the direction of the difference between the percentages of Medicare-Medicaid and Medicare-only beneficiaries using psychiatrist, psychologist, and licensed clinical social worker services. Among beneficiaries who had at least one outpatient psychotherapy visit, there were either no significant differences in the annualized number of visits (all outpatient psychotherapy, psychiatrist visits, psychologist visits, and licensed clinical social worker visits) between Medicare-Medicaid and Medicare-only beneficiaries or Medicare-Medicaid beneficiaries had significantly more visits (***Appendix Table E-7***).

As in 2009, Medicare-Medicaid beneficiaries were more likely than Medicare-only beneficiaries to use outpatient psychotherapy in 2005, but there were either no significant differences or the direction of the difference varied for the likelihood of using specific types of providers (***Appendix Table E-8***) and the annualized number of visits for those receiving outpatient psychotherapy (***Appendix Table E-9***). There was no consistent pattern in the direction of change from 2005 to 2009 in the states that were included in the analyses for both years. In general, the utilization of psychiatrist and psychologist services decreased from 2005 to 2009 among both Medicare-Medicaid and Medicare-only beneficiaries, while the utilization of licensed clinical social workers increased.

3.3.2 Multivariate Results

Main Model

Findings from the multivariate analyses indicate that paying a higher percentage of the Medicare cost sharing is associated with an increase, relative to Medicare-only beneficiaries, in the likelihood that Medicare-Medicaid beneficiaries will receive outpatient psychotherapy; however, the effect of the cost sharing payment differs by type of provider. ***Table 8*** shows the estimated effect from the main logistic regression model (using 2009 data) of the percentage of cost sharing paid on the likelihood of Medicare-Medicaid beneficiaries using outpatient psychotherapy services and the likelihood of receiving outpatient psychotherapy from a psychiatrist, psychologist, and licensed clinical social worker among beneficiaries who used outpatient psychotherapy services. These estimates assume a high cost sharing payment amount of 100% and a low cost sharing payment amount of 66%. Although these are higher than the cost sharing payment percentages found during the study period, we assume that payment of the Medicare cost sharing for outpatient psychotherapy will more closely resemble E&M services in

Table 7
Utilization of Outpatient Psychotherapy, 2009

State	Beneficiary Group	Had at Least One Outpatient Psychotherapy Visit (%)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Had Outpatient Psychotherapy With Psychiatrist (%)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Had Outpatient Psychotherapy With Psychologist (%)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Had Outpatient Psychotherapy With Licensed Clinical Social Worker (%)
	High Medicaid Payment [a]				
AK [LO]	Medicare-Medicaid	4.5**	67.2*	7.4**	22.6
	Medicare-only	1.1	55.1	18.8	20.2
VT [FP]	Medicare-Medicaid	11.2**	48.6**	18.9**	31.8*
	Medicare-only	2.6	38.8	27.5	38.2
	Medium Medicaid Payment [a]				
MD [LO]	Medicare-Medicaid	10.1**	64.1**	10.5**	38.5**
	Medicare-only	3.0	51.6	20.2	33.6
MT [LO]	Medicare-Medicaid	10.8**	53.7	15.6**	36.7*
	Medicare-only	1.7	49.1	27.4	30.7
ND [LO]	Medicare-Medicaid	7.7**	44.8	30.8	27.6*
	Medicare-only	1.8	45.0	35.2	20.4
NY [OT]	Medicare-Medicaid	9.2**	50.5**	17.2**	41.1**
	Medicare-only	3.4	47.8	24.3	33.6
WV [LO]	Medicare-Medicaid	4.9**	66.2	18.2	19.0
	Medicare-only	1.3	63.8	19.3	16.6
	Low Medicaid Payment [a]				
AL [LO]	Medicare-Medicaid	4.2**	63.6**	8.6**	29.4**
	Medicare-only	2.0	70.0	21.7	15.9
CT [LO]	Medicare-Medicaid	9.2**	40.0**	11.8**	49.1**
	Medicare-only	3.4	52.3	19.8	29.5
FL [LO]	Medicare-Medicaid	7.0**	60.5**	16.5**	18.5
	Medicare-only	2.8	57.6	28.4	19.2
GA [LO]	Medicare-Medicaid	6.0**	83.7**	7.1**	10.5**
	Medicare-only	2.2	72.1	19.4	14.2
IL [LO]	Medicare-Medicaid	5.9**	68.5**	12.4**	23.3**
	Medicare-only	2.1	63.1	24.6	21.3
KY [LO]	Medicare-Medicaid	7.4**	47.8**	11.5**	45.8**
	Medicare-only	2.1	57.3	14.7	32.7

(continued)

Table 7 (continued)
Utilization of Outpatient Psychotherapy, 2009

State	Beneficiary Group	Had at Least One Outpatient Psychotherapy Visit (%)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Had Outpatient Psychotherapy With Psychiatrist (%)	Had Outpatient Psychotherapy With Psychologist (%)	Had Outpatient Psychotherapy With Licensed Clinical Social Worker (%)
LA [LO]	Medicare-Medicaid	2.2**	56.8**	11.5**	27.4
	Medicare-only	1.2	49.5	24.9	27.2
MA [LO]	Medicare-Medicaid	13.9**	35.3**	17.6**	51.9**
	Medicare-only	4.3	43.1	24.4	35.1
MS [FP]	Medicare-Medicaid	3.6**	58.8	12.0**	11.1
	Medicare-only	1.4	57.2	26.9	11.5
NM [LO]	Medicare-Medicaid	6.5**	55.3	21.7**	25.7**
	Medicare-only	2.3	56.4	30.2	18.9
SC [LO]	Medicare-Medicaid	3.1**	81.7**	5.7**	13.6**
	Medicare-only	1.7	66.2	16.5	19.9

NOTES: The table includes states that met the study inclusion criteria for 2009. FP = Full payment on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey; LO = Lesser of; OT = Other.

[a] High Medicaid payment = Average percentage of Medicare cost sharing paid > 50%; Medium Medicaid payment = Average percentage of Medicare cost sharing paid > 25% and ≤ 50%; Low Medicaid payment = Average percentage of Medicare cost sharing paid ≤ 25%.

** Significantly different from Medicare-only at 0.01 level.

* Significantly different from Medicare-only at 0.05 level.

SOURCE: Data for table comes from descriptives for outcomes by dual status 2009 (Program: \\wallsas03.waltham.rti.org\vol3\project\0213459\002_Dual_Cost_Sharing\pgm\bbaker\programs\ntz18_v4.sas).

Table 8
Impact of Percentage of Medicare Cost Sharing Paid by Medicaid on Medicare-Medicaid Beneficiaries' Utilization of Outpatient Psychotherapy Services, 2009

	Cost Sharing Payment = 100%				Cost Sharing Payment = 66%					
	Medicare-Medicaid Beneficiaries	Medicare-Only Beneficiaries	Difference	% Difference	Medicare-Medicaid Beneficiaries	Medicare-Only Beneficiaries	Difference	% Difference	Difference in Difference (DD)	% DD
Had at Least One Outpatient Psychotherapy Visit (%)	5.9	1.7	4.2	70.7	4.9	1.9	3.0	61.5	1.2**	20.2
Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit										
Visit With Psychiatrist (%)	47.3	37.0	10.3	21.8	50.0	44.7	5.3	10.6	5.0**	10.5
Visit With Psychologist (%)	21.3	17.8	3.5	16.4	18.5	19.8	-1.3	-6.8	4.7**	22.3
Visit With Licensed Clinical Social Worker (%)	51.4	49.3	2.1	4.1	43.4	39.0	4.5	10.3	-2.3**	-4.5

NOTES:
** Statistically significant at 0.01 level.
SOURCE: RTI analysis /vol3/project/0213459/002_Dual_Cost_Sharing/pgm/ykaganova/programs/sh_request1_1b2_0.66_1.log.

the future with the elimination of Medicare limitations on reimbursement of outpatient psychotherapy. Results for covariates in the main logistic regression model for utilization of outpatient psychotherapy are presented in ***Appendix Table E-10***.

Regardless of the cost sharing payment level, the predicted probability of using outpatient psychotherapy services, including the three specific provider types, is nearly always higher for Medicare-Medicaid beneficiaries compared to Medicare-only beneficiaries. The exception is psychologist services, for which Medicare-Medicaid beneficiaries have a lower predicted probability at 66% cost sharing payment. However, the relative difference between Medicare-Medicaid and Medicare-only beneficiaries in the likelihood of having outpatient psychotherapy is 1.2 percentage points larger when 100% of the cost sharing amount is reimbursed compared to 66%—a statistically significant difference. Similarly, the likelihoods of Medicare-Medicaid beneficiaries receiving psychotherapy from a psychiatrist and from a psychologist are significantly higher relative to Medicare-only beneficiaries when 100% of the cost sharing liability is reimbursed—5.0 and 4.7 percentage points higher, respectively. On the other hand, relative to Medicare-only beneficiaries, the likelihood that Medicare-Medicaid beneficiaries will receive psychotherapy from a licensed clinical social worker is 2.3 percentage points lower at 100% payment of the cost sharing amount compared to 66%.

Summary of findings from other models

Coefficients and significance levels for the interaction of the Medicare-Medicaid eligibility indicator and the Medicare cost sharing payment variable estimated from the main model and the alternative logistic regression models for the probability of using outpatient psychotherapy services are presented in ***Appendix Table E-11***. The results from the alternative models are consistent with those from the 2009 model with two exceptions. First, results from the model that used the states' written policies in 2012 as the Medicare cost sharing payment variable (alternative model 1) indicate that living in a state that pays the full amount of Medicare cost sharing (relative to living in a state with a lesser of payment policy) significantly decreased Medicare-Medicaid beneficiaries' likelihood of receiving outpatient psychotherapy from psychiatrists, whereas all other models show that higher cost sharing payments increase the likelihood of seeing a psychiatrist. Second, the results from the model that used the change from 2005 to 2009 in the average percentage of Medicare cost sharing paid by Medicaid for outpatient psychotherapy as the cost sharing payment variable (alternative model 5) showed no significant impact on all of the measures of utilization of outpatient psychotherapy except psychologist visits.

Appendix Table E-12 shows the coefficients and significance levels for the interaction of the Medicare-Medicaid eligibility indicator, and the percentage of Medicare cost sharing paid by Medicaid for outpatient psychotherapy from negative binomial regression models (main model and alternative models), for the annualized number of visits for all outpatient psychotherapy and annualized number of outpatient psychotherapy visits with a psychiatrist, psychologist, and licensed clinical social worker. Although results varied by outcome and model specification, they generally show a positive or insignificant association between the cost sharing payment and the annualized number of visits. However, the main model for 2009 shows a significant negative association for psychologist and licensed clinical social worker services.

Predicted Probability of Utilization

The predicted probabilities of using outpatient psychotherapy (outpatient psychotherapy from any type of provider, psychiatrist visits, psychologist visits, and licensed clinical social worker visits) for Medicare-Medicaid and Medicare-only beneficiaries for each state based on estimates from the main model are shown in ***Table 9***. By holding constant beneficiary and market characteristics, the predicted probabilities illustrate utilization differences between Medicare-Medicaid and Medicare-only beneficiaries that are the result of state differences in the percentage of the Medicare cost sharing covered by Medicaid payments for outpatient psychotherapy visits. As a group, Medicare-Medicaid beneficiaries are more likely than Medicaid-only beneficiaries to have outpatient psychotherapy visits. In Vermont, the state where Medicaid payments covered the highest percentage of the Medicare cost sharing for outpatient psychotherapy, the predicted probability of using outpatient psychotherapy is 462% higher for Medicare-Medicaid beneficiaries compared to Medicare-only beneficiaries. In Connecticut, the state where Medicaid payments covered the lowest percentage of the cost sharing amount, Medicare-Medicaid beneficiaries are 200% more likely than Medicare-only beneficiaries to use outpatient psychotherapy. While Medicare-Medicaid beneficiaries who receive outpatient psychotherapy are more likely than Medicare-only beneficiaries to receive services from a licensed clinical social worker, the regression models showed a negative association between the percentage of the Medicare cost sharing paid by Medicaid and the use of clinical social worker services. In Vermont, Medicare-Medicaid beneficiaries are 21% more likely than Medicare-only beneficiaries to use licensed clinical social worker services, whereas they are 46% more likely to do so in Connecticut.

Table 9
Predicted Probability of Utilization of Outpatient Psychotherapy, 2009

State	Beneficiary Group	Had at Least One Outpatient Psychotherapy Visit (%)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Had Outpatient Psychotherapy With Psychiatrist (%)	Had Outpatient Psychotherapy With Psychologist (%)	Had Outpatient Psychotherapy With Licensed Clinical Social Worker (%)
	High Medicaid Payment [a]				
AK [LO]	Medicare-Medicaid	9.8	49.7	17.7	50.0
	Medicare-only	2.0	45.7	18.3	40.7
VT [FP]	Medicare-Medicaid	11.8	46.1	17.1	51.8
	Medicare-only	2.1	40.2	18.3	42.7
	Medium Medicaid Payment [a]				
MD [LO]	Medicare-Medicaid	8.0	51.9	14.7	40.1
	Medicare-only	2.6	51.0	22.4	31.4
MT [LO]	Medicare-Medicaid	8.7	50.7	16.9	40.9
	Medicare-only	1.8	48.6	20.6	32.2

(continued)

Table 9 (continued)
Predicted Probability of Utilization of Outpatient Psychotherapy, 2009

State	Beneficiary Group	Had at Least One Outpatient Psychotherapy Visit (%)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit		
			Had Outpatient Psychotherapy With Psychiatrist (%)	Had Outpatient Psychotherapy With Psychologist (%)	Had Outpatient Psychotherapy With Licensed Clinical Social Worker (%)
ND [LO]	Medicare-Medicaid	8.0	48.7	17.0	41.9
	Medicare-only	1.6	47.6	20.7	32.8
NY [OT]	Medicare-Medicaid	8.5	53.2	16.2	36.0
	Medicare-only	3.2	49.8	24.6	30.9
WV [LO]	Medicare-Medicaid	8.6	52.7	16.3	37.1
	Medicare-only	2.4	53.1	21.3	28.4
	Low Medicaid Payment [a]				
AL [LO]	Medicare-Medicaid	5.7	57.4	13.2	30.9
	Medicare-only	2.4	60.1	22.1	22.4
CT [LO]	Medicare-Medicaid	9.3	51.1	14.4	37.0
	Medicare-only	3.1	55.3	25.5	25.3
FL [LO]	Medicare-Medicaid	6.5	55.9	14.6	27.9
	Medicare-only	2.6	56.5	26.7	21.7
GA [LO]	Medicare-Medicaid	5.3	61.3	12.3	29.5
	Medicare-only	2.1	61.9	20.0	22.5
IL [LO]	Medicare-Medicaid	6.2	57.9	12.8	30.0
	Medicare-only	2.2	62.0	22.8	20.7
KY [LO]	Medicare-Medicaid	6.2	59.0	12.9	30.5
	Medicare-only	2.4	60.4	20.8	23.1
LA [LO]	Medicare-Medicaid	5.4	59.6	12.7	28.2
	Medicare-only	2.2	61.1	22.5	21.3
MA [LO]	Medicare-Medicaid	12.9	50.3	15.8	40.2
	Medicare-only	3.5	51.9	25.3	29.0
MS [FP]	Medicare-Medicaid	3.5	64.5	10.8	24.5
	Medicare-only	1.6	64.8	19.0	19.5
NM [LO]	Medicare-Medicaid	7.0	59.1	13.8	30.1
	Medicare-only	2.3	57.8	22.2	23.8
SC [LO]	Medicare-Medicaid	6.0	57.8	13.3	32.6
	Medicare-only	2.2	58.9	21.3	24.2

(continued)

Table 9 (continued)
Predicted Probability of Utilization of Outpatient Psychotherapy, 2009

NOTES: The table includes states that met the study inclusion criteria for 2009. FP = Full payment on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey; LO = Lesser of; OT = Other.

[a] High Medicaid payment = Average percentage of Medicare cost sharing paid > 50%; Medium Medicaid payment = Average percentage of Medicare cost sharing paid > 25% and ≤ 50%; Low Medicaid payment = Average percentage of Medicare cost sharing paid ≤ 25%.

SOURCE: \\rtimas04\hser\Project\0213459\002_Dual_Cost_Sharing\common\bbaker\ntz20_steps15_17_more_v3.

SECTION 4
DISCUSSION

These analyses showed substantial variation across states in the percentage of Medicare-Medicaid beneficiaries' Medicare cost sharing that payments from state Medicaid programs covered, ranging from 11.3 to 98.1% for office E&M services and from 2.3 to 71.1% for outpatient psychotherapy in 2009. These differences reflect a number of factors in addition to the states' written policies for reimbursing the Medicare cost sharing liability, including Medicaid fee schedule amounts, provider practices about submitting crossover claims, and, for outpatient psychotherapy, the portion of the amount not covered by Medicare that the states considered to be a coinsurance liability. As a result, the payment implications of a Medicare cost sharing payment policy can differ markedly even among states with the same written policy, and the actual amounts covered may appear different from a state's written policy.

Although payments in states with a policy of reimbursing the full Medicare payment amount typically covered a greater percentage of the cost sharing liability, even these states did not cover the entire cost sharing amount on office E&M visits for Medicare-Medicaid beneficiaries. For example, Medicaid payments for the Medicare cost sharing on office E&M services was 65.4% in Mississippi in 2009. In large part, this appears to be due to the fact that a crossover claim for Medicaid payment was not submitted for all services provided to Medicare-Medicaid beneficiaries, perhaps because the provider does not participate in Medicaid or the additional payment is too low to warrant the effort of submitting a claim. There were wide differences in the percentage of the cost sharing liability covered by Medicaid across states that paid the lesser of the full Medicare cost sharing or the difference between the Medicaid rate and the amount already paid by Medicare. Despite having a lesser of payment policy, payments in both Alaska and Montana, which have Medicaid fees for physician services that are close to or exceed the Medicare fee schedule (Zuckerman and Goin, 2012), were close to the full Medicare cost sharing amount in 2009.

Regardless of their written policy, state Medicaid program payments typically covered a substantially lower percentage of the Medicare cost sharing amount for outpatient psychotherapy services than for office E&M services. During the time period of this study, Medicare reimbursed only 50% of the Medicare fee schedule amount for outpatient mental health services and only 25% of the unreimbursed amount was considered coinsurance that Medicaid programs are expected to cover for Medicare-Medicaid beneficiaries. However, the percentage of the Medicare cost sharing paid by Medicaid for outpatient psychotherapy exceeded 25% of the amount not covered by Medicare in a number of states, suggesting that they base their payments on the full cost sharing liability.

In 2013, the national average payment for a 15-minute E&M visit with an established patient (procedure code 99213, the most commonly billed E&M visit) was approximately $73, for which the Medicare coinsurance amount was $14.60. Applying the range of payment percentages for office E&M visits in states with a lesser of payment policy, this translates to Medicaid cost sharing payments from about $1.61 to approximately $13.58. The national average payment in 2012 for 45 minutes of individual psychotherapy (procedure code 90806) was approximately $82. During the time period of this study, Medicare would not have covered $41 for this service. Applying the payment percentages for outpatient psychotherapy in states

with a lesser of payment policy, this translates to Medicaid cost sharing payments ranging from about $0.82 to $28.70.

The multivariate analyses showed a positive association between the percentage of the Medicare cost sharing liability covered by Medicaid payments and a variety of indicators of realized access to care for Medicare-Medicaid beneficiaries, including the likelihood of using E&M services, preventive services, and outpatient psychotherapy. These results were, for the most part, robust to alternative specifications of the regression model. Where there were differences, they were seen in models that used the state's written policy or the change in payment between 2005 and 2009 as the cost sharing payment measure. As discussed above, states' written policies often did not correspond with differences in the actual percentage of the cost sharing liability paid across states. In addition, most states had a lesser of payment policy and there was substantial heterogeneity among states within this group. Although the change in payment over time has been used in other studies of the impact of Medicaid reimbursement on access to care, these studies were often motivated by a policy initiative that led to payment changes in some states. There were no such policy changes during the time period of this study, and payment percentages in 2005 and 2009 were highly correlated. It is possible that changes over this time period in the percentage of the cost sharing amount paid reflect other confounding factors.

The findings from this study are consistent with those from an earlier study that examined the impact of Medicaid reimbursement of Medicare cost sharing payments on access to care for Medicare-Medicaid beneficiaries using earlier years of data and a smaller number of states (Mitchell & Haber, 2003, 2004). That study, which looked at the impact of changes in cost sharing reimbursement following the passage of the BBA, found that access to outpatient physician visits and outpatient psychotherapy decreased for Medicare-Medicaid beneficiaries in states where reimbursement declined. While there has been little research on the impact of Medicaid reimbursement on access to care for Medicare-Medicaid beneficiaries, other studies have found a positive association between generosity of Medicaid reimbursement and access for the non-dually eligible Medicaid population to a variety of services including number of physician visits (Decker, 2009), likelihood of any physician visits for adults (Shen & Zuckerman, 2005), preventive visits for children (Cohen & Cunningham, 1995), obstetrics care (Baker & Royalty, 2000), dental care for children and adolescents (Decker, 2011), dermatologists (Resneck et al., 2004), and cancer screening (Halpern et al., forthcoming).

Controlling for beneficiary, market, and other state factors expected to influence service utilization, paying a higher percentage of the Medicare cost sharing increased Medicare-Medicaid beneficiaries' likelihood, compared to Medicare-only beneficiaries, of using office and other outpatient E&M services, both primary care and specialist, and outpatient psychotherapy. Compared to reimbursing 66% of the cost sharing amount, reimbursing 100% increased the relative likelihood that a Medicare-Medicaid beneficiary would have an office or other outpatient E&M visit by 2.3 percentage points and the likelihood of receiving outpatient psychotherapy by 1.2 percentage points. The effect on E&M visits was especially strong for PCP visits, which increased by 3.5 percentage points, while the likelihood of having a specialist visit increased by 1.7 percentage points. Although Medicare does not require cost sharing for many preventive services, a state's cost sharing payment policy can affect access to these services because they typically are provided or ordered in the course of an office visit. Medicare-Medicaid

beneficiaries' likelihood of receiving a flu shot was 2.8 percentage points higher at 100% reimbursement of cost sharing compared to 66% reimbursement. Although increasing the cost sharing payment had a statistically significant positive impact on the likelihood of mammography screening, the effect was small (less than 1 percentage point).

The analyses also found an association between the percentage of Medicare cost sharing covered by Medicaid program payments and the type of provider seen by Medicare-Medicaid beneficiaries. Although they had poorer access to E&M services relative to Medicare-only beneficiaries at both 66% and 100% cost sharing payment, at 66% Medicare-Medicaid beneficiaries were 1.4 percentage points more likely both to receive services from safety net providers such as FQHCs and RHCs and to receive E&M services in a hospital outpatient department. Presumably this is because they found it more difficult to access care from office-based providers at the lower reimbursement percentage. The analyses also provided evidence that reimbursing a lower percentage of the Medicare cost sharing is associated with greater use of outpatient psychotherapy services provided by a licensed clinical social worker (4.5 percentage point increase) and less use of these services provided by a psychiatrist (5.0 percentage point decrease). Although we hypothesized that paying a lower percentage of the Medicare cost sharing might also be associated with greater use of clinical psychologist services, the analyses showed a negative relationship (4.7 percentage point reduction), which suggests that the response of psychologists is similar to that of psychiatrists.

While our findings about the impact of Medicaid reimbursement of Medicare cost sharing on Medicare-Medicaid beneficiaries' utilization of any services were consistent for E&M and outpatient psychotherapy services, impacts on intensity of utilization for those who used these services differed. For E&M services, Medicare cost sharing reimbursement primarily impacts Medicare-Medicaid beneficiaries' initial access to a provider, but effects on the number of E&M visits for those who were able to see a provider were small or not statistically significant. In contrast, intensity of utilization of outpatient psychotherapy generally, and treatment from psychiatrists specifically, was greater at higher levels of cost sharing reimbursement; results for psychologists and licensed clinical social workers, however, depended on the model specification.

This study used state variation in the percentage of Medicare cost sharing paid by Medicaid to estimate impacts on access to services for Medicare-Medicaid beneficiaries, using Medicare-only beneficiaries to control for unmeasured factors that might contribute to utilization differences across states. Despite the strengths of this model, there are several limitations to these analyses. First, we could not include more than half of states in the analyses due to either Medicaid data quality problems or extensive enrollment of the Medicare-Medicaid population in managed care. Second, our measure of the percentage of Medicare cost sharing covered by Medicaid payments is an approximation. If the claims used in the numerator and the denominator of the percentage calculation are not comparable, the calculation of the percentage of the Medicare cost sharing covered could be biased upward or downward. We placed restrictions on the types of claims included in the calculation in order to increase the likelihood that we used comparable Medicare and Medicaid claims; however, these restrictions also limited the range of services represented by our calculation of the percentage of the Medicare cost sharing covered by Medicaid program payments. Nonetheless, the only effect of random errors in the calculation of the percentage of the Medicare cost sharing covered by Medicaid payments would be to bias

estimates from multivariate analyses toward 0. Third, the cost sharing payment variable and utilization measures in our main model were based on claims from the same year. We assume that beneficiaries' ability to access services reflects the providers' responses to the payments they receive. Therefore, it is likely that provider behavior is influenced by payments in prior years, not the concurrent year. However, findings from a model that used the percentage of the Medicare cost sharing paid in 2005 to predict utilization in 2009 yielded comparable results to the model based exclusively on 2009 data. Furthermore, the percentages of Medicare cost sharing covered by a state Medicaid program in 2005 and 2009 were highly correlated, suggesting that using the current year payment percentage was not a serious limitation. Finally, our model used Medicare-only beneficiaries to control for unmeasured state-specific factors that might contribute to cross-state utilization differences in the Medicare-Medicaid population. To the extent that any unmeasured factors have differential effects on the Medicare-Medicaid and the Medicare-only populations, our estimates of the impact of the percentage of Medicare cost sharing paid by Medicaid could still be biased.

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ENDNOTES

1. For utilization of office and other outpatient E&M services, preventive services, and safety net provider services, a state was considered to have high Medicaid payment if the average percentage of Medicare cost sharing covered by Medicaid payments for office E&M visits was greater than 75%; medium Medicaid payment if the percentage of cost sharing covered was greater than 25% and less than or equal to 75%; and low Medicaid payment if the percentage of cost sharing covered was less than or equal to 25%. For utilization of outpatient psychotherapy services, a state was considered to have high Medicaid payment if the average percentage of Medicare cost sharing covered by Medicaid payments for outpatient psychotherapy visits was greater than 50%; medium Medicaid payment if the percentage of cost sharing covered was greater than 25% and less than or equal to 50%; and low Medicaid payment if the percentage of cost sharing covered was less than or equal to 25%.
2. The individual-level covariates included age, gender, and race, as well as whether the beneficiary was originally entitled to Medicare because of disability. The county-level covariates included whether the county is a Metropolitan Statistical Area, physician and hospital bed supply, percentage of population in poverty, percentage of population older than 65, and Medicare managed care penetration rate. ***Appendix C*** shows the specifications for these covariates.
3. The detailed methodology for calculating the percentage of Medicare cost sharing covered by Medicaid program payments and results of analyses to validate the percentage of the cost sharing paid and to assess the quality of crossover claims for Medicare-Medicaid beneficiaries in MAX data are described in ***Appendix D***.
4. Matching Medicare and Medicaid crossover claims were identified on the basis of beneficiary ID, procedure code, and date of service. Results for the percentage of Medicare cost sharing paid for services where there was a matching Medicaid crossover claim are shown in ***Appendix D***.

APPENDIX A:
ALTERNATIVE MULTIVARIATE MODEL SPECIFICATIONS

We used six alternative multivariate model specifications, the main model using 2009 data and five alternative models to check the robustness of the findings. We describe each model speciation in detail and summarize them in ***Appendix Table A-1***.

Main Model—Single-year Analysis

Our main multivariate regression model used 2009 data:

$$Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CS_s) + \beta_4 X_{is} + \varepsilon_{is}, \quad (1)$$

where

Y_{is} = a measure of utilization for beneficiary *i* in state *s*;
$DUAL_{is}$ = 1 if beneficiary *i* in state *s* is a Medicare-Medicaid beneficiary; 0 otherwise;
CS_s = the percentage of Medicare cost sharing paid by Medicaid in state *s* in 2009;
X_{is} = a vector of individual and county level characteristics expected to influence utilization for beneficiary *i* in state *s* (age, gender, race/ethnicity, original basis for Medicare entitlement, urban/rural residence, physician supply, hospital bed supply, percentage of population in poverty, percentage of population older than 65, and Medicare managed care penetration rate); and
ε_{is} = error term.

This model, which uses Medicare-only beneficiaries as a comparison group, is similar in spirit to a difference-in-differences design, although it does not incorporate changes over time as is typical in difference-in-differences designs.

The coefficient β_3 (for $DUAL_{is}*CS_s$) was of primary interest. The key explanatory variable (CS) was the average percentage of Medicare cost sharing paid by Medicaid for office and other outpatient E&M visits or for outpatient psychotherapy services, depending on the dependent variable. A positive coefficient (β_3) for the interaction term $DUAL_{is}*CS_s$ indicates that a paying a higher percentage of Medicare cost sharing is associated with higher utilization among Medicare-Medicaid beneficiaries relative to Medicare-only beneficiaries. A negative coefficient indicates that Medicare-Medicaid beneficiaries in states that pay a higher percentage of the cost sharing have lower utilization (relative to Medicare-only beneficiaries) than those in states that pay a higher percentage. The hypothesized direction of the effect of the cost sharing payment percentage was positive for most analyses. We hypothesized a negative direction for safety net provider services and for psychologist and licensed clinical social worker services for outpatient psychotherapy.

The coefficient on DUAL (β_1) measures utilization differences between Medicare-Medicaid and Medicare-only beneficiaries that are common to all states. The coefficient on CS (β_2) measures utilization differences across states for Medicare-only beneficiaries; this variable captures state-specific factors (other than Medicaid cost sharing payment policy) that might influence state differences in utilization by Medicare-Medicaid beneficiaries. β_4 is a vector of coefficients for beneficiary and local area characteristics expected to influence service utilization.

Alternative Model 1—Single-year Analysis

The alternative model 1 has the same specification as the main model:

$$Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CSFP_s + \beta_3 CSOT_s + \beta_4 (DUAL_{is} * CSFP_s) + \beta_5 (DUAL_{is} * CSOT_s) + \beta_6 X_{is} + \varepsilon_{is}, \quad (1)$$

where

Y_{is} = a given measure of utilization for beneficiary *i* in state *s*;
$DUAL_{is}$ = 1 if beneficiary *i* in state *s* is a Medicare-Medicaid beneficiary; 0 otherwise;
$CSFP_s$ = 1 if state *s*'s Medicaid payment policy for Medicare cost sharing is full payment;
$CSOT_s$ = 1 if state *s*'s Medicaid payment policy for Medicare cost sharing is other;
X_{is} = a vector of characteristics for beneficiary *i* in state *s* (age, gender, race/ethnicity, original basis for Medicare entitlement, urban/rural residence, local area [county] level factors influencing utilization such as provider supply, total number of months during the year beneficiary was eligible for the study [as a control for "exposure" time in models with dichotomous dependent variables]); and
ε_{is} = error term.

The coefficient β_4 (for independent variable $DUAL_{is}*CSFP_s$) is of primary interest. A positive coefficient indicates that Medicare-Medicaid beneficiaries in full payment states have higher utilization (relative to Medicare-only beneficiaries) than those in lesser of states. A negative coefficient indicates that Medicare-Medicaid beneficiaries in full payment states have lower utilization (relative to Medicare-only beneficiaries) than those in lesser of states. The hypothesized direction was positive. The coefficient β_5 indicates the impact on utilization for Medicare-Medicaid beneficiaries living in states with other payment policy compared to living in lesser of states. We did not focus on this coefficient, as only New York fell into the category of other payment policy.

Same as the main model, the coefficient on DUAL (β_1) measures utilization differences between Medicare-Medicaid and Medicare-only beneficiaries that are common to all states. The coefficient on CSFP (β_2) measures utilization differences between states with a full payment policy and those with a lesser of policy for Medicare-only beneficiaries; B_3 measures utilization differences between states with other payment policy and those with a lesser of policy for Medicare-only beneficiaries. β_6 is a vector of coefficients for beneficiary and local area characteristics expected to influence service utilization.

The $CSFP_s$ and $CSOT_s$ variables were based on states' written policies in 2012 as reported in the NORC survey. To the extent that actual cost sharing payments diverge from states' written policies, comparing the main model and this specification allows us to test whether providers respond to stated policies or their actual reimbursement experience. Although actual experience might be expected to be more salient, it is possible that providers are more aware of written policies than the amounts they are actually reimbursed.

Alternative Model 2—Multiyear Analysis

This model used the same specification as the main model, except that it incorporated a lagged cost sharing payment variable calculated for a base year (2005), rather than a payment variable calculated from the same year of data used to measure utilization (2009):

$$Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CS_s) + \beta_4 X_{is} + \varepsilon_{is}, \quad (2)$$

where all variables are measured in 2009, except
CS_s = a measure of Medicare cost sharing paid by Medicaid in state *s* in 2005.

The model assumes that it takes time for providers to observe the effects of Medicaid cost sharing payment policies. Therefore, providers' current willingness to serve Medicare-Medicaid beneficiaries is based on their experience with Medicare cost sharing payment policies in earlier time periods. The coefficient of primary interest is β_3 and the interpretation of the coefficient is the same as in the main model. Findings from this model differ from the main model only if state cost sharing payment levels changed from 2005 to 2009.

Alternative Models 3–5—Multiyear Analysis

This set of models incorporated information on utilization and cost sharing payment policies in 2005. In these models, service utilization and Medicaid payment policies for Medicare cost sharing were always measured in the same year; that is, both in 2005 or both in 2009. Model 3 modified the main model, adding variables to control for time trends in utilization:

$$Y_{ist} = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_{st} + \beta_3 (DUAL_{ist} * CS_{st}) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6 (CS_{st} * YR09_t) + \beta_7 (DUAL_{ist} * YR09_t) + \varepsilon_{ist}, \quad (3)$$

where
$YR09_t$ = 1 if the observation year is 2009; 0 otherwise.

Like the main model, model 3 estimates the impact of the level of Medicare cost sharing paid by a given state Medicaid program on service utilization for Medicare-Medicaid beneficiaries. The estimated effect was averaged across the 2 years in the model. Incorporating 2005 data introduced additional variation in the cost sharing variable (CS_s). In model 3, β_3 (for independent variable $DUAL_{is} * CS_{st}$) is still the coefficient of primary interest. Same as the main model, a positive coefficient (β_3) indicates that Medicare-Medicaid beneficiaries in states with higher Medicare cost sharing payment levels have higher utilization relative to Medicare-only beneficiaries than those in states with lower payment levels. A negative coefficient indicates that Medicare-Medicaid beneficiaries in states with higher Medicare cost sharing payments have lower utilization (relative to Medicare-only beneficiaries) than those in states with lower payments. β_5 measures the time trend in utilization for Medicare-only beneficiaries from 2005 to 2009 that is common to all states, whereas β_6 captures differences among states in the utilization time trend for Medicare-only beneficiaries and β_7 captures any difference in the utilization time trend for Medicare-Medicaid compared with Medicare-only beneficiaries that is common to all states.

Model 4 modified model 3 by including a three-way interaction term $DUAL_{ist} * CS_{st} * YR09_t$:

$$Y_{ist} = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_{st} + \beta_3 (DUAL_{ist} * CS_{st}) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6 (CS_{st} * YR09_t) +$$

$$\beta_7 (DUAL_{ist} * YR09_t) + \beta_8 (DUAL_{ist} * CS_{st} * YR09_t) + \varepsilon_{is}. \quad (4)$$

In model 4, β_3 (for independent variable $DUAL_{ist} * CS_{st}$) and β_8 for the three-way interaction term ($DUAL_{ist} * CS_{st} * YR09_t$) are of primary interest. The interpretation of β_3 is the same as in the main model and alternative models 2 and 3, but it reflects the impact of cost sharing payment policies in 2005. The inclusion of $DUAL_{ist} * CS_{st} * YR09_t$, which reflects the impact of cost sharing payment policies in 2009, allows for the possibility that the impact of Medicaid payment policies for Medicare cost sharing differs in 2005 and 2009 (different magnitude or different sign). The interpretation of other coefficients is the same as in model 3.

We did not have a hypothesized direction of the difference in the impact of Medicaid payment policies for Medicare cost sharing on service utilization for Medicare-Medicaid beneficiaries between 2005 and 2009. Although the hypothesized effect of the cost sharing payment level was positive in both years, it was not clear whether the magnitude of the effect would be greater in 2005 or 2009. If there was a lag in provider response to payment policy changes, the estimated effect might be greater in 2009. For example, providers might continue seeing existing Medicare-Medicaid patients after a reduction in cost sharing payments but not accept new Medicare-Medicaid patients. In this case, the impact of a state's cost sharing payment policy would be cumulative over time. Alternatively, providers might adjust to changes in cost sharing payment policies over time and become more willing to see Medicare-Medicaid patients, particularly if they have not been replaced with higher-paying patients. In this case, the estimated effect might be smaller in 2009. Unlike the other analyses that use 2 years of data, this analysis could be of interest even if cost sharing payments do not change between 2005 and 2009; it could help us understand whether provider responses to cost sharing payment policies have changed over time.

Model 5 adapted model 4 to measure the impact of changes from 2005 to 2009 in the Medicare cost sharing paid by Medicaid, similar to the model estimated in RTI's earlier analyses (Mitchell & Haber, 2003, 2004).

$$Y_{ist} = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_s + \beta_3 (DUAL_{ist} * CS_s) + \beta_4 X_{ist} +$$

$$\beta_5 YR09_t + \beta_6 \Delta CS_s + \beta_7 (\Delta CS_s * YR09_t) + \beta_8 (DUAL_{ist} * \Delta CS_s) +$$

$$\beta_9 (DUAL_{ist} * YR09_t) + \beta_{10} (DUAL_{ist} * \Delta CS_s * YR09_t) + \varepsilon_{ist}, \quad (5)$$

where
CS_s = a measure of Medicare cost sharing paid by Medicaid in state *s* in 2005 and
ΔCS_s = the change from 2005 to 2009 in Medicare cost sharing paid by Medicaid in state *s*.

In model 5, β_{10} for independent variable $DUAL_{ist} * \Delta CS_s * YR09_t$ is of primary interest. A positive β_{10} indicates that raising the cost sharing payment from 2005 to 2009 is associated with an increase in utilization for Medicare-Medicaid beneficiaries (relative to Medicare-only) from 2005 to 2009. A negative β_{10} indicates that raising the cost sharing payment from 2005 to 2009 is associated with a decrease in utilization for Medicare-Medicaid beneficiaries (relative to

Medicare-only). The hypothesized direction of the effect of the change in cost sharing payment is positive.

The estimated coefficient for DUAL measures the baseline (2005) difference in utilization between Medicare-Medicaid and Medicare-only beneficiaries that is common to all states, whereas the estimated coefficient for Y09 measures the average utilization time trend for Medicare-only beneficiaries between 2005 and 2009 that is common to all states. The interaction of these two variables (DUAL*Y09) measures the difference in the utilization time trend for Medicare-Medicaid beneficiaries compared with the Medicare-only beneficiaries (again that is common to all states). The main effects of CS and ΔCS control for baseline utilization differences across states for the Medicare-only population. The interaction of these terms with DUAL controls for baseline utilization differences across states for the Medicare-Medicaid population. The estimated coefficient for the interaction of ΔCS and Y09 measures differences among states in the change in utilization over time for Medicare-only beneficiaries.

Appendix Table A-1
Model Specifications and Interpretation of Findings

Model	Variable(s) of Interest	Interpretation of Coefficient on Variable(s) of Interest
Main model: 1 year of data, cost sharing payment level $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CSFP_s) + \beta_4 (DUAL_{is} * CSOT_s) + \beta_5 X_{is} + \varepsilon_{is}$ Note: The CS variable, the average proportion of Medicare cost sharing paid by Medicaid, was calculated based on claims. All variables were measured in 2009.	$DUAL_{is} * CS_s$	**Positive**: Medicare-Medicaid beneficiaries in states with higher Medicare cost sharing payment levels have higher utilization (relative to Medicare-only beneficiaries) than those in states with lower payment levels **Negative**: Medicare-Medicaid beneficiaries in states with higher Medicare cost sharing payment levels have lower utilization (relative to Medicare-only beneficiaries) than those in states with lower payment levels Assumes provider behavior reflects experience with cost sharing policies in current time period

(continued)

Appendix Table A-1 (continued)
Model Specifications and Interpretation of Findings

Model	Variable(s) of Interest	Interpretation of Coefficient on Variable(s) of Interest
Alternative 1: 1 year of data, cost sharing payment level $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CSFP_s + \beta_3 CSOT_s + \beta_4 (DUAL_{is} * CSFP_s) + \beta_5 (DUAL_{is} * CSOT_s) + \beta_6 X_{is} + \varepsilon_{is}$ Note: The CSFP and CSOT variables were based on states' written policies in 2012 as reported in the NORC survey. All other variables were measured in 2009.	$DUAL_{is} * CSFP_s$ (full payment relative to lesser of)	**Positive**: Medicare-Medicaid beneficiaries in full payment states have higher utilization (relative to Medicare-only beneficiaries) than those in lesser of states **Negative**: Medicare-Medicaid beneficiaries in full payment states have lower utilization (relative to Medicare-only beneficiaries) than those in lesser of states Assumes provider behavior reflects experience with cost sharing policies in current time period
Alternative 2: 2 years of data, lagged cost sharing payment level $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CS_s) + \beta_4 X_{is} + \varepsilon_{is}$ Note: The CS variable, the average proportion of Medicare cost sharing paid by Medicaid, was calculated based on claims. All variables were measured in 2009 except CS, which was measured in 2005.	$DUAL_{is} * CS_s$	Same as the main model **Positive**: Medicare-Medicaid beneficiaries in states with higher Medicare cost sharing payment levels have higher utilization (relative to Medicare-only beneficiaries) than those in states with lower payment levels **Negative**: Medicare-Medicaid beneficiaries in states with higher Medicare cost sharing payment levels have lower utilization (relative to Medicare-only beneficiaries) than those in states with lower payment levels Assumes current provider behavior reflects experience with cost sharing policies in earlier time periods
Alternative 3: 2 years of data, cost sharing payment level $Y_{ist} = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_{st} + \beta_3 (DUAL_{ist} * CS_{st}) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6 (CS_{st} * YR09_t) + \beta_7 (DUAL_{ist} * YR09_t) + \varepsilon_{ist}$ Note: The CS variable, the average proportion of Medicare cost sharing paid by Medicaid, was calculated based on claims. All variables were measured in both 2005 and 2009. Each year's CS variable predicted the utilization in the concurrent year.	$DUAL_{ist} * CS_{st}$	Same as the main model Estimated effect is averaged across the 2 years Provides additional variation in CS variable

(continued)

Appendix Table A-1 (continued)
Model Specifications and Interpretation of Findings

Model	Variable(s) of Interest	Interpretation of Coefficient on Variable(s) of Interest
Alternative 4: 2 years of data, cost sharing payment level $Yist = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_{st} + \beta_3(DUAL_{ist}*CS_{st}) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6(CS_{st}*YR09_t) + \beta_7(DUAL_{ist}*YR09_t) + \beta_8(DUAL_{ist}*CS_{st}*YR09_t) + \varepsilon_{ist}$ Note: The CS variable, the average proportion of Medicare cost sharing paid by Medicaid, was calculated based on claims. All variables were measured in both 2005 and 2009. Each year's CS variable predicted the utilization in the concurrent year.	$DUAL_{ist}*CS_{st}$ $DUAL_{ist}*CS_{st}*YR09_t$	Same as the main model Allows for the possibility that the impact of cost sharing payment level differs in 2005 and 2009 (different magnitude and/or different sign)
Alternative 5: 2 years of data, change in cost sharing payment $Y_{ist} = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_s + \beta_3(DUAL_{ist}*CS_s) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6 \Delta CS_s + \beta_7(\Delta CS_s*YR09_t) + \beta_8(DUAL_{ist}*\Delta CS_s) + \beta_9(DUAL_{ist}*YR09_t) + \beta_{10}(DUAL_{ist}*\Delta CS_s*YR09_t) + \varepsilon_{ist}$ Note: The CS variable, the average proportion of Medicare cost sharing paid by Medicaid, was calculated based on 2005 claims. The ΔCS was the change from 2005 to 2009 in Medicare cost sharing paid by Medicaid.	$DUAL_{ist}*\Delta CS_s*YR09_t$	**Positive**: Increase in cost sharing payment from 2005 to 2009 is associated with an increase in utilization for Medicare-Medicaid beneficiaries (relative to Medicare-only beneficiaries) from 2005 to 2009 **Negative**: Increase in cost sharing payment from base year to 2009 is associated with a decrease in utilization for Medicare-Medicaid beneficiaries (relative to Medicare-only beneficiaries) from base year to 2009

NOTES:

Y_{ist} = a given measure of utilization for beneficiary *i* in state *s* in year *t*; annualized value is used for count variables;

$DUAL_{ist}$ = 1 if beneficiary *i* in state *s* in year *t* is dually eligible for Medicare and Medicaid; 0 otherwise;

CSFPs = 1 if state s's Medicaid payment policy for Medicare cost sharing is full payment;

CSOTs = 1 if state s's Medicaid payment policy for Medicare cost sharing is other;

CS_{st} = a measure of Medicare cost sharing paid by Medicaid in state *s* in year *t;*

ΔCS_s = change in Medicare cost sharing paid by Medicaid in state *s* from 2005 to 2009;

$YR09_t$ = 1 if Year = 2009; 0 otherwise;

X_{ist} = a vector of characteristics for beneficiary *i* in state *s* in year *t* (age, gender, race/ethnicity, original basis for Medicare entitlement, urban/rural residence, local area [county] level factors influencing utilization such as provider supply, total number of months during the year beneficiary was eligible for the study [as a control for "exposure" time in models with dichotomous dependent variables]); and

ε_{ist} = error term.

All regressions were weighted based on the number of months during the year the beneficiary was eligible for the analysis and, for Medicare-only beneficiaries, the 20% sampling probability.

APPENDIX B:
DATA SOURCES, STUDY YEARS, STUDY POPULATION, AND STUDY STATES

B.1 Data Sources and Study Years

The analyses used five data sources:

- Medicaid Analytic eXtract (MAX) personal summary and claims data in the Other Therapy (OT) file for Medicare-Medicaid beneficiaries
- Medicare enrollment and outpatient facility and Part B claims data for Medicare-Medicaid beneficiaries and a random sample of 20% of Medicare-only beneficiaries
- Crosswalk of MAX and Medicare identifiers for Medicare-Medicaid beneficiaries
- Area Resource File (ARF)
- Survey on state Medicaid payment policies regarding Medicare cost sharing collected by MACPAC's contractor, NORC at the University of Chicago

Appendix Table B-1 summarizes the time frame, source, and purpose for which each dataset was used.

Appendix Table B-1
Data Sources and Purposes

Dataset	Years	Source	Purpose
Medicaid Analytic eXtract (MAX) personal summary and claims files for Medicare-Medicaid beneficiaries	2005, 2009	CMS	▪ Calculating proportion of Medicare cost sharing paid by Medicaid on crossover claims ▪ Establishing eligibility for analyses
Medicare enrollment and Part B and outpatient facility claims files for Medicare-Medicaid and Medicare-only beneficiaries	2005, 2009	CMS	▪ Calculating proportion of Medicare cost sharing paid by Medicaid on crossover claims ▪ Constructing measures of realized access to care (dependent variables) ▪ Constructing measures of beneficiary characteristics ▪ Establishing eligibility for analyses
Medicare and Medicaid identifier crosswalk for Medicare-Medicaid beneficiaries	2005, 2009	CMS	▪ Linking Medicare and Medicaid data for Medicare-Medicaid beneficiaries
Area Resource File (ARF) [a]	2005, 2009	Health Resources and Services Administration	▪ Area (county) level factors influencing utilization of health care (control variables)
Survey data on state Medicaid payment policies regarding Medicare cost sharing	2012	NORC at the University of Chicago	▪ Measure of states' written Medicare cost sharing payment policy (alternative specification of key policy variable of interest) ▪ Validating the claims-based measure of Medicare cost sharing paid by Medicaid

[a] Available at http://arf.hrsa.gov/.

Our primary analyses of the impact of Medicaid cost sharing payment policies on service utilization used MAX and Medicare data for 2009, which was the most current year of MAX data available when the analyses began. Some components of the analyses incorporated base year data from 2005. Base year data were used to calculate the change in Medicaid payment for Medicare cost sharing across time. In addition, base year data were used in some of the multivariate models used to estimate Medicaid cost sharing payment impacts (see ***Appendix A***).

The selection of study years took into account the quality of crossover claims in MAX data. Years prior to 2005 were ruled out because MAX data anomalies reports indicated that the total Medicaid payment field was filled with the sum of the Medicaid payment for Medicare coinsurance and deductible fields, which may not be accurately reported by states. Two additional key variables in the MAX data for these analyses are type of service, which was used to identify claims for services provided by physicians and advanced practice providers, and procedure code, which was used to identify E&M and outpatient psychotherapy services.

We compared the completeness of reporting procedure code on crossover claims and the percentage of crossover claims with a physician type of service in 2005, 2007, and 2009 MAX data. Completeness of procedure code reporting has improved over time. In 2009, 26 states reported a procedure code on more than 80% of crossover claims in the OT file (excluding home health and hospital outpatient department claims). Of these states, 24 met the 80% criterion in 2007 and 21 in 2005. To assess whether physician services might be under-identified using the type of service variable, we looked at the percentage of crossover claims that are identified as physician services using the type of service variable, as reported in MAX validation reports. Findings on the percentage of claims reported as a physician type of service are less easy to interpret as it is not clear what a reasonable percentage is. In general, however, states that report a low percentage of claims with a physician type of service do so consistently across years. Detailed results of the assessment of the quality of crossover claims data are presented in ***Appendix Table B-2***.

Appendix Table B-2
Selected Characteristics of Crossover Claims, by State and Year

State	Percent of Crossover Claims in Other Therapy File with Procedure Codes (excluding outpatient department and home health claims)			Percent of Crossover Claims with Physician Type of Service		
	2005	2007	2009	2005	2007	2009
Alabama	0.00	14.16	***99.96***	39.97	44.21	***42.18***
Alaska	88.42	88.27	***91.99***	39.25	35.82	***43.50***
Arizona	74.22	77.19	71.47	6.45	15.89	***15.66***
Arkansas	6.06	72.26	69.70	53.03	35.43	***32.96***
California	0.00	0.00	0.00	39.79	45.36	***46.96***

(continued)

Appendix Table B-2
Selected Characteristics of Crossover Claims, by State and Year (continued)

State	Percent of Crossover Claims in Other Therapy File with Procedure Codes (excluding outpatient department and home health claims)			Percent of Crossover Claims with Physician Type of Service		
	2005	2007	2009	2005	2007	2009
Colorado	92.78	94.46	***95.74***	3.54	2.46	2.55
Connecticut	88.98	87.80	***93.75***	12.57	13.72	11.77
Delaware	0.00	0.00	0.00	60.05	59.68	***59.34***
District of Columbia	42.49	32.92	45.00	0.00	0.00	5.14
Florida	0.00	3.13	***96.80***	18.62	24.57	***44.43***
Georgia	96.00	95.47	***95.16***	39.25	29.26	***24.96***
Hawaii	96.60	95.66	***95.64***[b]	54.06	54.05	***54.23***[b]
Idaho	0.00	0.00	0.00[b]	48.50	38.73	***36.44***[b]
Illinois	99.14	99.49	***99.58***	30.62	23.20	***24.12***
Indiana	0.00	0.00	0.00	29.23	23.78	***19.18***
Iowa	75.23	74.57	69.63	31.58	29.90	***26.56***
Kansas	7.68	9.10	8.06	39.18	50.91	***36.95***
Kentucky	29.11	99.18	***98.69***	38.08	28.21	***27.53***
Louisiana	91.19	90.18	***92.78***	42.42	45.52	***54.98***
Maine[a]	.	.	.	.	.	.
Maryland	98.64	99.50	***98.60***	49.84	50.25	***50.99***
Massachusetts	96.99	96.90	***97.32***	20.79	15.46	***17.73***
Michigan	100.00	100.00	***100.00***	21.27	28.22	***26.26***
Minnesota	13.55	13.77	13.21	53.35	48.38	***41.61***
Mississippi	97.48	99.24	***98.84***	19.66	31.23	***43.79***
Missouri	0.00	0.00	0.00[b]	14.67	6.60	4.95[b]
Montana	82.70	83.07	***84.58***	46.22	48.88	***50.24***
Nebraska	85.74	85.45	***85.12***	44.51	42.40	***40.87***
Nevada	0.00	0.00	0.00	69.93	65.74	***64.11***
New Hampshire	0.00	0.00	0.00[b]	46.09	50.11	***51.86***[b]
New Jersey	0.00	0.00	0.00	20.04	17.76	***17.31***
New Mexico	89.66	90.90	***90.94***	44.72	43.46	***41.95***
New York	95.12	95.31	***99.16***	45.59	44.78	***46.01***
North Carolina	3.17	4.15	3.28	52.45	51.49	***53.42***
North Dakota	0.00	94.91	***96.14***	56.94	31.35	***33.43***
Ohio	0.00	0.00	0.00	63.96	61.17	***59.36***

(continued)

Appendix Table B-2
Selected Characteristics of Crossover Claims, by State and Year (continued)

State	Percent of Crossover Claims in Other Therapy File with Procedure Codes (excluding outpatient department and home health claims)			Percent of Crossover Claims in Other Therapy File with Physician Type of Service		
	2005	2007	2009	2005	2007	2009
Oklahoma	0.00	0.00	0.00[b]	55.68	52.66	***52.10***[b]
Oregon	99.85	99.83	***98.35***	16.22	14.42	***17.17***
Pennsylvania	0.89	100.00	***100.00***	23.43	0.01	***24.11***
Rhode Island	0.00	0.00	0.00	18.59	20.25	***20.06***
South Carolina	99.82	99.85	***99.68***	17.39	29.04	***29.98***
South Dakota	0.00	0.00	0.00	47.07	44.11	***44.01***
Tennessee	68.42	72.58	62.40	0.00	0.00	0.00
Texas	100.00	100.00	***100.00***	10.00	23.08	2.38
Utah	96.44	99.18	***98.65***[b]	10.98	8.40	6.55b
Vermont	99.13	97.97	***97.31***	47.50	41.60	***40.18***
Virginia	0.00	0.00	0.00	99.72	99.57	***98.44***
Washington	0.00	0.00	46.72	24.04	23.76	***22.43***
West Virginia	99.12	99.11	***98.94***	13.72	9.93	13.95
Wisconsin	0.00	0.00	45.46[b]	11.90	12.08	11.79[b]
Wyoming	96.37	77.81	75.31	41.13	25.48	***23.57***

NOTES:

[a] No data are available for Maine for 2005–2009.
[b] 2008 data are used when 2009 data are not available.

Bold italic font indicates states that reported a procedure code on more than 80% of crossover claims in 2009 (N = 26) or more than 15% of crossover claims with a physician type of service in 2009 (N = 41).

Gray highlighting indicates states that reported a procedure code on more than 80% of crossover claims in 2009 but not for an earlier year (N = 5 for 2005; N = 2 for 2007) or that reported more than 15% of crossover claims with a physician type of service in 2009 but not for an earlier year (N = 1 for 2005; N = 2 for 2007).

SOURCE: CMS Medicaid Analytic eXtract (MAX) validation reports. Available at: http://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/MAX-Validation-Reports.html.

Based on these analyses, the earliest possible year (2005) was selected as the base year to maximize the likelihood that state Medicaid policies and fee schedules would differ from 2009, thereby increasing variation in the cost sharing payment. One multivariate model used cost sharing payments in the base year to predict utilization in 2009. While cost sharing payments in a base year that is reasonably proximate to 2009 seem more plausible as predictor, 2005 is not so distant that it appeared implausible.

B.2 Study Population

The study population included Medicare-Medicaid dually eligible beneficiaries who were eligible for at least one month of Medicaid coverage of Medicare cost sharing. This included full- and partial-benefit Qualified Medicare Beneficiaries (QMBs), full-benefit Specified Low-income Medicare beneficiaries (SLMBs), and other full-benefit Medicare-Medicaid beneficiaries who were not eligible for the Medicare Savings Programs. These categories of Medicare-Medicaid beneficiaries were identified using dual eligibility variables in MAX data. To qualify for the study population, Medicare-Medicaid beneficiaries must also have at least one month during the year where they were eligible for Medicare Part B; not enrolled in a Medicare Advantage plan; and not enrolled in a medical or comprehensive Medicaid managed care plan, or a Program of All-Inclusive Care for the Elderly plan. For analyses of utilization of outpatient psychotherapy services, we further required that qualifying Medicare-Medicaid beneficiaries had at least one month where they met these requirements and were not enrolled in a behavioral managed care plan. Medicare Advantage enrollees were excluded because Medicare claims data to measure their service utilization are not available. Medicare-Medicaid beneficiaries enrolled in Medicaid managed care plans were excluded because some managed care plans pay their crossover claims (MACPAC, 2013); in these cases, claims for their cost sharing payments are likely to be incomplete in MAX data.

A parallel set of Medicare-related criteria for study eligibility were applied to Medicare-only beneficiaries in all analyses. Some beneficiaries' Medicare-Medicaid dual eligibility status may change during the course of the year. The Medicare-only population excluded beneficiaries with any period of Medicaid and Medicare dual eligibility during the year. Because the Medicare-only population is much larger than the Medicare-Medicaid population, we selected a 20% random national sample of Medicare-only beneficiaries for the analyses.

B.3 Study States

Selection of study states took into consideration both study population characteristics and data quality. We excluded states with high enrollment in Medicare or Medicaid managed care because managed care enrollees are not eligible for the analyses and the remaining beneficiaries may not be a representative population. States in which more than 40% of Medicare-Medicaid dually eligible months indicated enrollment in a Medicare or Medicaid managed care plan were considered to have high managed care enrollment. We also excluded states with data quality problems for key variables in the MAX data used to calculate the cost sharing payment percentage—that is, those in which a procedure code was missing on more than 20% of crossover claims in the MAX OT file and those in which the percentage of office or other outpatient E&M claims for Medicare-Medicaid beneficiaries in the MAX data with a physician type of service was implausibly low (**see *Appendix Table B-2***). In addition, Maine was excluded because the state did not submit claims to MAX in 2009.

APPENDIX C:
VARIABLE CONSTRUCTION

C.1 Cost Sharing Payments

Measures of Medicaid policies for payment of Medicare cost sharing for physician and other practitioner services were the key explanatory variables in our analyses. We used three specifications for this measure:

(1) Statewide average percentage of Medicare cost sharing paid by Medicaid for office E&M visits: the key explanatory variable for utilization of Medicare-covered office and other outpatient E&M services, preventive services, and safety net provider services.
(2) Statewide average percentage of Medicare cost sharing paid by Medicaid for outpatient psychotherapy: the key explanatory variable for utilization of Medicare-covered outpatient psychotherapy services.
(3) States' written policies regarding payment of Medicare cost sharing for physician services documented in the NORC study: used to validate the calculated statewide average percentage of Medicare cost sharing paid for office E&M visits and outpatient psychotherapy and as the key explanatory variable in an alternate specification of our analytic model.

Statewide Average Percentage of Medicare Cost Sharing Paid by Medicaid for Office E&M Visits

The calculation only included claims with a date of service during months in which the beneficiary met the eligibility criteria for the Medicare-Medicaid study population. We applied additional requirements to identify services where Medicare should always be the primary payer so that any Medicaid claims should be crossover claims to cover the Medicare cost sharing liability and to ensure that the claims for the numerator and denominator were for comparable services.

The denominator for this measure was the sum of line deductible and line coinsurance amounts on Medicare Part B claims in which (1) the procedure code was an outpatient E&M service (99201–99215 or 99241–99245), (2) the provider specialty code indicated physician or advanced practice provider (nurse practitioner, physician assistant, certified nurse midwife, certified registered nurse anesthetist, or certified clinical nurse specialist) services, and (3) place of service was office. The numerator was the sum of Medicaid payment amounts on claims in the MAX OT file with a procedure code for the outpatient E&M services noted above; physician, nurse midwife, or nurse practitioner type of service; and place of service in an office. We excluded from the numerator MAX claims that did not match with a Part B claim (on the basis of beneficiary ID, date of service and procedure code) on the assumption that any Medicaid claim without a matching Medicare claim was not a crossover claim.

Statewide Average Percentage of Medicare Cost Sharing Paid by Medicaid for Outpatient Psychotherapy

This measure differed from the cost sharing measure for office E&M services in several ways. First, we used claims with a procedure code for outpatient psychotherapy (90804–90815), rather than E&M codes. Second, we expanded the specialty code list to include psychologists and licensed clinical social workers. Third, we excluded claims during months when a

beneficiary was enrolled in a behavioral health Medicaid managed care plan in addition to claims during months enrolled in a comprehensive or PACE managed care plan. Fourth, the Medicare cost sharing amount was calculated as the line allowed charge minus the line payment and the line penalty amount (if any) rather than the sum of line deductible and coinsurance amounts on the Medicare claim. The amounts reported in the deductible and coinsurance fields in Medicare claims reflected Medicare's policy of covering a maximum of 62.5% of the fee schedule amount for mental health services, although there were inconsistencies on some claims. Therefore, we calculated the percentage paid by each state's Medicaid program for outpatient psychotherapy services based on the entire Medicare fee schedule amount not reimbursed by Medicare.

State Payment Type Documented in the NORC Study

We used the categorization developed by NORC based on their documentation of states' written policies in 2012: (1) states that pay the full amount of Medicare deductibles and coinsurance; (2) states that pay the lesser of the full Medicare cost sharing or the difference between the Medicaid rate and the amount already paid by Medicare; or (3) states that pay some other amount.

C.2 Outcome Measures

The outcomes in our analyses were a number of commonly accepted claims-based indicators of realized access to outpatient provider care in the Medicare population. For each outcome measure, we created an indicator for receiving any services in that category. In addition, except for utilization of preventive services, we created counts of the number of visits; these were limited to beneficiaries who had at least one visit.

Outcome variables only included utilization during months when the beneficiary met the eligibility criteria for the analyses (enrolled in Medicare Part B, not enrolled in Medicare or Medicaid managed care, and, for Medicare-Medicaid beneficiaries, covered under one of the qualifying dual eligibility categories). For beneficiaries who were not eligible for the analyses for the entire year, we annualized the number of visits based on the number of months during which they were eligible for the analyses.

Office and other outpatient E&M services included Medicare Part B claims for outpatient E&M services (procedure code 99201-99215 or 99241-99245) and where the place of service was not inpatient. In addition, we created separate measures of visits to primary care providers and specialists, defined based on provider specialty code. We also examined utilization of selected Medicare-covered preventive services: receipt of a flu shot (procedure code 90655-90660 or G0008) and, for women age 50-69, receipt of mammography screening (procedure code 76090-76092, 77055-77057, G0202, G0204 or G0206 or principal diagnosis code V76.11, V76.12).

FQHC visits were identified using both Medicare Part B claims (place of service = 50) and Medicare Outpatient claims (revenue center 0510, 0520, 0521 or 0523 and provider number XX1800-XX1989 and facility type = 7 and type of service = 3). RHC visits were identified in a similar way (Medicare Part B claims where place of service = 72 or Medicare Outpatient claims with revenue center 0510, 0520, 0521 or 0523 and provider number XX3400-XX3499, XX3800-XX3999, XX8500-XX8999). Similarly hospital outpatient department visits included Medicare

Part B claims for E&M services provided in hospital outpatient departments (procedure code 99201-99215 or 99241-99245 and place of service = 22) and Medicare Outpatient claims with these procedure codes and revenue center 0982 or 0983.

We used Medicare Part B claims with outpatient psychotherapy procedure codes (90804-90815) to measure outpatient mental health treatment. Outpatient psychotherapy services from psychiatrists, psychologists, and licensed clinical social workers were identified based on provider specialty code.

C.3 Additional Variables

We included several individual-level and county-level covariates in the multivariate analyses to control for individual and market characteristics expected to influence service utilization. ***Appendix Table C-1*** shows the specifications for these covariates.

Appendix Table C-1
Specifications of Covariates

Covariate	Data Source	Source Variable	Specifications
Age	Medicare enrollment file	BENE_BIRTH_DT	Less than 65 years 65–74 years 75–84 years 85+ years
Female	Medicare enrollment file	BENE_SEX_IDENT_CD	Female = 1 or 0
Race	Medicare enrollment file	RTI_RACE_CD	White Black Asian Hispanic Native American Other or unknown
Original entitlement due to disability	Medicare enrollment file	BENE_ENTLMT_RSN_ORIG	Original entitlement due to disability = 1 or 0
Lives in metropolitan statistical area (MSA)	Area Resource File	F1406709 (Metro/Micro Indicator Code 2009)	Lives in MSA = 1 or 0
Number of active non-federal physicians per 1,000 population	Area Resource File	F0885708 (Total Active M.D.s Non-Federal 2008)* F1198408 (Population Estimate 2008)*	Number of active non-federal physicians per 1,000 population

(continued)

Appendix Table C-1 (continued)
Specifications of Covariates

Covariate	Data Source	Source Variable	Specifications
Number of hospital bed per 1,000 population	Area Resource File	F0892208 (Short Term General Hospital Beds 2008)* F1198408 (Population Estimate 2008)*	Number of hospital bed per 1,000 population
Percent persons in poverty	Area Resource File	F1332109 (Percent Persons in Poverty 2009)	Percentage of population in poverty
Percent persons 65+	Area Resource File	F1408309 (Population Estimate 65+ 2009) F1198409 (Population Estimate 2009)	Percentage of population older than 65
Medicare managed care penetration rate	Area Resource File	F1319309 (Percent Medicare Advantage Penetration 2009)	Percentage of Medicare Advantage penetration

*2008 data were used when 2009 data were not available.

APPENDIX D:
VALIDATION OF VARIABLES FOR THE PERCENTAGE OF THE MEDICARE COST SHARING PAID BY STATES

RTI INTERNATIONAL | Memorandum

TO: Anna Sommers; April Grady

CC: Amy Bernstein

FROM: Susan Haber, Tracy Zheng, and Sonja Hoover

DATE: March 27, 2014

SUBJECT: Final Validation Tables

This memo describes the results of analyses to assess the quality of crossover claims for dually eligible beneficiaries in MAX data. We conducted three sets of analyses.

1. We calculated the average percentage of the Medicare cost-sharing amount reimbursed by Medicaid programs by state for a set of outpatient evaluation and management (E&M) services and outpatient psychotherapy services for which Medicare is expected to be the primary payer. To validate these calculated percentages, we compared them to the categorization of states based on their written policies documented by NORC in 2012 as (1) states that pay the full amount of Medicare deductibles and coinsurance; (2) states that pay the lesser of the full Medicare cost sharing or the difference between the Medicaid rate and the amount already paid by Medicare; or (3) states that pay some other amount.
2. To examine the quality of reporting crossover claims for dually eligible beneficiaries in MAX data, we calculated the percentage of claims reported as a crossover claim for a set of services for which Medicare is expected to be the primary payer.
3. We examined the extent to which the total Medicaid payment field equaled the sum of the Medicaid payment for Medicare coinsurance and deductible fields on MAX claims flagged as crossovers.

VALIDATION OF AVERAGE PERCENTAGE OF THE MEDICARE COST-SHARING AMOUNT REIMBURSED BY MEDICAID PROGRAMS

Table 1a shows the average percentage of Medicare cost sharing for outpatient E&M services paid by each state's Medicaid program calculated using Medicare and Medicaid claims, with states grouped according to their written policies in 2012 (full payment, lesser-of payment, or other payment), as documented by NORC. This payment percentage is a key variable in analyses examining the impact of Medicaid policies for payment of crossover claims on utilization of services by dually eligible beneficiaries that RTI is conducting for MACPAC. The results of

these validation efforts were important for determining which states have usable data and could be included in these subsequent analyses.

The calculation of the average percentage of Medicare cost sharing paid by Medicaid included claims during months in which the beneficiary (1) was eligible for Medicare Part B, (2) qualified for Medicaid coverage of Medicare cost sharing (full- and partial-benefit Qualified Medicare Beneficiaries [QMBs], full-benefit Specified Low-income Medicare beneficiaries [SLMBs], and other full-benefit dually eligible Medicare beneficiaries who are not eligible for the Medicare Savings Programs), and (3) was not enrolled in a Medicare Advantage plan or a comprehensive or PACE Medicaid managed care plan. The denominator for this measure is the sum of line deductible and line coinsurance amounts on Medicare Part B claims in which (1) the procedure code is an outpatient E&M service (99201–99215 or 99241–99245), (2) the provider specialty code indicates physician or advanced practice provider (nurse practitioner, physician assistant, certified nurse midwife, certified registered nurse anesthetist, or certified clinical nurse specialist) services, and (3) place of service is office. The numerator is the sum of Medicaid payment amounts on claims in the MAX OT file with a procedure code for the outpatient E&M services noted above; physician, nurse midwife, or nurse practitioner type of service; and place of service in an office. Because there should be an associated Medicare claim for all Medicaid crossover claims, we further restricted the numerator to Medicaid claims that matched with a Medicare claim using beneficiary ID, procedure code, and date of service.

The table excludes states in which more than 40% of dually eligible months indicated enrollment in a Medicare or Medicaid managed care plan. We also excluded states with data quality problems for key variables in the MAX data used to calculate the cost-sharing payment percentage—that is, those in which a procedure code was missing on more than 20% of crossover claims in the MAX OT file and those in which the percentage of outpatient E&M claims for dually eligible beneficiaries in the MAX data with a physician type of service was implausibly low. In 2005, 4 full-payment states, 12 lesser-of states, and 1 other state satisfied the criteria for inclusion; for 2009, 3 full-payment states, 16 lesser-of states, and 1 other state satisfied the inclusion criteria. Two full-payment states, 12 lesser-of states, and 1 other state satisfied the criteria in both years.

Our goal in defining the claims to include in the numerator and denominator was to identify comparable sets of claims in the Medicare and Medicaid data. We applied a number of restrictions in order to achieve this goal. We initially selected claims with outpatient E&M procedure codes and physician or advanced practice provider specialties because Medicare should always be the primary payer for these services for dually eligible beneficiaries; any Medicaid claims for these services should be crossover claims to cover the Medicare cost sharing liability.

Although we could not assume that there would be a matching Medicaid claim for all Medicare claims that meet these criteria (because a Medicare provider may not submit a crossover claim to Medicaid), we expected that any Medicaid claim that meets these criteria would be a crossover claim and, therefore, should have a matching Medicare claim. However, when we used only procedure code and provider specialty to identify claims, in some states unexpectedly large percentages of Medicaid claims did not match with a Medicare claim though there was variation across states (data not shown). For example, among the states in ***Table 1-a***, in 2005 we did not find a matching Medicare claim for 10% or more of Medicaid claims with outpatient E&M procedure codes and physician or advanced practice provider specialties in Alaska, Illinois, Michigan, Montana, and West Virginia. In contrast, less than 1% of these Medicaid claims did not match with a Medicare claim in Nebraska, Wyoming, and New Mexico.

There are several challenges to matching Medicare and Medicaid claims. First, as described above, there may be problems with the quality of key variables in the MAX data. In addition, MAX data includes professional and outpatient facility claims in a single file (the OT file), whereas claims for these services are in separate files in the Medicare data (professional claims are in the Part B, or carrier, file; facility claims are in the outpatient file). Thus, claims in the MAX OT file with qualifying procedure and provider specialty codes could include claims from outpatient facilities such as hospital outpatient departments and community health centers, which are not included in the Medicare Part B file. Because we were specifically interested in Medicaid reimbursement of the Medicare cost sharing liability for non-institutional providers, we imposed an additional requirement limiting claims to those with an office place of service. This requirement reduced the percentage of Medicaid claims that did not match with a Medicare claim in some states. In 2005, for example, Alaska, Michigan, and Montana each had 4% or less non-matching Medicaid claims when claims were limited to those with an office place of services (data not shown). Nonetheless, there still remained some unmatched Medicaid claims in all states. Including Medicaid claims without an associated Medicare claim in the numerator would bias our calculation of the cost-sharing payment percentage upward. Therefore, we required that Medicaid claims included in the numerator matched with a Medicare claim using beneficiary ID, procedure code, and date of service

We found a reasonable correspondence between our calculated measure and the states' written policies (***Table 1a***). States with a written policy of reimbursing the full Medicare cost-sharing liability generally had high cost-sharing payment percentages, although Nebraska in 2005 and Mississippi in 2009 each paid only about 65% of the Medicare cost-sharing amount. The cost-sharing payment percentage varied substantially among states with a lesser-of payment policy, ranging from Connecticut, which paid about 10% in 2005 and 11% in 2009, to Alaska, which paid 81% in 2005, and Montana, which paid 93% in 2009. However, most lesser-of states reimbursed 50% or less of the Medicare cost-sharing amount. New York, which had a policy of

paying some other amount, reimbursed about 16% of the Medicare cost-sharing amount in 2005 and 25% in 2009.

Although the cost-sharing payment percentages in full-payment states were generally higher than those in other states, they were typically less than 100%. This could still be consistent with a full-payment policy if Medicare providers do not submit a claim to Medicaid for the crossover payment, perhaps because the provider does not participate in Medicaid or the additional payment is too low to warrant the effort of submitting a claim. To investigate whether the absence of an associated Medicaid crossover claim for Medicare services explained less than 100% reimbursement of the Medicare cost-sharing amounts in full-payment states, we identified Medicare claims for which we could find a matching Medicaid claim based on beneficiary ID, service date, and procedure code. We then calculated the cost-sharing payment percentage for these matching claims only. With the exception of Nebraska in 2005 and Mississippi in 2009, the Medicaid payment in full-payment states was approximately equal to, and in some cases greater than, the Medicare cost-sharing liability. In addition, several states with a lesser-of policy appear to reimburse roughly the full Medicare cost-sharing amount, and sometimes more, when a crossover claim is submitted (Alaska and Maryland in 2005; Alaska, Florida, Maryland, and Montana in 2009). Furthermore, the percentage of Medicare claims with a matching Medicaid claim was generally highest in states with a full-payment policy and in lesser-of states that pay a high percentage of the cost-sharing liability when a crossover claim is submitted. In a few states (Vermont in 2005 and 2009; Maryland and Montana in 2009), the Medicaid payment on matching claims exceeded the Medicare cost-sharing amount by fairly substantial margins (16–21%). The Medicaid payment exceeded the cost-sharing liability on the matching Medicare claim in a relatively large proportion (14–21%) of claims in these states.

Among states that met the inclusion criteria in both years, in most cases the cost-sharing payment percentage increased from 2005 to 2009, although the percentage decreased in a few states (Vermont, Georgia, Illinois, and New Mexico). With the exception of Illinois, this reduction was driven by a decrease in the percentage of Medicare claims with matching crossover claims in the Medicaid data. Some states showed a big change (>10 percentage points) in the average proportion of Medicare cost sharing paid for outpatient E&M services. Nebraska, a full-payment state, paid about 65% of Medicare cost sharing for outpatient E&M services in 2005 and 86% in 2009. The increase in the proportion of Medicare cost sharing paid based on matched claims (from 78% to 99%) suggests that the increase may be due to increased Medicaid payment on MAX crossover claims. Three lesser-of states showed a large increase in the cost-sharing measure as a result of more Medicare claims for outpatient E&M services having a matching MAX crossover claim. One state (Maryland) also saw an increase in the proportion of Medicare claims for which the Medicaid payment amount on the matched MAX claim exceeded the Medicare cost-sharing amount.

During the time period covered by these analyses, outpatient mental health services were subject to a much higher cost-sharing rate and Medicare paid only 50% of the fee schedule amount. Only 12.5% of the fee schedule amount is technically considered coinsurance that qualifies for reimbursement by Medicaid programs for dually eligible beneficiaries. Nonetheless, some state Medicaid programs may make payments based on the full 50%. Therefore, we also calculated the percentage of Medicare cost sharing for outpatient psychotherapy services paid by each state's Medicaid program (***Table 1-b***). The measure differs from the cost-sharing measure for outpatient E&M services in several ways. First, we used claims with a procedure code for outpatient psychotherapy (90804–90815), rather than E&M codes. Second, we expanded the specialty code list to include psychologists and licensed clinical social workers. Third, the Medicare cost-sharing amount was calculated as the line allowed charge minus the line payment and the line penalty amount (if any), rather than as the sum of the line deductible and line coinsurance amounts. The amounts reported in the deductible and coinsurance fields in Medicare claims reflect Medicare's policy of covering a maximum of 62.5% of the fee schedule amount for mental health services. However, as noted, some Medicaid programs may reimburse based on the full fee schedule amount. In addition, there were some inconsistencies in whether the deductible and coinsurance amounts in the Medicare claims reflected the full fee schedule amount or the 62.5% covered by Medicare. Finally, we excluded claims during months when a beneficiary was enrolled in a behavioral health Medicaid managed care plan in addition to claims during months enrolled in a comprehensive or PACE managed care plan. As a result, additional states that enroll a large percentage of dually eligible beneficiaries in behavioral health plans were excluded from the outpatient psychotherapy cost-sharing analyses. In 2005, 4 full-payment states, 11 lesser-of states and 1 other state satisfied the criteria for inclusion; for 2009, 2 full-payment states, 15 lesser-of states, and 1 other state were included. One full-payment state, 11 lesser-of states, and 1 other state are included in both years.

As expected given Medicare limitations on coverage of outpatient mental health services during the study period, with a few exceptions, the percentage of the Medicare cost-sharing amount paid by Medicaid for outpatient psychotherapy was lower than that for outpatient E&M services. In addition, the pattern of full-payment states' having higher payment percentages than lesser-of states was less clear than it was for outpatient E&M services. For 2005, the four full-payment states paid about 27%–83% of Medicare cost sharing for outpatient psychotherapy services. The cost-sharing measure for the lesser-of states ranged from about 2% for Connecticut to 53% for Alaska. The cost-sharing measure for New York (other) was about14% in 2005. Among the full-payment states in 2009, Mississippi paid 15% of the Medicare cost sharing while Vermont paid 71%. The cost-sharing measure for the lesser-of states ranged from about 2% for Florida to 70% for Alaska. The cost-sharing measure for New York (other) was about 28% in 2009. Our results for matched claims show that most states do not limit their reimbursement to the 12.5% of the

fee schedule amount that they are technically required to cover. If states limited their coverage to the 12.5% of the fee schedule amount that is considered coinsurance, then even full-payment states would pay only 25% of the 50% not paid by Medicare. As we found for E&M services, the calculation for matched claims indicates that the Medicaid payment amount in Vermont exceeded the Medicare cost-sharing amount. On the other hand, the low percentages paid for matched claims by some full-payment states (Nebraska in 2005 and Mississippi in 2009) suggest that these states are limiting their reimbursement to the 12.5% of the fee schedule amount that they are required to cover.

Among states that met the inclusion criteria in both years, three lesser-of states and one other state showed a large change (>10 percentage points) in the average proportion of Medicare cost sharing paid for outpatient psychotherapy. Alaska (lesser of) and New York (other) saw an increase in the proportion of Medicare cost sharing paid based on matched claims, suggesting increased Medicaid payment on MAX crossover claims. Louisiana and New Mexico (lesser-of states) saw a decrease in the proportion of Medicare claims used to calculate the cost-sharing measure that found a match in MAX claims, which resulted in a decrease in the average proportion of Medicare cost sharing paid by Medicaid.

DATA QUALITY OF CROSSOVER CLAIMS IN MAX FILES

We conducted two additional sets of analyses to examine the quality of data reporting on crossover claims in MAX data. These analyses were conducted for general purposes of assessing crossover claims in MAX data and were not intended to inform the study of the impact of Medicaid policies for payment of crossover claims on utilization of services by dually eligible beneficiaries.

The first set of analyses compared the extent to which physician, nurse midwife, and nurse practitioner claims for dually eligible beneficiaries were flagged as crossover claims in the MAX OT file (***Table 2***). We assume that most services provided by these providers are covered by Medicare and, therefore, should be identified as crossover claims in the MAX data. In 2005, 95.8% of physician, nurse midwife, and nurse practitioner claims for dually eligible beneficiaries were flagged as crossover claims; by 2009 the percentage increased slightly, to 97.3%. In 2005, 40 states flagged more than 90% of these claims as crossover claims, but three states (District of Columbia, Tennessee, and Texas) did not flag any. In 2009, 44 states flagged more than 90% of these claims as crossover claims, whereas Tennessee and Texas continued to not flag any. In 43 states the percentage flagged as crossover claims remained the same or increased from 2005 to 2009. In the remaining 8 states, the reduction in the percentage flagged as crossover claims was generally small (less than 3%), although Michigan and Washington had larger decreases (7% and 6%, respectively).

To further examine the quality of data reporting on crossover claims, we compared the extent to which the total Medicaid payment field on MAX physician, nurse midwife, and nurse practitioner claims flagged as crossovers equaled the sum of the Medicaid payment for Medicare coinsurance and deductible fields (***Table 3***). According to MSIS reporting instructions, this should hold true for all claims flagged as crossovers. Overall, the total Medicaid paid amount equaled the sum of the deductible and copayment on 60% of crossover claims in 2005. This percentage increased to 67% in 2009. In 2005, the total Medicaid paid amount equaled the sum of the deductible and copayment in more than half the claims in 24 states; 16 states reported more than 90% of claims as such. The number of states with a high percentage of claims for which the total Medicaid payment equaled the payments for deductibles and copayment decreased by 2009: this was true for more than half the claims in 22 states and more than 90% of claims in 13 states. In both years, the percentages varied widely across states. For example, in 2009, the percentage of claims for which the sum of the deductible and copayment equaled the paid amount ranged from 0 in Tennessee and Texas to 100 in New Jersey.

Table 1a. Average Percentage of Medicare Cost Sharing Paid by Medicaid for Evaluation and Management Services, by State Medicaid Payment Policies for Medicare Cost Sharing

	2005				2009			
State[a]	Average Percentage of Medicare Cost Sharing Paid for E&M Services[b]	Percentage of Medicare Claims for E&M With a Matching Medicaid Claim	Average Percentage of Medicare Cost Sharing Paid for E&M Services Based on Matched Claims[c]	Percentage of Matched Claims for Which the Medicaid Payment Amount Exceeds the Medicare Cost-Sharing Liability	Average Percentage of Medicare Cost Sharing Paid for E&M Services[b]	Percentage of Medicare Claims for E&M With a Matching Medicaid Claim	Average Percentage of Medicare Cost Sharing Paid for E&M Services Based on Matched Claims[c]	Percentage of Matched Claims for Which the Medicaid Payment Amount Exceeds the Medicare Cost-Sharing Liability
Full Payment								
Hawaii	91.4%	89.4%	101.1%	1.1%				
Mississippi					65.4%	74.1%	84.4%	6.8%
Nebraska	64.5%	81.7%	77.5%	1.0%	85.5%	85.5%	99.3%	2.3%
Vermont	103.7%	84.4%	120.5%	14.0%	98.1%	78.9%	120.6%	19.1%
Wyoming	94.1%	81.5%	104.2%	2.4%				
Lesser of								
Alabama					26.9%	23.8%	66.9%	0.2%
Alaska	81.4%	82.1%	100.3%	1.5%	91.2%	89.4%	100.8%	2.9%
Connecticut	9.7%	7.8%	41.1%	1.7%	11.3%	8.0%	49.9%	3.9%
Florida					16.0%	8.8%	105.7%	61.3%
Georgia	30.6%	58.2%	46.7%	0.1%	21.9%	20.7%	60.4%	0.3%
Illinois	16.9%	11.8%	61.7%	9.5%	13.8%	11.9%	48.0%	6.3%
Kentucky					24.2%	27.8%	58.4%	0.7%
Louisiana	19.9%	21.9%	52.3%	2.9%	42.1%	64.7%	58.0%	2.2%
Maryland	61.0%	61.9%	98.8%	3.0%	79.8%	71.2%	115.9%	13.6%
Massachusetts	17.0%	12.0%	56.8%	11.5%	23.9%	17.0%	70.1%	10.9%
Michigan	11.1%	7.0%	54.1%	0.5%	13.1%	8.8%	47.8%	0.5%
Montana	55.2%	53.7%	87.6%	11.8%	92.9%	72.7%	116.1%	18.7%
New Mexico	42.8%	86.9%	49.3%	1.6%	31.8%	36.5%	79.5%	1.9%
North Dakota					71.2%	72.7%	93.8%	3.6%
South Carolina	16.6%	10.0%	62.8%	4.7%	23.0%	26.9%	57.5%	4.4%
West Virginia	24.3%	14.5%	71.5%	3.0%	28.5%	17.6%	73.9%	10.3%
Other								
New York	16.3%	41.2%	35.9%	1.9%	24.9%	52.2%	44.9%	1.6%

Notes

a States are grouped on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey.

b Includes claims during months in which a beneficiary was eligible for Medicare Part B, eligible for Medicaid coverage of Medicare cost sharing, and not enrolled in a Medicare Advantage plan or a comprehensive or PACE Medicaid managed care plan.
Denominator = the sum of line deductible and line coinsurance on Medicare Part B claims for outpatient evaluation and management (E&M) visits in which provider specialty indicates physician or advanced practice provider services, and place of service is office.
Numerator = the sum of Medicaid payment amount on claims in the MAX OT file for outpatient evaluation and management visits in which MSIS type of service is physician, nurse midwife, or nurse practitioner; place of service indicates office; and a matching Medicare Part B claim was found.

c Includes claims during months in which a beneficiary was eligible for Medicare Part B, eligible for Medicaid coverage of Medicare cost sharing, and not enrolled in a Medicare Advantage plan or a comprehensive or PACE Medicaid managed care plan.
Denominator = the sum of line deductible and line coinsurance on Medicare Part B claims for outpatient E&M visits in which provider specialty indicates physician or advanced practice provider services, place of service is office, and a matching MAX claim was found.
Numerator = the sum of Medicaid payment amount on claims in the MAX OT file identified as a match for the qualifying Medicare Part B claims in the denominator.

Gray shading indicates that the state is excluded for that year.

Table 1b. Average Percentage of Medicare Cost Sharing Paid by Medicaid for Outpatient Psychotherapy Services, by State Medicaid Payment Policies for Medicare Cost Sharing

State[a]	2005				2009			
	Average Percentage of Medicare Cost Sharing Paid for Outpatient Psychotherapy [b]	Percentage of Medicare Claims for Outpatient Psychotherapy With a Matching Medicaid Claim	Average Percentage of Medicare Cost Sharing Paid for Outpatient Psychotherapy Based on Matched Claims[c]	Percentage of Matched Claims for Which the Medicaid Payment Amount Exceeds the Medicare Cost-Sharing Liability	Average Percentage of Medicare Cost Sharing Paid for Outpatient Psychotherapy [b]	Percentage of Medicare Claims for Outpatient Psychotherapy With a Matching Medicaid Claim	Average Percentage of Medicare Cost Sharing Paid for Outpatient Psychotherapy Based on Matched Claims[c]	Percentage of Matched Claims for Which the Medicaid Payment Amount Exceeds the Medicare Cost-Sharing Liability
Full Payment								
Hawaii	82.5%	84.5%	96.8%	0.4%				
Mississippi					15.2%	69.1%	22.0%	0.7%
Nebraska	26.7%	92.9%	28.0%	0.3%				
Vermont	72.5%	48.0%	143.3%	28.8%	71.1%	56.4%	123.7%	18.7%
Wyoming	63.8%	85.2%	74.9%	0.1%				
Lesser of								
Alabama					13.5%	49.4%	27.2%	0.1%
Alaska	53.3%	82.4%	64.8%	0.2%	69.5%	82.7%	81.4%	0.1%
Connecticut	1.9%	31.9%	6.3%	0.2%	2.3%	42.6%	5.7%	5.8%
Florida					1.5%	3.6%	32.2%	0.0%
Georgia	18.6%	72.5%	25.9%	0.0%	21.1%	69.4%	30.5%	0.1%
Illinois	3.1%	4.8%	46.7%	8.3%	2.5%	4.8%	35.4%	0.0%
Kentucky					18.3%	62.0%	27.9%	0.1%
Louisiana	27.9%	43.9%	63.4%	0.0%	12.0%	36.1%	36.4%	2.5%
Maryland	34.6%	54.2%	63.9%	14.9%	27.4%	56.5%	48.6%	12.7%
Massachusetts	8.2%	73.8%	11.4%	0.1%	15.4%	73.6%	21.1%	1.0%
Montana	44.1%	57.2%	74.2%	14.3%	46.3%	63.3%	71.3%	19.1%
New Mexico	46.2%	81.8%	56.5%	0.2%	21.9%	38.2%	58.4%	0.1%
North Dakota					46.6%	85.1%	53.5%	0.6%
South Carolina	18.2%	36.7%	50.4%	12.7%	20.0%	35.7%	57.6%	7.5%
West Virginia	29.4%	62.7%	41.9%	0.7%	36.6%	80.2%	45.2%	0.0%
Other								
New York	14.4%	15.9%	56.2%	3.4%	27.8%	16.3%	93.2%	4.9%

Notes: [a]States are grouped on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey. [b]Includes claims during months in which a beneficiary was eligible for Medicare Part B; eligible for Medicaid coverage of Medicare cost sharing; and not enrolled in a Medicare Advantage plan or a comprehensive, behavioral health, or PACE Medicaid managed care plan. Denominator = the sum of line allowed charge minus line payment and penalty amount on Medicare Part B claims for outpatient psychotherapy claims for which provider specialty indicates physician, advanced practice provider, psychologist, or licensed clinical social worker services and place of service is office. Numerator = the sum of Medicaid payment amount on claims in the MAX OT file for outpatient psychotherapy claims for which MSIS type of service is physician, nurse midwife, nurse practitioner, or other practitioners; place of service is office; and a matching Medicare Part B claim was found. [c]Includes claims during months in which a beneficiary was eligible for Medicare Part B; eligible for Medicaid coverage of Medicare cost sharing; and not enrolled in a Medicare Advantage plan or a comprehensive, behavioral health, or PACE Medicaid managed care plan. Denominator = the sum of line deductibles and line coinsurance on Medicare Part B claims for outpatient psychotherapy claims for which provider specialty indicates physician, advanced practice provider, psychologist, or licensed clinical social worker services; place of service is office; and a matching MAX claim was found. Numerator = the sum of Medicaid payment amount on claims in the MAX OT file identified as a match for the qualifying Medicare Part B claims in the denominator.

Gray shading indicates that the state is excluded for that year.

Table 2. Percentage of Physician, Nurse Midwife, and Nurse Practitioner Claims for Dually Eligible Beneficiaries Flagged as Crossover Claims in MAX Data, 2005 and 2009

States	2005	2009	States	2005	2009
Alabama	99.0	99.2	Nebraska	98.7	99.0
Alaska	92.7	95.4	New Hampshire	92.1	93.7
Arkansas	99.1	99.3	New Jersey	91.2	94.6
California	94.5	96.4	New Mexico	98.9	99.6
Colorado	89.3	97.3	New York	97.1	99.3
Connecticut	91.9	90.7	Nevada	98.6	99.5
Delaware	98.8	99.5	North Carolina	98.3	98.3
District of Columbia	0.0	92.4	North Dakota	92.1	94.6
Florida	77.0	90.0	Ohio	98.2	99.5
Georgia	97.4	97.3	Oklahoma	98.2	97.2
Hawaii	95.6	98.9	Oregon	96.7	94.1
Idaho	98.7	99.1	Pennsylvania	85.2	94.5
Illinois	88.7	90.0	Rhode Island	81.4	87.9
Indiana	91.9	96.4	South Carolina	96.4	98.8
Iowa	98.6	98.8	South Dakota	98.4	98.8
Kansas	97.3	98.2	Tennessee	0.0	0.0
Kentucky	94.9	97.6	Texas	0.0	0.0
Louisiana	96.9	99.8	Utah	91.4	94.7
Maryland	99.5	99.5	Vermont	94.5	97.1
Massachusetts	90.9	93.1	Virginia	98.3	98.3
Michigan	92.5	85.5	Washington	90.1	83.9
Minnesota	97.0	98.3	West Virginia	75.2	94.2
Mississippi	96.3	99.1	Wisconsin	93.0	90.6
Missouri	97.5	94.8	Wyoming	99.4	98.6
Montana	95.5	96.8	**Total**	**95.8**	**97.3**

Note: Includes all claims in MAX OT file that had MAX Type of Service = 8, 36, or 37 and that occurred during a month when a beneficiary was enrolled in Medicare Part B, not enrolled in Medicare Advantage or a comprehensive or PACE Medicaid managed care plan, and eligible for Medicaid coverage of Medicare cost sharing.

Table 3. Reporting of Cost Sharing and Paid Amount on Physician, Nurse Midwife, and Nurse Practitioner Crossover Claims in MAX Data, 2005 and 2009

	Percentage of Claims for Which Medicare Deductible + Medicare Coinsurance Payment Amount...							
	2005				2009			
States	= 0	< Medicaid Payment Amount	> Medicaid Payment Amount	= Medicaid Payment Amount	= 0	< Medicaid Payment Amount	> Medicaid Payment Amount	= Medicaid Payment Amount
Alabama	3.6	2.5	87.5	6.4	0.0	0.1	64.8	35.2
Alaska	0.0	0.2	0.4	99.4	0.0	0.3	0.3	99.4
Arkansas	0.0	0.4	0.4	99.2	0.9	1.1	0.4	97.6
California	0.0	0.1	0.1	99.9	0.0	0.0	0.0	99.9
Colorado	0.0	0.0	70.7	29.2	0.0	0.1	85.1	14.8
Connecticut	0.0	0.1	0.1	99.9	0.0	0.2	0.2	99.7
Delaware	0.0	0.0	82.1	17.9	0.1	0.0	80.4	19.4
District of Columbia	0.0	0.0	0.0	0.0	1.3	26.2	0.5	72.0
Florida	0.1	0.0	0.0	99.9	0.1	17.2	22.1	60.7
Georgia	0.0	0.0	80.3	19.7	0.0	0.0	65.0	34.9
Hawaii	0.0	1.4	0.3	98.3	0.0	1.1	1.5	97.5
Idaho	0.0	1.5	74.4	24.1	0.0	3.0	71.3	25.8
Illinois	0.0	2.7	55.8	41.5	0.0	3.5	36.4	60.1
Indiana	0.1	9.5	44.9	45.4	1.4	5.7	46.8	46.0
Iowa	0.7	26.1	50.0	23.3	0.7	22.8	55.4	21.1
Kansas	1.0	1.7	35.9	61.4	0.1	4.3	54.5	41.2
Kentucky	0.0	1.3	71.4	27.2	4.4	0.0	48.4	47.1
Louisiana	0.0	1.5	42.4	56.1	0.0	1.6	69.2	29.2
Maryland	0.0	1.1	0.2	98.7	0.0	1.1	0.2	98.8
Massachusetts	0.0	0.2	47.3	52.4	8.3	4.4	60.8	26.5
Michigan	24.7	11.6	63.3	0.5	9.6	18.0	51.3	21.1
Minnesota	2.6	2.5	0.5	94.4	3.0	0.3	0.7	96.1
Mississippi	0.8	0.5	83.0	15.7	3.5	11.3	71.6	13.6
Missouri	0.0	0.0	0.1	99.9	0.0	0.0	0.1	99.9
Montana	0.8	10.3	82.9	6.0	0.4	5.3	42.4	51.9

(continued)

Table 3. Reporting of Cost Sharing and Paid Amount on Physician, Nurse Midwife and Nurse Practitioner Crossover Claims in MAX Data, 2005 and 2009 (continued)

	Percentage of Claims for Which Medicare Deductible + Medicare Coinsurance Payment Amount...							
	2005				2009			
States	= 0	< Medicaid Payment Amount	= 0	< Medicaid Payment Amount	= 0	< Medicaid Payment Amount	= 0	< Medicaid Payment Amount
Nebraska	0.6	0.7	54.0	44.7	0.8	0.7	51.3	47.3
Nevada	0.2	0.3	45.3	54.2	0.0	0.0	99.5	0.5
New Hampshire	0.0	2.5	25.3	72.2	0.0	2.8	27.3	69.9
New Jersey	0.0	0.1	0.0	99.9	0.0	0.0	0.0	100.0
New Mexico	0.1	0.1	67.5	32.3	0.3	0.2	50.1	49.4
New York	11.6	0.0	0.3	88.1	11.4	0.0	0.0	88.7
North Carolina	0.5	0.4	98.9	0.2	0.6	3.2	63.9	32.3
North Dakota	0.2	0.8	0.7	98.3	4.0	0.1	33.0	62.9
Ohio	0.0	0.2	0.7	99.1	0.0	0.2	0.5	99.3
Oklahoma	0.3	5.7	62.3	31.7	0.0	3.8	16.0	80.2
Oregon	100.0	0.0	0.0	0.0	22.2	0.2	47.7	30.0
Pennsylvania	0.3	2.1	39.6	58.0	0.0	0.2	78.7	21.1
Rhode Island	0.0	0.0	80.7	19.3	0.0	0.0	70.6	29.4
South Carolina	0.0	0.0	0.1	99.9	0.0	0.0	0.1	99.9
South Dakota	0.0	0.3	0.3	99.5	0.0	0.3	0.4	99.3
Tennessee	NA	NA	NA	NA	NA	NA	NA	NA
Texas	NA	NA	NA	NA	NA	NA	NA	NA
Utah	0.9	0.1	62.9	36.1	6.6	12.5	55.4	25.5
Vermont	86.5	6.3	0.4	6.8	96.6	1.7	0.0	1.7
Virginia	0.0	0.1	30.6	69.3	0.0	0.1	43.6	56.4
Washington	42.9	9.9	24.5	22.8	59.7	7.6	24.0	8.7
West Virginia	2.2	2.7	64.1	31.0	0.7	2.8	74.5	22.1
Wisconsin	0.0	0.4	0.9	98.6	0.4	3.7	50.9	44.9
Wyoming	0.0	0.6	0.7	98.7	0.0	0.2	0.5	99.3
Total	3.0	1.6	35.1	60.3	3.5	2.6	27.1	66.8

Note: Includes all claims in MAX OT file with MAX Type of Service = 8, 36, or 37 that are identified as crossover claims and that occurred during a month when a beneficiary was enrolled in Medicare Part B, not enrolled in Medicare Advantage or a comprehensive or PACE Medicaid managed care plan, and eligible for Medicaid coverage of Medicare cost sharing. NA = State had no claims reported as crossover claims.

APPENDIX E:
ADDITIONAL ANALYTIC TABLES

Appendix Table E-1
Annualized Number of Visits for Evaluation and Management and Safety Net Provider Services, 2009

State	Beneficiary Group	Office or Other Outpatient E&M Visit			Safety Net Provider Visit	
		Annualized Number of Visits (users only)	Annualized Number of Visits with Primary Care Providers (users only)	Annualized Number of Visits with Specialists (users only)	Annualized Number of FQHC or RHC Visits (users only)	Annualized Number of Outpatient Department E&M Visits (users only)
	High Medicaid Payment [a]					
AK [LO]	Medicare-Medicaid	7.7**	5.6**	3.9**	4.2**	4.2**
	Medicare-only	6.4	4.2	3.7	3.3	3.5
MD [LO]	Medicare-Medicaid	8.6**	5.3**	5.2**	4.6**	3.3**
	Medicare-only	9.1	4.5	5.7	3.6	2.7
MT [LO]	Medicare-Medicaid	7.5**	5.4**	4.2**	5.8**	5.3**
	Medicare-only	6.8	4.3	3.9	4.0	4.2
NE [FP]	Medicare-Medicaid	8.0**	5.6**	4.2**	5.8**	2.7**
	Medicare-only	7.3	4.6	4.1	4.7	2.5
VT [FP]	Medicare-Medicaid	7.1**	5.1**	4.1	5.3**	4.2**
	Medicare-only	6.7	4.2	4.1	4.1	3.8
	Medium Medicaid Payment [a]					
AL [LO]	Medicare-Medicaid	8.0**	5.3**	4.6**	4.9**	2.9**
	Medicare-only	8.5	4.5	5.2	4.2	2.6
LA [LO]	Medicare-Medicaid	7.8**	4.9**	5.0**	4.6**	3.6**
	Medicare-only	8.2	4.1	5.5	3.5	3.3
MS [FP]	Medicare-Medicaid	7.4**	5.2**	4.5**	5.1**	3.0**
	Medicare-only	7.8	4.5	4.8	4.1	2.6

(continued)

Appendix Table E-1 (continued)
Annualized Number of Visits for Evaluation and Management and Safety Net Provider Services, 2009

State	Beneficiary Group	Office or Other Outpatient E&M Visit			Safety Net Provider Visit	
		Annualized Number of Visits (users only)	Annualized Number of Visits with Primary Care Providers (users only)	Annualized Number of Visits with Specialists (users only)	Annualized Number of FQHC or RHC Visits (users only)	Annualized Number of Outpatient Department E&M Visits (users only)
NM [LO]	Medicare-Medicaid	7.6*	5.6**	4.0**	5.1**	4.8**
	Medicare-only	7.5	4.5	4.5	3.9	4.0
ND [LO]	Medicare-Medicaid	6.3*	4.5**	3.6	6.1**	4.8**
	Medicare-only	6.5	4.1	3.7	4.7	4.5
WV [LO]	Medicare-Medicaid	7.9**	5.3**	4.8**	5.2**	3.2**
	Medicare-only	7.6	4.5	4.6	4.1	2.7
	Low Medicaid Payment [a]					
CT [LO]	Medicare-Medicaid	8.1**	4.9**	5.1**	5.1**	3.2**
	Medicare-only	9.2	4.5	5.7	3.8	2.5
FL [LO]	Medicare-Medicaid	10.0**	6.0**	6.1**	5.2**	3.5**
	Medicare-only	11.0	5.0	7.0	4.2	3.2
GA [LO]	Medicare-Medicaid	9.0**	5.5**	5.6**	5.0**	3.6**
	Medicare-only	9.1	4.6	5.8	4.1	2.9
IL [LO]	Medicare-Medicaid	8.0**	5.3**	4.8**	5.0**	4.0**
	Medicare-only	8.0	4.3	5.0	4.2	3.3
KY [LO]	Medicare-Medicaid	8.3**	5.9**	4.6**	6.3**	2.7**
	Medicare-only	8.2	4.8	4.8	4.9	2.6
MA [LO]	Medicare-Medicaid	8.1**	5.0**	4.8**	5.3**	4.8**
	Medicare-only	8.6	4.5	5.3	4.5	3.9

(continued)

Appendix Table E-1 (continued)
Annualized Number of Visits for Evaluation and Management and Safety Net Provider Services, 2009

State	Beneficiary Group	Office or Other Outpatient E&M Visit			Safety Net Provider Visit	
		Annualized Number of Visits (users only)	Annualized Number of Visits with Primary Care Providers (users only)	Annualized Number of Visits with Specialists (users only)	Annualized Number of FQHC or RHC Visits (users only)	Annualized Number of Outpatient Department E&M Visits (users only)
MI [LO]	Medicare-Medicaid	8.2**	5.7**	4.6**	5.0**	3.8**
	Medicare-only	8.1	4.6	4.8	3.9	3.4
NY [OT]	Medicare-Medicaid	10.5**	6.4**	6.0**	5.4**	4.4**
	Medicare-only	10.1	4.8	6.5	4.2	3.6
SC [LO]	Medicare-Medicaid	8.0**	5.2**	5.1**	5.1**	3.8**
	Medicare-only	8.9	4.7	5.5	4.4	3.0

NOTES: The table includes states that met the study inclusion criteria for 2009. E&M = evaluation and management; FP = full payment on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey; FQHC = federally qualified health center; LO = lesser of; OT = other; RHC = rural health clinic.

[a] High Medicaid payment = average percentage of Medicare cost sharing paid > 75%; medium Medicaid payment = average percentage of Medicare cost sharing paid > 25% & ≤ 75%; low Medicaid payment = average percentage of Medicare cost sharing paid ≤ 25%.

** Significantly different from Medicare-only at 0.01 level.

* Significantly different from Medicare-only at 0.05 level.

SOURCE: Data for table come from descriptives for outcomes by dual status 2009 (Program: \\wallsas03.waltham.rti.org\vol3\project\0213459\002_Dual_Cost_Sharing\pgm\bbaker\programs\ntz18_v4.sas).

Appendix Table E-2
Utilization of Office and Other Outpatient Evaluation and Management Services, Preventive Services, and Safety Net Provider Services, 2005

State	Beneficiary group	Had at least one office or other outpatient E&M visit (%)			Had a preventive service (%)		Had at least one visit to safety net provider (%)	
		Any visit	Visit with PCP	Visit with specialist	Flu shot	Mammography (female only)	FQHC or RHC visit	Hospital outpatient department E&M visit
	High Medicaid Payment [a]							
AK [LO]	Medicare-Medicaid	73.7**	62.5**	44.8**	7.8**	20.6**	11.0**	25.7**
	Medicare-only	77.3	64.9	52.1	19.5	37.8	4.7	15.3
HI [FP]	Medicaid-Medicare	78.2**	66.0**	49.8**	29.5**	17.4**	9.5**	7.4**
	Medicare-only	83.1	72.2	63.9	43.3	40.2	2.8	14.1
VT [FP]	Medicaid-Medicare	71.1**	55.5**	48.9**	18.1**	22.1**	20.9**	17.6**
	Medicare-only	83.3	68.1	62.7	31.0	45.9	13.3	21.6
WY [FP]	Medicaid-Medicare	76.4**	62.8**	50.0**	25.7**	15.9**	18.1**	7.2**
	Medicare-only	83.1	68.0	59.5	45.1	33.4	11.8	8.9
	Medium Medicaid Payment [a]							
GA [LO]	Medicaid-Medicare	78.7**	62.6**	55.7**	18.7**	21.0**	10.1**	12.9**
	Medicare-only	87.9	73.9	70.0	41.9	40.0	4.0	7.4
MD [LO]	Medicaid-Medicare	76.0**	60.3**	54.5**	20.6**	21.7**	4.9**	9.3**
	Medicare-only	86.9	74.1	69.8	42.3	40.3	1.0	7.2
MT [LO]	Medicaid-Medicare	72.1**	55.9**	46.9**	17.4**	18.9**	24.2**	25.2**
	Medicare-only	81.6	67.2	58.4	35.6	40.2	15.1	27.6
NE [FP]	Medicaid-Medicare	82.2**	68.1**	54.5**	28.8**	20.0**	18.3**	16.3**
	Medicare-only	85.5	71.3	60.9	46.4	38.6	16.3	14.7

(continued)

Appendix Table E-2 (continued)
Utilization of Office and Other Outpatient Evaluation and Management Services, Preventive Services, and Safety Net Provider Services, 2005

State	Beneficiary group	Had at least one office or other outpatient E&M visit (%)			Had a preventive service (%)		Had at least one visit to safety net provider (%)	
		Any visit	Visit with PCP	Visit with specialist	Flu shot	Mammography (female only)	FQHC or RHC visit	Hospital outpatient department E&M visit
NM [LO]	Medicaid-Medicare	76.6**	62.2**	48.7**	12.9**	17.3**	20.4**	24.1**
	Medicare-only	80.8	67.3	59.3	25.7	34.4	10.0	17.6
	Low Medicaid Payment [a]							
CT [LO]	Medicaid-Medicare	71.9**	51.5**	56.1**	18.1**	24.2**	10.2**	9.4**
	Medicare-only	89.5	78.3	72.1	43.7	44.8	0.8	7.2
IL [LO]	Medicaid-Medicare	70.5**	51.4**	50.3**	14.2**	19.5**	13.8**	14.2**
	Medicare-only	84.7	70.1	64.6	38.0	39.5	7.0	12.8
LA [LO]	Medicaid-Medicare	78.4**	62.0**	55.0**	15.8**	20.3**	9.8**	12.2**
	Medicare-only	86.7	71.9	69.4	37.9	37.6	4.7	8.6
MA [LO]	Medicaid-Medicare	77.9**	62.5**	57.4**	16.1**	27.3**	8.6**	29.1**
	Medicare-only	87.6	74.1	70.5	36.4	44.9	1.1	24.7
MI [LO]	Medicaid-Medicare	73.5**	57.0**	51.2**	20.1**	21.3**	13.5**	16.2**
	Medicare-only	88.3	76.5	66.9	43.8	43.6	7.1	14.8
SC [LO]	Medicaid-Medicare	77.3**	56.6**	56.8**	17.4**	21.9**	24.5**	11.5**
	Medicare-only	87.5	73.5	70.0	38.7	40.6	8.9	8.1
WV [LO]	Medicaid-Medicare	73.7**	54.6**	53.0**	17.9**	20.9**	25.9**	11.3**
	Medicare-only	84.2	69.1	63.5	37.0	39.6	14.8	10.4
NY [OT]	Medicaid-Medicare	76.6**	61.4**	56.1**	20.0**	21.9**	4.6**	21.4**
	Medicare-only	85.3	69.8	69.2	39.9	38.1	1.3	12.8

(continued)

Appendix Table E-2 (continued)
Utilization of Office and Other Outpatient Evaluation and Management Services, Preventive Services, and Safety Net Provider Services, 2005

NOTES: The table includes states that met the study inclusion criteria for 2005.

a High Medicaid payment = Average percentage of Medicare costing sharing paid > 75%; Medium Medicaid payment = Average percentage of Medicare costing sharing paid > 25% & ≤ 75%; Low Medicaid payment = Average percentage of Medicare costing sharing paid ≤ 25%.

FP = Full payment on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey; LO = Lessor of; OT= Other.

** Significantly different from Medicare-only at 0.01 level.

* Significantly different from Medicare-only at 0.05 level.

SOURCE: Data for table comes from descriptives for outcomes by dual status 2005 (Program: \\wallsas03.waltham.rti.org\vol3\project\0213459\002_Dual_Cost_Sharing\pgm\bbaker\programs\ntz18_v4.sas).

Appendix Table E-3
Annualized Number of Visits for Evaluation and Management and Safety Net Provider Services, 2005

State	Beneficiary Group	Office or Other Outpatient E&M Visit			Safety Net Provider Visit	
		Annualized Number of Visits (users only)	Annualized Number of Visits with Primary Care Providers (users only)	Annualized Number of Visits with Specialists (users only)	Annualized Number of FQHC or RHC Visits (users only)	Annualized Number of Outpatient Department E&M Visits (users only)
	High Medicaid Payment [a]					
AK [LO]	Medicare-Medicaid	7.9**	5.9**	4.1**	5.0**	4.3**
	Medicare-only	6.4	4.3	3.7	3.6	3.4
HI [FP]	Medicaid-Medicare	9.5**	7.2**	4.9**	5.9**	5.0*
	Medicare-only	9.2	5.5	5.4	4.8	5.4
VT [FP]	Medicaid-Medicare	7.3**	5.6**	3.9	6.1**	3.1
	Medicare-only	6.8	4.4	3.9	4.5	3.1
WY [FP]	Medicaid-Medicare	7.3**	5.3**	4.0	6.3**	2.4
	Medicare-only	6.6	4.2	4.0	4.4	2.3
	Medium Medicaid Payment [a]					
GA [LO]	Medicaid-Medicare	8.1**	5.4**	4.9**	5.3**	3.6**
	Medicare-only	8.4	4.6	5.3	4.2	2.9
MD [LO]	Medicaid-Medicare	8.0**	5.3**	4.8**	4.4**	3.2**
	Medicare-only	8.5	4.5	5.3	3.6	2.6
MT [LO]	Medicaid-Medicare	7.4**	5.4**	4.1**	6.1**	4.9**
	Medicare-only	6.6	4.4	3.8	4.1	4.1
NE [FP]	Medicaid-Medicare	7.9**	5.7**	4.0**	6.3**	2.7**
	Medicare-only	7.1	4.7	3.9	4.8	2.4

(continued)

Appendix Table E-3 (continued)
Annualized Number of Visits for Evaluation and Management and Safety Net Provider Services, 2005

State	Beneficiary Group	Office or Other Outpatient E&M Visit			Safety Net Provider Visit	
		Annualized Number of Visits (users only)	Annualized Number of Visits with Primary Care Providers (users only)	Annualized Number of Visits with Specialists (users only)	Annualized Number of FQHC or RHC Visits (users only)	Annualized Number of Outpatient Department E&M Visits (users only)
NM [LO]	Medicaid-Medicare	7.4	5.5**	3.9**	5.5**	4.3**
	Medicare-only	7.4	4.7	4.3	4.3	3.4
	Low Medicaid Payment [a]					
CT [LO]	Medicaid-Medicare	7.4**	4.9**	4.6**	5.3**	3.3**
	Medicare-only	8.5	4.5	5.2	3.7	2.4
IL [LO]	Medicaid-Medicare	7.6	5.3**	4.5**	4.9**	3.8**
	Medicare-only	7.6	4.3	4.7	4.2	3.1
LA [LO]	Medicaid-Medicare	7.2**	4.8**	4.5**	4.5**	3.3**
	Medicare-only	7.6	4.0	5.1	3.6	3.0
MA [LO]	Medicaid-Medicare	7.5**	4.9**	4.6**	5.4**	4.5**
	Medicare-only	8.0	4.4	5.0	4.7	3.7
MI [LO]	Medicaid-Medicare	7.7**	5.6**	4.3**	5.2**	3.7**
	Medicare-only	7.9	4.7	4.5	3.9	3.4
SC [LO]	Medicaid-Medicare	7.6**	5.2**	4.7**	5.4**	3.6**
	Medicare-only	8.3	4.7	5.1	4.6	3.0
WV [LO]	Medicaid-Medicare	7.5*	5.4**	4.4	5.7**	3.1**
	Medicare-only	7.4	4.6	4.4	4.5	2.5
NY [OT]	Medicaid-Medicare	9.5**	6.2**	5.3**	5.4**	4.4**
	Medicare-only	9.3	4.9	5.9	4.4	3.5

(continued)

Appendix Table E-3 (continued)
Annualized Number of Visits for Evaluation and Management and Safety Net Provider Services, 2005

NOTES: The table includes states that met the study inclusion criteria for 2005.

[a] High Medicaid payment = Average percentage of Medicare costing sharing paid > 75%; Medium Medicaid payment = Average percentage of Medicare costing sharing paid > 25% & ≤ 75%; Low Medicaid payment = Average percentage of Medicare costing sharing paid ≤ 25%.

FP = Full payment on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey; LO = Lessor of; OT= Other.

** Significantly different from Medicare-only at 0.01 level.

* Significantly different from Medicare-only at 0.05 level.

SOURCE: Data for table comes from descriptives for outcomes by dual status 2005 (Program: \\wallsas03.waltham.rti.org\vol3\project\0213459\002_Dual_Cost_Sharing\pgm\bbaker\programs\ntz18_v4.sas).

Table E-4
Logistic Regression Results from the Main Model for Utilization of Evaluation and Management Services, Preventive Services, and Safety Net Provider Services

Covariate	Had at Least One Office or Other Outpatient E&M Visit			Had a Preventive Service		Had at Least One Safety Net Provider Visit	
	Any Visit, Odds Ratio	Visit with PCP, Odds Ratio	Visit with Specialist, Odds Ratio	Flu Shot, Odds Ratio	Mammography (female only) , Odds Ratio	FQHC or RHC Visit, Odds Ratio	Hospital Outpatient Department E&M Visit, Odds Ratio
Age (reference = 65–74 years)							
Less than 65 years	0.71 **	0.76 **	0.71 **	0.56 **	0.69 **	1.23 **	1.02 **
75–84 years	1.59 **	1.29 **	1.44 **	1.35 **	0.73 **	0.95 **	1.16 **
85+ years	0.84 **	0.85 **	0.9 **	1.05 **	0.22 **	0.80 **	0.95 **
Female	1.50 **	1.46 **	1.09 **	1.23 **		1.17 **	1.05 **
Race (reference = white)							
Black	0.60 **	0.67 **	0.64 **	0.43 **	0.90 **	1.32 **	1.04 **
Asian	0.75 **	0.92 **	0.61 **	1.19 **	0.61 **	1.13 **	0.69 **
Hispanic	0.66 **	0.76 **	0.70 **	0.55 **	0.85 **	1.70 **	0.99
Native American	0.71 **	0.89 **	0.53 **	0.27 **	0.55 **	1.15 **	4.90 **
Other or unknown	0.66 **	0.75 **	0.71 **	0.71 **	0.75 **	0.88 **	0.93 **
Original entitlement due to disability	0.99	0.99	1.12 **	0.94 **	0.77 **	1.22 **	1.22 **

(continued)

Appendix Table E-4 (continued)
Multivariate Regression Results from the Main Model for Utilization of Evaluation and Management Services, Preventive Services, and Safety Net Provider Services

	Had at Least One Office or Other Outpatient E&M Visit			Had a Preventive Service		Had at Least One Safety Net Provider Visit	
Covariate	Any Visit, Odds Ratio	Visit with PCP, Odds Ratio	Visit with Specialist, Odds Ratio	Flu Shot, Odds Ratio	Mammography (female only) , Odds Ratio	FQHC or RHC Visit, Odds Ratio	Hospital Outpatient Department E&M Visit, Odds Ratio
Lives in metropolitan statistical area	1.33 **	1.51 **	1.30 **	1.30 **	1.12 **	0.35 **	0.72 **
Number of active non-federal physicians per 1,000 population	0.99 **	0.97 **	1.02 **	0.99**	1.03 **	0.78 **	1.12 **
Number of hospital beds per 1,000 population	1.00 **	1.01 **	0.99 **	1.00 **	1.00	1.01 **	1.00 *
Percent persons in poverty[a]	0.95 **	0.93 **	0.96 **	0.92 **	0.93 **	1.46 **	0.84 **
Percent persons 65+[a]	1.12 **	0.99 **	1.23 **	1.07 **	1.26 **	1.85 **	0.92 **
Medicare managed care penetration rate[a]	0.96 **	0.97 **	0.99 **	0.97 **	0.99 **	0.83 **	1.12 **
N	5,053,064	5,053,064	5,053,064	5,053,064	2,975,640	5,053,064	5,053,064

NOTES: Dual, average percentage of Medicare cost sharing paid, and their interaction were included in the logistic regression models, but they are not reported in this table. E&M = evaluation and management; FQHC = federally qualified health center; PCP = primary care provider; RHC = rural health clinic.

[a] Odds ratio reported is the change in the odds of having the outcome given a 10-percentage-point change in the independent variable.

** Statistically significant at 0.01 level.

* Statistically significant at 0.05 level.

SOURCE: RTI analysis \\rtimas04\hser\Project\0213459\002_Dual_Cost_Sharing\common\bbaker\ntz20_v5.

Appendix Table E-5
Summary of Results from Logistic Regression Models for Utilization of Evaluation and Management Services, Preventive Services, and Safety Net Provider Services

Model	Variable(s) of interest	Had at Least One Office or Other Outpatient E&M Visit			Had a Preventive Service		Had at Least One Safety Net Provider Visit	
		Any Visit, Coeffi-cient	Visit with PCP, Coeffi-cient	Visit with Specialist, Coefficient	Flu Shot, Coeffi-cient	Mammography (female only), Coefficient	FQHC or RHC Visit, Coeffi-cient	Hospital Outpatient Department E&M Visit, Coefficient
Main Model: 1 year of data, cost sharing payment level based on the proportion of Medicare cost sharing paid by each state's Medicaid program in 2009 $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CS_s) + \beta_4 X_{is} + \varepsilon_{is}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid	0.05 **	0.05 **	0.02 **	0.04 **	0.01 **	-0.08 **	-0.03 **
Alternative 1: 1 year of data, cost sharing payment level based on the policy documented in the NORC (2012) study of states' written policies $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CSFP_s) + \beta_4 (DUAL_{is} * CSOT_s) + \beta_5 X_{is} + \varepsilon_{is}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of living in a state with a full payment policy compared with living in a state with a lesser of payment policy	-0.01 *	0.04 **	0.02 **	0.08 **	-0.06 **	-0.41 **	-0.06 **
Alternative 2: 2 years of data, lagged cost sharing payment level $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CS_s) + \beta_4 X_{is} + \varepsilon_{is}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in 2005)	0.04 **	0.04 **	0.01 **	0.02 **	-0.01 **	-0.06 **	-0.03 **

(continued)

Appendix Table E-5 (continued)
Summary of Results from Alternative Logistic Regression Models for Utilization of Evaluation and Management Services, Preventive Services, and Safety Net Provider Services

Model	Variable(s) of interest	Had at Least One Office or Other Outpatient E&M Visit			Had a Preventive Service		Had at Least One Safety Net Provider Visit	
		Any Visit, Coeffi-cient	Visit with PCP, Coeffi-cient	Visit with Specialist, Coefficient	Flu Shot, Coeffi-cient	Mammography (female only), Coefficient	FQHC or RHC Visit, Coeffi-cient	Hospital Outpatient Department E&M Visit, Coefficient
Alternative 3: 2 years of data, cost sharing payment level $Y_{ist} = \beta_0 + \beta 1DUAL_{ist} + \beta_2 CS_{st} + \beta_3(DUAL_{ist}*CS_{st}) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6(CS_{st}*YR09_t) + \beta_7(DUAL_{ist}*YR09_t) + \varepsilon_{ist}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2005 and 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization; effect constrained to be the same in 2005 and 2009)	0.04 **	0.04 **	0.01 **	0.02 **	-0.001	-0.05 **	-0.03 **
Alternative 4: 2 years of data, cost sharing payment level $Y_{ist} = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_{st} + \beta_3(DUAL_{ist}*CS_{st}) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6(CS_{st}*YR09_t) + \beta_7(DUAL_{ist}*YR09_t) + \beta_8(DUAL_{ist}*CS_{st}*YR09_t) + \varepsilon_{ist}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2005 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization)	0.04 **	0.05 **	0.01 **	0.03 **	-0.002	-0.07 **	-0.03 **
	Difference in impact on utilization for Medicare-Medicaid beneficiaries in 2009 compared with 2005 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization)	-0.004	-0.004 *	-0.002	-0.01 **	0.002	0.03 **	0.01 **

(continued)

Appendix Table E-5 (continued)
Summary of Results from Alternative Logistic Regression Models for Utilization of Evaluation and Management Services, Preventive Services, and Safety Net Provider Services

Model	Variable(s) of interest	Had at Least One Office or Other Outpatient E&M Visit			Had a Preventive Service		Had at Least One Safety Net Provider Visit	
		Any Visit, Coefficient	Visit with PCP, Coefficient	Visit with Specialist, Coefficient	Flu Shot, Coefficient	Mammography (female only), Coefficient	FQHC or RHC Visit, Coefficient	Hospital Outpatient Department E&M Visit, Coefficient
	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization) [b]	0.04 **	0.04 **	0.01 **	0.02 **	-0.005	-0.04 **	-0.02 **
Alternative 5: 2 years of data, change in cost sharing payment $Y_{ist} = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_s + \beta_3(DUAL_{ist} * CS_s) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6 \Delta CS_s + \beta_7(\Delta CS_s * YR09_t) + \beta_8(DUAL_{ist} * \Delta CS_s) + \beta_9(DUAL_{ist} * YR09_t) + \beta_{10}(DUAL_{ist} * \Delta CS_s * YR09t) + \varepsilon_{ist}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid in 2009 compared with 2005	-0.003	-0.01	-0.003	-0.01 **	-0.004	0.04 **	-0.03 **

NOTES: E&M = evaluation and management; FQHC = federally qualified health center; PCP = primary care provider; RHC = rural health clinic.
[a] Estimated by combining the estimates for DUAList*CSst and DUAList*CSst*YR09t
Y_{ist} = a given measure of utilization for beneficiary i in state *s* in year *t*
$DUAL_{ist}$ = 1 if beneficiary i in state *s* in year *t* is a Medicare-Medicaid beneficiary; 0 otherwise
$CSFP_s$ = 1 if state *s*'s Medicaid payment policy for Medicare cost sharing is full payment
$CSOT_s$ = 1 if state *s*'s Medicaid payment policy for Medicare cost sharing is other
CS_{st} = a measure of Medicare cost sharing paid by Medicaid in state *s* in year *t*
ΔCS_s = change from 2005 to 2009 in Medicare cost sharing paid by Medicaid in state *s*
$YR09_t$ = 1 if Year = 2009; 0 otherwise (continued)

Appendix Table E-5 (continued)
Summary of Results from Alternative Logistic Regression Models for Utilization of Evaluation and Management Services, Preventive Services, and Safety Net Provider Services

X_{ist} = a vector of characteristics for beneficiary *i* in state *s* in year *t* (age, gender, race/ethnicity, original basis for Medicare entitlement, urban/rural residence, local area [county] level factors influencing utilization such as provider supply, total number of months during the year beneficiary was eligible for the study [as a control for "exposure" time])

ε_{ist} = error term

** Statistically significant at 0.01 level.

* Statistically significant at 0.05 level.

SOURCE: RTI analysis \\rtimas04\hser\Project\0213459\002_Dual_Cost_Sharing\common\bbaker\ntz20_steps10_14_v4.

Appendix Table E-6
Summary of Results from Negative Binomial Regression Models for Annualized Number of Visits for Evaluation and Management Services and Safety Net Provider Services

Model	Variable(s) of Interest	Office or Other Outpatient E&M Visit			Safety Net Provider Visit	
		Annualized Number of Outpatient E&M Visits (users only), Coefficient	Annualized Number of Outpatient E&M Visits with Primary Care Providers (users only), Coefficient	Annualized Number of Outpatient E&M Visits with Specialists (users only), Coefficient	Annualized Number of FQHC or RHC Visits (users only), Coefficient	Annualized Number of Outpatient Department E&M Visits (users only), Coefficient
Main Model: 1 year of data, cost sharing payment level based on the proportion of Medicare cost sharing paid by each state's Medicaid program in 2009 $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CS_s) + \beta_4 X_{is} + \varepsilon_{is}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid	0.004 **	-0.005 **	0.007 **	-0.004 **	-0.010 **
Alternative 1: 1 year of data, cost sharing payment level based on the policy documented in the NORC (2012) study of states' written policies $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CSFP_s) + \beta_4 (DUAL_{is} * CSOT_s) + \beta_5 X_{is} + \varepsilon_{is}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of living in a state with a full payment policy compared with living in a state with a lesser of payment policy	0.026 **	-0.023 **	0.062 **	0.001	-0.004
Alternative 2: 2 years of data, lagged cost sharing payment level $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CS_s) + \beta_4 X_{is} + \varepsilon_{is}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in 2005)	0.000	-0.006**	0.001	-0.002	-0.004**

(continued)

Appendix Table E-6 (continued)
Summary of Results from Negative Binomial Regression Models for Annualized Number of Visits for Evaluation and Management Services and Safety Net Provider Services

Model	Variable(s) of Interest	Office or Other Outpatient E&M Visit: Annualized Number of Outpatient E&M Visits (users only), Coefficient	Office or Other Outpatient E&M Visit: Annualized Number of Outpatient E&M Visits with Primary Care Providers (users only), Coefficient	Office or Other Outpatient E&M Visit: Annualized Number of Outpatient E&M Visits with Specialists (users only), Coefficient	Safety Net Provider Visit: Annualized Number of FQHC or RHC Visits (users only), Coefficient	Safety Net Provider Visit: Annualized Number of Outpatient Department E&M Visits (users only), Coefficient
Alternative 3: 2 years of data, cost sharing payment level $Y_{ist} = \beta_0 + \beta 1DUAL_{ist} + \beta_2 CS_{st} + \beta_3(DUAL_{ist}*CS_{st}) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6(CS_{st}*YR09_t) + \beta_7(DUAL_{ist}*YR09_t) + \varepsilon_{ist}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2005 and 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization; effect constrained to be the same in 2005 and 2009)	0.001 **	-0.003 **	0.000	0.000	-0.006 **
Alternative 4: 2 years of data, cost sharing payment level $Y_{ist} = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_{st} + \beta_3(DUAL_{ist}*CS_{st}) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6(CS_{st}*YR09_t) + \beta_7(DUAL_{ist}*YR09_t) + \beta_8(DUAL_{ist}*CS_{st}*YR09_t) + \varepsilon_{ist}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2005 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization)	0.004 **	-0.001	0.002	0.001	-0.009 **
	Difference in impact on utilization for Medicare-Medicaid beneficiaries in 2009 compared with 2005 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization)	-0.005 **	-0.004 **	-0.003 *	-0.002	0.004

(continued)

Appendix Table E-6 (continued)
Summary of Results from Negative Binomial Regression Models for Annualized Number of Visits for Evaluation and Management Services and Safety Net Provider Services

		Office or Other Outpatient E&M Visit			Safety Net Provider Visit	
Model	Variable(s) of Interest	Annualized Number of Outpatient E&M Visits (users only), Coefficient	Annualized Number of Outpatient E&M Visits with Primary Care Providers (users only), Coefficient	Annualized Number of Outpatient E&M Visits with Specialists (users only), Coefficient	Annualized Number of FQHC or RHC Visits (users only), Coefficient	Annualized Number of Outpatient Department E&M Visits (users only), Coefficient
	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization) [a]	-0.001	-0.005 **	-0.001	-0.001	-0.005 **
Alternative 5: 2 years of data, change in cost sharing payment $Y_{ist} = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_s + \beta_3 (DUAL_{ist} * CS_s) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6 \Delta CS_s + \beta_7 (\Delta CS_s * YR09_t) + \beta_8 (DUAL_{ist} * \Delta CS_s) + \beta_9 (DUAL_{ist} * YR09_t) + \beta_{10} (DUAL_{ist} * \Delta CS_s * YR09t) + \varepsilon_{ist}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid in 2009 compared with 2005	0.000	-0.001	0.006 *	0.009 *	0.009 *

NOTES: E&M = evaluation and management; FQHC = federally qualified health center; RHC = rural health clinic.

[a] Estimated by combining the estimates for Dual*Average percentage of Medicare cost sharing paid and Dual*Year2009*Average percentage of Medicare cost sharing paid.

Y_{ist} = a given measure of utilization for beneficiary *i* in state *s* in year *t*

$DUAL_{ist}$ = 1 if beneficiary *i* in state *s* in year *t* is a Medicare-Medicaid beneficiary; 0 otherwise

$CSFP_s$ = 1 if state *s*'s Medicaid payment policy for Medicare cost sharing is full payment

$CSOT_s$ = 1 if state *s*'s Medicaid payment policy for Medicare cost sharing is other

CS_{st} = a measure of Medicare cost sharing paid by Medicaid in state *s* in year *t*

ΔCS_s = change from 2005 to 2009 in Medicare cost sharing paid by Medicaid in state *s* (continued)

Appendix Table E-6 (continued)
Summary of Results from Negative Binomial Regression Models for Annualized Number of Visits for Evaluation and Management Services and Safety Net Provider Services

$YR09_t$ = 1 if Year = 2009; 0 otherwise
X_{ist} = a vector of characteristics for beneficiary *i* in state *s* in year *t* (age, gender, race/ethnicity, original basis for Medicare entitlement, urban/rural residence, local area [county] level factors influencing utilization such as provider supply, total number of months during the year beneficiary was eligible for the study [as a control for "exposure" time])
ε_{ist} = error term
** Statistically significant at 0.01 level.
* Statistically significant at 0.05 level.
SOURCE: RTI analysis: \\rtimas04\hser\Project\0213459\002_Dual_Cost_Sharing\common\bbaker\ntz21_steps1_12_v4.

Appendix Table E-7
Annualized Number of Visits for Outpatient Psychotherapy, 2009

State	Beneficiary Group	Annualized Number of Outpatient Psychotherapy Visits (users only)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Psychiatrists (users only)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Psychologists (users only)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Licensed Clinical Social Workers (users only)
	High Medicaid Payment [a]				
AK [LO]	Medicare-Medicaid	10.9	9.9**	10.7	8.4
	Medicare-only	9.4	5.6	17.3	13.7
VT [FP]	Medicare-Medicaid	13.3	8.4	18.2**	15.0
	Medicare-only	11.9	7.3	12.2	14.1
	Medium Medicaid Payment [a]				
MD [LO]	Medicare-Medicaid	11.6	7.1**	16.1	11.9*
	Medicare-only	11.1	6.2	14.8	12.9
MT [LO]	Medicare-Medicaid	9.0	3.8	10.7	12.8*
	Medicare-only	8.1	4.1	9.8	10.3
ND [LO]	Medicare-Medicaid	8.4**	3.6	11.7**	9.7**
	Medicare-only	5.8	3.9	7.3	5.8
NY [OT]	Medicare-Medicaid	12.9**	5.7**	21.1*	15.2**
	Medicare-only	14.6	6.9	20.0	18.3
WV [LO]	Medicare-Medicaid	6.6**	5.2**	8.4**	7.3
	Medicare-only	5.6	4.3	5.7	8.1
	Low Medicaid Payment [a]				
AL [LO]	Medicare-Medicaid	4.3**	3.1**	6.4**	4.8**
	Medicare-only	5.6	3.8	8.5	6.2
CT [LO]	Medicare-Medicaid	10.0	5.1**	15.1	10.8*
	Medicare-only	10.3	5.8	15.4	12.1
FL [LO]	Medicare-Medicaid	9.7**	4.3**	19.3**	17.3**
	Medicare-only	8.9	5.0	11.8	12.4
GA [LO]	Medicare-Medicaid	4.8**	3.9*	9.7	6.1**
	Medicare-only	6.4	4.1	10.0	9.2
IL [LO]	Medicare-Medicaid	8.4**	4.8*	16.2**	10.1**
	Medicare-only	9.1	5.1	12.1	12.3

(continued)

Appendix Table E-7 (continued)
Annualized Number of Visits for Outpatient Psychotherapy, 2009

State	Beneficiary Group	Annualized Number of Outpatient Psychotherapy Visits (users only)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Psychiatrists (users only)	Annualized Number of Outpatient Psychotherapy Visits with Psychologists (users only)	Annualized Number of Outpatient Psychotherapy Visits with Licensed Clinical Social Workers (users only)
KY [LO]	Medicare-Medicaid	5.6	3.9	5.4**	5.4
	Medicare-only	5.8	4.1	7.1	5.9
LA [LO]	Medicare-Medicaid	8.3**	3.4	5.9	18.9**
	Medicare-only	6.1	3.3	5.4	10.8
MA [LO]	Medicare-Medicaid	13.3**	6.0**	15.4**	15.1**
	Medicare-only	11.3	6.6	13.4	12.6
MS [FP]	Medicare-Medicaid	3.8**	3.2	4.8	5.3
	Medicare-only	4.6	3.2	5.8	6.8
NM [LO]	Medicare-Medicaid	12.7**	6.9**	22.5**	13.3
	Medicare-only	9.4	5.5	12.4	10.9
SC [LO]	Medicare-Medicaid	5.7	4.7*	6.4	9.1
	Medicare-only	6.0	4.3	7.7	8.5

NOTES: The table includes states that met the study inclusion criteria for 2009. FP = full payment on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey; LO = lesser of; OT = other.

[a] High Medicaid payment = average percentage of Medicare cost sharing paid > 50%; medium Medicaid payment = average percentage of Medicare cost sharing paid > 25% & ≤ 50%; low Medicaid payment = average percentage of Medicare cost sharing paid ≤ 25%

** Significantly different from Medicare-only at 0.01 level.

* Significantly different from Medicare-only at 0.05 level.

SOURCE: Data for table come from descriptives for outcomes by dual status 2009 (Program: \\wallsas03.waltham.rti.org\vol3\project\0213459\002_Dual_Cost_Sharing\pgm\bbaker\programs\ntz18_v4.sas).

Appendix Table E-8
Utilization of Outpatient Psychotherapy, 2005

State	Beneficiary group	Had at least one outpatient psychotherapy visit (%)	Among beneficiaries who had at least one outpatient psychotherapy visit: Had outpatient psychotherapy with psychiatrist (%)	Had outpatient psychotherapy with psychologist (%)	Had outpatient psychotherapy with licensed clinical social worker (%)
	High Medicaid Payment [a]				
AK [LO]	Medicare-Medicaid	6.0**	56.3	8.7**	26.1
	Medicare-only	1.3	51.5	21.1	24.7
HI [FP]	Medicaid-Medicare	8.5**	76.2	22.6*	7.3**
	Medicare-only	2.2	72.5	28.1	3.7
VT [FP]	Medicaid-Medicare	8.9**	52.0	20.4**	30.3
	Medicare-only	2.3	43.4	30.2	30.1
WY [FP]	Medicaid-Medicare	8.2**	56.8	27.6*	20.6
	Medicare-only	1.2	50.7	36.2	18.4
	Medium Medicaid Payment [a]				
LA [LO]	Medicaid-Medicare	2.3**	66.1	6.5**	28.2**
	Medicare-only	1.2	63.7	14.2	23.7
MD [LO]	Medicaid-Medicare	10.1**	70.9**	10.6**	32.0**
	Medicare-only	2.7	54.9	18.8	26.4
MT [LO]	Medicaid-Medicare	10.6**	63.7**	15.6**	33.5**
	Medicare-only	1.7	56.1	29.8	24.3
NE [FP]	Medicaid-Medicare	11.3**	59.4	20.4**	24.5**
	Medicare-only	1.6	55.9	29.9	18.4
NM [LO]	Medicaid-Medicare	6.2**	60.7	29.3	16.6
	Medicare-only	2.4	63.2	26.8	16.5
WV [LO]	Medicaid-Medicare	4.0**	67.2	18.4	18.2
	Medicare-only	1.2	64.6	16.9	21.3
	Low Medicaid Payment [a]				
CT [LO]	Medicaid-Medicare	9.4**	45.5**	13.0**	44.9**
	Medicare-only	3.2	58.4	16.2	24.0
GA [LO]	Medicaid-Medicare	6.3**	86.2**	6.7**	7.0**
	Medicare-only	2.4	76.4	16.2	11.0
IL [LO]	Medicaid-Medicare	5.6**	72.0**	11.6**	19.0
	Medicare-only	1.9	67.1	22.0	19.0

(continued)

Appendix Table E-8 (continued)
Utilization of Outpatient Psychotherapy, 2005

State	Beneficiary group	Had at least one outpatient psychotherapy visit (%)	Among beneficiaries who had at least one outpatient psychotherapy visit: Had outpatient psychotherapy with psychiatrist (%)	Had outpatient psychotherapy with psychologist (%)	Had outpatient psychotherapy with licensed clinical social worker (%)
MA [LO]	Medicaid-Medicare	13.6**	35.1**	20.7**	48.5**
	Medicare-only	3.8	47.9	23.5	31.2
NY [OT]	Medicaid-Medicare	9.0**	56.5**	15.1**	39.3**
	Medicare-only	3.2	54.5	21.6	30.8
SC [LO]	Medicaid-Medicare	3.0**	82.3**	8.5**	13.1**
	Medicare-only	1.8	68.7	15.4	17.9

NOTES: The table includes states that met the study inclusion criteria for 2005.

[a] High Medicaid payment = Average percentage of Medicare costing sharing paid > 50%; Medium Medicaid payment = Average percentage of Medicare costing sharing paid > 25% & ≤ 50%; Low Medicaid payment = Average percentage of Medicare costing sharing paid ≤ 25%.

FP = Full payment on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey; LO = Lessor of; OT= Other.

** Significantly different from Medicare-only at 0.01 level.

* Significantly different from Medicare-only at 0.05 level.

SOURCE: Data for table comes from descriptives for outcomes by dual status 2005 (Program: \\wallsas03.waltham.rti.org\vol3\project\0213459\002_Dual_Cost_Sharing\pgm\bbaker\programs\ntz18_v4.sas).

Appendix Table E-9
Annualized Number of Visits for Outpatient Psychotherapy, 2005

State	Beneficiary Group	Annualized Number of Outpatient Psychotherapy Visits (users only)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Psychiatrists (users only)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Psychologists (users only)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Licensed Clinical Social Workers (users only)
	High Medicaid Payment [a]				
AK [LO]	Medicare-Medicaid	9.1	7.6**	10.1	7.3
	Medicare-only	8.0	4.5	12.7	9.0
HI [FP]	Medicaid-Medicare	7.7	5.6	11.5*	9.1
	Medicare-only	7.1	5.5	9.5	9.3
VT [FP]	Medicaid-Medicare	13.5**	8.8	17.8**	15.1**
	Medicare-only	9.7	7.2	11.1	10.7
WY [FP]	Medicaid-Medicare	11.0**	4.6	15.8**	13.6
	Medicare-only	7.9	4.2	8.3	10.9
	Medium Medicaid Payment [a]				
LA [LO]	Medicaid-Medicare	7.3**	3.7	6.2	15.2**
	Medicare-only	5.7	3.4	4.9	11.5
MD [LO]	Medicaid-Medicare	12.5**	8.3**	14.2	12.0
	Medicare-only	10.8	7.0	13.6	13.0
MT [LO]	Medicaid-Medicare	9.1	4.0	12.1**	12.1
	Medicare-only	8.1	4.2	8.7	12.7
NE [FP]	Medicaid-Medicare	14.2**	6.5**	16.9**	26.7**
	Medicare-only	6.7	3.6	8.6	8.5
NM [LO]	Medicaid-Medicare	10.6**	4.8*	18.8**	9.6
	Medicare-only	8.2	5.5	11.6	9.3
WV [LO]	Medicaid-Medicare	7.1**	5.3**	9.2**	8.1*
	Medicare-only	5.5	4.2	6.4	6.4
	Low Medicaid Payment [a]				
CT [LO]	Medicaid-Medicare	10.4**	5.2**	16.5**	11.3
	Medicare-only	9.3	6.1	13.3	11.3
GA [LO]	Medicaid-Medicare	5.0**	4.1**	9.4**	7.9
	Medicare-only	6.2	4.4	11.1	7.7

(continued)

Appendix Table E-9 (continued)
Annualized Number of Visits for Outpatient Psychotherapy, 2005

State	Beneficiary Group	Annualized Number of Outpatient Psychotherapy Visits (users only)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Psychiatrists (users only)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Psychologists (users only)	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Licensed Clinical Social Workers (users only)
IL [LO]	Medicaid-Medicare	8.5	5.2	16.2**	11.3
	Medicare-only	8.4	5.2	11.4	11.1
MA [LO]	Medicaid-Medicare	13.6**	7.1**	14.8**	15.4**
	Medicare-only	10.2	6.4	12.5	11.9
NY [OT]	Medicaid-Medicare	11.9**	5.5**	20.1**	14.1**
	Medicare-only	13.3	7.3	17.9	16.5
SC [LO]	Medicaid-Medicare	5.7	4.3	7.8	9.3
	Medicare-only	5.9	4.2	7.2	8.7

NOTES: The table includes states that met the study inclusion criteria for 2005.

[a] High Medicaid payment = Average percentage of Medicare costing sharing paid > 50%; Medium Medicaid payment = Average percentage of Medicare costing sharing paid > 25% & ≤ 50%; Low Medicaid payment = Average percentage of Medicare costing sharing paid ≤ 25%.

FP = Full payment on the basis of their Medicaid payment policies for Medicare cost sharing in 2012 as reported in the NORC survey; LO = Lessor of; OT= Other.

** Significantly different from Medicare-only at 0.01 level.

* Significantly different from Medicare-only at 0.05 level.

SOURCE: Data for table comes from descriptives for outcomes by dual status 2005 (Program: \\wallsas03.waltham.rti.org\vol3\project\0213459\002_Dual_Cost_Sharing\pgm\bbaker\programs\ntz18_v4.sas).

Appendix Table E-10
Logistic Regression Results from the Main Model for Utilization of Outpatient Psychotherapy

Covariate	Had at Least One Outpatient Psychotherapy Visit, Odds Ratio	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Had Outpatient Psychotherapy with Psychiatrist, Odds Ratio	Had Outpatient Psychotherapy with Psychologist, Odds Ratio	Had Outpatient Psychotherapy with Licensed Clinical Social Worker, Odds Ratio
Age (reference = 65–74 years)				
Less than 65 years	2.45 **	0.77 **	1.14 **	1.45 **
75–84 years	0.78 **	1.21 **	0.85 **	0.82 **
85+ years	0.58 **	0.87 **	0.97	0.97
Female	1.68 **	0.92 **	0.97	1.25 **
Race (reference = white)				
Black	0.39 **	1.10 **	0.78 **	0.85 **
Asian	0.40 **	1.38 **	0.83 **	0.65 **
Hispanic	0.78 **	1.35 **	0.80 **	0.72 **
Native American	0.68 **	0.79 *	1.52 **	0.91
Other or unknown	0.89 **	1.18 **	0.98	0.86* *
Original entitlement due to disability	2.03 **	1.28 **	0.79 **	0.98
Lives in metropolitan statistical area	1.33 **	1.18 **	1.14 **	0.92 **
Number of active non-federal physicians per 1,000 population	1.12 **	0.96 **	1.03 **	1.06 **
Number of hospital beds per 1,000 population	0.94 **	1.00	1.01 *	0.97 **
Percent persons in poverty[a]	0.79 **	1.48 **	0.87 **	0.67 **
Percent persons 65+[a]	1.07 **	0.76 **	1.16 **	1.14 **
Medicare managed care penetration rate[a]	1.10 **	0.93 **	1.07 **	1.05 **
N	4,555,724	224,830	224,830	224,830

NOTES:

Dual, average percentage of Medicare cost sharing paid, and their interaction were included in the logistic regression models, but they are not reported in this table.

[a] Odds ratio reported is the change in the odds of having the outcome given a 10-percentage-point change in the independent variable.

** Statistically significant at 0.01 level.

* Statistically significant at 0.05 level.

SOURCE: RTI analysis: \\rtimas04\hser\Project\0213459\002_Dual_Cost_Sharing\common\bbaker\ntz20_v6.

Appendix Table E-11
Summary of Results from Logistic Regression Models for Utilization of Outpatient Psychotherapy

Alternative Model	Variable(s) of Interest	Had at Least One Outpatient Psychotherapy Visit, Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit		
			Had Outpatient Psychotherapy with Psychiatrist, Coefficient	Had Outpatient Psychotherapy with Psychologist, Coefficient	Had Outpatient Psychotherapy with Licensed Clinical Social Worker, Coefficient
Main Model: 1 year of data, cost sharing payment level based on the proportion of Medicare cost sharing paid by each state's Medicaid program in 2009 $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CS_s) + \beta_4 X_{is} + \varepsilon_{is}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid	0.08 **	0.06 **	0.09**	-0.03 **
Alternative 1: 1 year of data, cost sharing payment level based on the policy documented in the NORC (2012) study of states' written policies $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CSFP_s) + \beta_4 (DUAL_{is} * CSOT_s) + \beta_5 X_{is} + \varepsilon_{is}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of living in a state with a full payment policy compared with living in a state with a lesser of payment policy	0.26 **	-0.23 **	0.26 **	-0.16 **
Alternative 2: 2 years of data, lagged cost sharing payment level $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CS_s) + \beta_4 X_{is} + \varepsilon_{is}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in 2005)	0.05 **	0.11 **	0.03 **	-0.11 **

(continued)

Appendix Table E-11 (continued)
Summary of Results from Alternative Logistic Regression Models for Utilization of Outpatient Psychotherapy

Alternative Model	Variable(s) of Interest	Had at Least One Outpatient Psychotherapy Visit, Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Had Outpatient Psychotherapy with Psychiatrist, Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Had Outpatient Psychotherapy with Psychologist, Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Had Outpatient Psychotherapy with Licensed Clinical Social Worker, Coefficient
Alternative 3: 2 years of data, cost sharing payment level $Y_{ist} = \beta_0 + \beta 1 DUAL_{ist} + \beta_2 CS_{st} + \beta_3 (DUAL_{ist} * CS_{st}) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6 (CS_{st} * YR09_t) + \beta_7 (DUAL_{ist} * YR09_t) + \varepsilon_{ist}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2005 and 2009 of a 10 percentage point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization; effect constrained to be the same in 2005 and 2009)	0.06 **	0.11 **	0.04 **	-0.08 **
Alternative 4: 2 years of data, cost sharing payment level $Y_{ist} = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_{st} + \beta_3 (DUAL_{ist} * CS_{st}) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6 (CS_{st} * YR09_t) + \beta_7 (DUAL_{ist} * YR09_t) + \beta_8 (DUAL_{ist} * CS_{st} * YR09_t) + \varepsilon_{ist}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2005 of a 10 percentage point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization)	0.02 **	0.16 **	-0.01	-0.11 **
	Difference in impact on utilization for Medicare-Medicaid beneficiaries in 2009 compared with 2005 of a 10 percentage point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization)	0.06 **	-0.10 **	0.09 **	0.05 **

(continued)

Appendix Table E-11 (continued)
Summary of Results from Alternative Logistic Regression Models for Utilization of Outpatient Psychotherapy

Alternative Model	Variable(s) of Interest	Had at Least One Outpatient Psychotherapy Visit, Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Had Outpatient Psychotherapy with Psychiatrist, Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Had Outpatient Psychotherapy with Psychologist, Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Had Outpatient Psychotherapy with Licensed Clinical Social Worker, Coefficient
	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10 percentage point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization) [b]	0.09 **	0.07 **	0.08 **	-0.06 **
Alternative 5: 2 years of data, change in cost sharing payment $Y_{ist} = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_s + \beta_3 (DUAL_{ist} * CS_s) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6 \Delta CS_s + \beta_7 (\Delta CS_s * YR09_t) + \beta_8 (DUAL_{ist} * \Delta CS_s) + \beta_9 (DUAL_{ist} * YR09_t) + \beta_{10} (DUAL_{ist} * \Delta CS_s * YR09t) + \varepsilon_{ist}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10 percentage point increase in the percentage of Medicare cost sharing paid in 2009 compared with 2005	0.01	0.005	0.15 **	-0.03

NOTES:
[a] Estimated by combining the estimates for $DUAL_{ist} * CS_{st}$ and $DUAL_{ist} * CS_{st} * YR09_t$
Y_{ist} = a given measure of utilization for beneficiary *i* in state *s* in year *t*
$DUAL_{ist}$ = 1 if beneficiary *i* in state *s* in year *t* is a Medicare-Medicaid beneficiary; 0 otherwise
$CSFP_s$ = 1 if state *s*'s Medicaid payment policy for Medicare cost sharing is full payment
$CSOT_s$ = 1 if state *s*'s Medicaid payment policy for Medicare cost sharing is other
CS_{st} = a measure of Medicare cost sharing paid by Medicaid in state *s* in year *t*
ΔCS_s = change from 2005 to 2009 in Medicare cost sharing paid by Medicaid in state *s*
$YR09_t$ = 1 if Year = 2009; 0 otherwise
X_{ist} = a vector of characteristics for beneficiary *i* in state *s* in year *t* (age, gender, race/ethnicity, original basis for Medicare entitlement, urban/rural residence, local area [county] level factors influencing utilization such as provider supply, total number of months during the year beneficiary was eligible for the study [as a control for "exposure" time])
ε_{ist} = error term
** Statistically significant at 0.01 level.
* Statistically significant at 0.05 level.
SOURCE: RTI analysis: \\rtimas04\hser\Project\0213459\002_Dual_Cost_Sharing\common\bbaker\ntz20_steps10_14_v4& ntz20_v6.

Appendix Table E-12
Summary of Results from Negative Binomial Regression Models for Annualized Number of Visits for Outpatient Psychotherapy

Model	Variable(s) of Interest	Annualized Number of Outpatient Psychotherapy Visits (users only), Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Psychiatrists (users only), Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Psychologists (users only), Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Licensed Clinical Social Workers (users only), Coefficient
Main Model: 1 year of data, cost sharing payment level based on the proportion of Medicare cost sharing paid by each state's Medicaid program in 2009 $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CS_s) + \beta_4 X_{is} + \varepsilon_{is}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid	0.009 *	0.044 **	-0.038 **	-0.025 **
Alternative 1: 1 year of data, cost sharing payment level based on the policy documented in the NORC (2012) study of states' written policies $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CSFP_s) + \beta_4 (DUAL_{is} * CSOT_s) + \beta_5 X_{is} + \varepsilon_{is}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of living in a state with a full payment policy compared with living in a state with a lesser of payment policy	0.010 **	0.013 **	0.003	0.016 **
Alternative 2: 2 years of data, lagged cost sharing payment level $Y_{is} = \beta_0 + \beta_1 DUAL_{is} + \beta_2 CS_s + \beta_3 (DUAL_{is} * CS_s) + \beta_4 X_{is} + \varepsilon_{is}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in 2005)	0.045 **	0.077 **	0.041 **	0.035 **

(continued)

Appendix Table E-12 (continued)
Summary of Results from Negative Binomial Regression Models for Annualized Number of Visits for Outpatient Psychotherapy

Model	Variable(s) of Interest	Annualized Number of Outpatient Psychotherapy Visits (users only), Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Psychiatrists (users only), Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Psychologists (users only), Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Licensed Clinical Social Workers (users only), Coefficient
Alternative 3: 2 years of data, cost sharing payment level $Y_{ist} = \beta_0 + \beta 1DUAL_{ist} + \beta_2 CS_{st} + \beta_3(DUAL_{ist}*CS_{st}) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6(CS_{st}*YR09_t) + \beta_7(DUAL_{ist}*YR09_t) + \varepsilon_{ist}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2005 and 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization; effect constrained to be the same in 2005 and 2009)	0.024 **	0.050 **	0.022 *	0.000
Alternative 4: 2 years of data, cost sharing payment level $Y_{ist} = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_{st} + \beta_3(DUAL_{ist}*CS_{st}) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6(CS_{st}*YR09_t) + \beta_7(DUAL_{ist}*YR09_t) + \beta_8(DUAL_{ist}*CS_{st}*YR09_t) + \varepsilon_{ist}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2005 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization)	0.032 **	0.058 **	0.038	0.015
	Difference in impact on utilization for Medicare-Medicaid beneficiaries in 2009 compared with 2005 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization)	-0.017 **	-0.016	-0.033	-0.028 *

(continued)

Appendix Table E-12 (continued)
Summary of Results from Negative Binomial Regression Models for Annualized Number of Visits for Outpatient Psychotherapy

Model	Variable(s) of Interest	Annualized Number of Outpatient Psychotherapy Visits (users only), Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Psychiatrists (users only), Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Psychologists (users only), Coefficient	Among Beneficiaries Who Had at Least One Outpatient Psychotherapy Visit: Annualized Number of Outpatient Psychotherapy Visits with Licensed Clinical Social Workers (users only), Coefficient
	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid (based on payment percentage in the year concurrent with utilization) [a]	0.015 **	0.042 **	0.005	-0.013
Alternative 5: 2 years of data, change in cost sharing payment $Y_{ist} = \beta_0 + \beta_1 DUAL_{ist} + \beta_2 CS_s + \beta_3 (DUAL_{ist} * CS_s) + \beta_4 X_{ist} + \beta_5 YR09_t + \beta_6 \Delta CS_s + \beta_7 (\Delta CS_s * YR09_t) + \beta_8 (DUAL_{ist} * \Delta CS_s) + \beta_9 (DUAL_{ist} * YR09_t) + \beta_{10} (DUAL_{ist} * \Delta CS_s * YR09t) + \varepsilon_{ist}$	Impact on utilization for Medicare-Medicaid beneficiaries in 2009 of a 10-percentage-point increase in the percentage of Medicare cost sharing paid in 2009 compared with 2005	0.014	0.013	0.008	-0.007

NOTES:

[a] Estimated by combining the estimates for Dual*Average percentage of Medicare cost sharing paid and Dual*Year2009*Average percentage of Medicare cost sharing paid.

Y_{ist} = a given measure of utilization for beneficiary *i* in state *s* in year *t*

$DUAL_{ist}$ = 1 if beneficiary *i* in state *s* in year *t* is a Medicare-Medicaid beneficiary; 0 otherwise

$CSFP_s$ = 1 if state *s*'s Medicaid payment policy for Medicare cost sharing is full payment (continued)

Appendix Table E-12 (continued)
Summary of Results from Negative Binomial Regression Models for Annualized Number of Visits for Outpatient Psychotherapy

$CSOT_s$ = 1 if state *s*'s Medicaid payment policy for Medicare cost sharing is other

CS_{st} = a measure of Medicare cost sharing paid by Medicaid in state *s* in year *t*

ΔCS_s = change from 2005 to 2009 in Medicare cost sharing paid by Medicaid in state *s*

$YR09_t$ = 1 if Year = 2009; 0 otherwise

X_{ist} = a vector of characteristics for beneficiary *i* in state *s* in year *t* (age, gender, race/ethnicity, original basis for Medicare entitlement, urban/rural residence, local area [county] level factors influencing utilization such as provider supply, total number of months during the year beneficiary was eligible for the study [as a control for "exposure" time])

ε_{ist} = error term

** Statistically significant at 0.01 level.

* Statistically significant at 0.05 level.

SOURCE: RTI analysis: \\rtimas04\hser\Project\0213459\002_Dual_Cost_Sharing\common\bbaker\ntz21_steps1_12_v4.