NBER WORKING PAPER SERIES

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Working Paper 19366
http://www.nber.org/papers/w19366

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
August 2013

I appreciate conversations with Trevor Gallen, Josh Archambault, Amanda Kowalski and the financial support of the George J. Stigler Center for the Study of the Economy and the State. The views expressed herein are those of the author and do not necessarily reflect the views of the National Bureau of Economic Research.

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JEL No. E24,H31,I18,I38

ABSTRACT

Measured in percentage points, the Affordable Care Act will, by 2015, add about twelve times more to average marginal labor income tax rates nationwide than the Massachusetts health reform added to average rates in Massachusetts following its 2006 statewide health reform. The rate impacts are different between the two laws for several reasons, especially that: the populations subject to the two laws are different, the Affordable Care Act's employer penalty is an order of magnitude greater, before either reform Massachusetts had already been offering more means-tested and employment-tested health insurance assistance than other states had, and the subsidized health insurance plans created by the Massachusetts reform were less substitutable for employer-provided insurance than are the subsidized plans to be created nationwide next year.

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An online appendix is available at:
http://www.nber.org/data-appendix/w19366

The Affordable Care Act was designed to expand the fraction of the population covered by health insurance. The act (hereafter, ACA) includes taxes on employers and various implicit taxes on employees that go into effect over the next two years. Economic theory suggests that such taxes would contract the labor market in an amount commensurate with the amount of the new taxes.

The federal government and other advocates of the Affordable Care Act have dismissed concerns that the coming labor market contraction would be significant, or even noticeable, by pointing to Massachusetts' experience with a reform also designed to expand insurance coverage (hereafter, Romneycare). Because the Massachusetts labor market did not noticeably contract relative to the rest of the nation after Romneycare went into effect (Dubay, Long and Lawton 2012), the U.S. Department of Health and Human Services said "The experience in Massachusetts … suggest[s] that the health care law will improve the affordability and accessibility of health care without significantly affecting the labor market" (Contorno 2013). As Jonathan Gruber put it, "We've actually run this experiment, folks: we ran it in Massachusetts" (Gruber 2011, 27:02).[1]

This paper assumes for the sake of argument that forecasts of the employment and work hours effects of the Affordable Care Act ought to rely on, among other things, an examination of Romneycare and Massachusetts' labor market activity surrounding its implementation.[2] However, in doing so it is worthwhile assessing the direction and magnitude of the incentives created by both reforms, and to do so with a common methodology. This paper makes such an assessment, drawing on a companion paper (Mulligan 2013) that reports more details on the methodology and results for the ACA by itself.

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[1] See also the Urban Institute study concluding that "the broad similarities between the ACA and Massachusetts' reform suggest that we can expect to see patterns in the response by employers under the ACA similar to those observed under health reform in Massachusetts" and that "the evidence from Massachusetts would suggest that national health reform does not imply job loss and stymied economic growth." (Dubay, Long and Lawton 2012)

[2] I use "Romneycare" to refer to the MA health law as implemented after 2006 (with special emphasis on 2010), regardless of whether the implementation details were determined under the governorship of Mitt Romney or Duval Patrick, who took office in early 2007.

The Massachusetts reform, passed in 2006 and implemented over the subsequent two years (Dubay, Long and Lawton 2012), specified that state residents must have health insurance, or potentially face a monetary penalty. It created a couple of health plans with means-tested subsidized premiums. The reform also penalized employers for not providing health insurance for enough of its employees, with the penalty amount linked to the number of employees on the payroll. Roughly speaking, the nationwide ACA has the same three elements, which will take effect over the next two years.

The tax rate effects of Romneycare are in various directions. In combination, they raised marginal tax rates in 2010 by less than one half of one percentage point relative to what they would have been without Romneycare. The results account for the fact that many people will not participate in programs for which they are eligible, the tendency of the act to move people off of means-tested uncompensated care, and the fact that Romneycare implicitly taxes unemployment benefits. Although parts of Romneycare builds "notches" and "cliffs" into household budget sets – that is, infinitesimal income intervals over which marginal tax rates are infinite – my quantitative results are not a consequence of those notches or cliffs.

Section I reviews the index number framework from Mulligan (2012) that permits the measurement of statutory marginal tax rates combined over multiple government programs and averaged over various taxpayer situations. Section II explains how Romneycare's penalty provisions create new, albeit small, implicit taxes on work. The new implicit tax rates coming from new and expanded Romneycare subsidies, and from interactions with old subsidy programs, are examined in Section III. Because this paper assesses the magnitude of the new implicit taxes, and the fractions of the Massachusetts workforce that faced them, using the same methodology that Mulligan (2013) used for the ACA, Section IV concludes by comparing the Romneycare results with the ACA marginal tax rates.

A Framework for Measuring Legislated Changes in the Average Marginal Tax Rate on Labor Income

Assistance programs available to help people without work or otherwise with low incomes can be summarized by measuring the combined value of benefits available to a person who does not work, less taxes paid, and comparing it to the net of tax value of benefits available to the same person if he or she were working. The difference between the two combined values is the causal effect of working on the value of benefits available. The more that working reduces the net of tax value of available benefits, the more the programs have reduced the reward to working.

The effect of a work decision on the value of assistance received varies by person and by the type of work decision. The effect also depends on calendar time because program eligibility and benefit rules vary over time when new legislation and new regulations are put in place. In order to focus on the latter – especially the effect of Romneycare on incentives to work after 2006 – I use index numbers to summarize the average incentive among a rich variety of incentives for different persons at a point in time. Each type of work decision – moving between employment and unemployment, moving between employment and out of the labor force, and changing weekly hours – has its own "statutory" incentive index time series $\{b_t\}$. The three margin-specific series are combined into an overall statutory work incentive index by taking a fixed-weighted average of the three.

Each of the three incentive indices is a sum of program-specific terms, such as a food stamp term, a payroll tax term, etc.

$$b_t \equiv \sum_j \omega_j E_{jt} B_{jt} \tag{1}$$

where t indexes time and j indexes safety net programs. Each program's term is itself the product of a statutory eligibility index $\{E_{jt}\}$ and a statutory benefit-per-participant index $\{B_{jt}\}$. The two indices, and therefore their product, change only at dates t when new program rules ("statutes") go into effect. The program-specific products $\{E_{jt}B_{jt}\}$ are combined into the statutory incentive index by aggregating them with a set of time-invariant program weights ω_j, which can reflect time-invariant estimates of the propensity

of people to participate in program *j* while they are not employed or otherwise with reduced labor supply.

The Massachusetts reform can itself be understood as a collection of programs, each of which has its own term in the sums that form the three work incentive indices. Those programs are: employer shared responsibility penalties, individual mandate penalties for persons below 300 percent of the poverty line (hereafter, FPL), individual mandate penalties for persons above 300 percent FPL, health insurance subsidies for persons who are not offered affordable employer-sponsored insurance (hereafter, ESI) even when employed, health insurance subsidies for persons who are offered affordable ESI when and only when they are employed, and the expansion of Medicaid/CHIP coverage to children in families between 200 and 300 percent FPL.

The Romneycare provisions interact with related public policies, especially unemployment insurance and uncompensated care. In order to include these interaction terms in my index for the overall safety net, I therefore add two terms quantifying those interactions: "implicit taxation of unemployment benefits" and "move off implicit compensated care tax."

All eight of these programs are listed in Table 1. The table's top (middle) panel shows each program's benefit (participation weight) terms, respectively.[3] The bottom panel compiles all of the terms into a single benefit index for 2010. For the purpose of comparing with the Affordable Care Act, the dollar amounts in the table are expressed in 2014 dollars.[4] This paper does not attempt to examine the evolution of Romneycare in response to the implementation of the ACA in Massachusetts.

Sometimes, as with a constant replacement unemployment benefit, the dollar amount of benefits to be received as a consequence not working varies across persons according to what they earn when they are working. In these cases, I follow Mulligan (2012) and Mulligan (2013) and assume a hypothetical non-elderly household head or spouse (hereafter, "median earner") who earns $914 (2014 dollars) per week plus fringes, which is what the Massachusetts median nonelderly household head or spouse earned in

[3] The eligibility indices are not shown because they are trivially 0 before Romneycare and 1 thereafter, as long as the Romneycare eligibility-related statutes and regulations remain unchanged.

[4] As of the time of writing, the latest available annual price index was for 2012; for the purposes of calculating 2014 dollars, I assume average annual inflation of 2 percent between 2012 and 2014.

2007 during a week that they were working.[5] The same median earner (inclusive of the value of his fringes) is used to convert Table 1's bottom line dollar amounts into a bottom line tax rate. When I identify persons in micro data that are similar to the median earner, I take any non-elderly head or spouse with weekly earnings within 10% of $914, and refer to them as "median earners."

When the dollar amounts vary across persons for other reasons, such as marital status or health insurance status or program take-up, I use the Massachusetts average across non-elderly working household heads and spouses, as noted below. Depending on data availability, the averages are conditioned on working sometime during the calendar year and having weekly earnings within 10 percent of the median earner, and usually calculated from the March 2011 Current Population Survey (referring to calendar year 2010).

Penalty Components of the Marginal Tax Rate Index

Romneycare included monetary penalties on employers who do not offer health insurance to their full-time employees and on individuals who fail to participate in the health plans that are made available to them. These penalties are known as the employer and individual responsibility provisions, respectively. The individual penalty is also described as the "individual mandate penalty."

Romneycare had two types of employer penalties. The first is a penalty of $295 per full-time-equivalent employee (hereafter, FTE) per year for large employers who fail to offer health insurance and make a fair and reasonable contribution toward premiums.[6] Unlike the ACA's employer penalty, Romneycare's $295 is deductible from the employer's federal business taxes.

Because the employer penalty is contingent on a person's work status and hours worked, it has many of the economic characteristics of payroll taxes – at least for the purposes of quantifying incentives to work. In particular, the law defines FTE in terms of

[5] The $914 for Massachusetts is a factor of 1.16 greater than the hypothetical weekly earnings used by Mulligan (2012) and Mulligan (2013) for national analysis, reflecting the propensity of Massachusetts workers to earn above the national average.

[6] Commonwealth of Massachusetts, 188th General Court (2013) and Blue Cross Blue Shield of Massachusetts Foundation (2011).

aggregate work hours so that the penalty creates an extra marginal cost on assessable employers for increasing those hours, as long as the hours are at or above the threshold for "large employer".[7] Because the marginal cost is based on FTE, it is neutral in terms of whether an employer adjusts labor hours by adjusting the number of employees or by adjusting the hours per employee, which is why Table 4 shows $25 per month for all three labor supply margins.[8]

The second employer penalty applies to large employers who fail to provide employees with "cafeteria plans," which are arrangements for employees to buy health insurance (perhaps on the individual market) with pre-tax dollars and with the employer administrative assistance in terms of withholding of employee health payments and delivering them to the insurer. Employers are not required to provide any funds for payments for the insurance employees obtain through the cafeteria plan. Large employers that fail to provide a cafeteria plan are liable for the health safety net (Massachusetts' hospitals' system of uncompensated care) costs incurred by their uninsured employees. Despite the fact that a nontrivial number of employers do not offer a cafeteria plan, as of July 2011 no employer in Massachusetts had yet been held liable under this second employer penalty provision (Blue Cross Blue Shield of Massachusetts Foundation 2011). I therefore treat the second penalty as zero and omit it from Table 4.

The Medical Expenditure Panel Survey (MEPS) reports national and region-specific propensities of employees to work at an employer that does not offer insurance to any of its employees. To be conservative about the difference between the MA-US difference in this propensity, I assume that MA has the same propensity as the rest of the New England region and rescale the ACA participation weight for employer penalties by

[7] Romneycare has a couple of thresholds (11 and 50). Focusing on the 50-employee threshold, the marginal hiring cost of the 50th employee would be $14,750 for the 50th employee and the marginal hiring cost zero for the first 49 employees. For simplicity, I treat the marginal hiring cost as $295 for all employers not offering health insurance, regardless of employer size.

[8] Table 4's dollar amounts are in units of employee compensation. $25 per month is 295*(2014 price index)/[12*(2010 price index)*(1.0765)]. The factor of 1.0765 reflects the fact that $295 of employer penalty is less expensive for employers than $295 cash wages would be because the latter creates an employer payroll tax liability.

the ratio of the MEPS New England propensity (9.5%) to the MEPS nationwide propensity (12.6%).[9]

After 2007, Romneycare assessed penalties on each uninsured person as a function of their household income. The individual mandate by itself need not create an implicit tax on work, but *relief* from the mandate does. Figure 1's solid curves show the penalty schedule, of which there are two because the penalty varies with age above 300% FPL (Massachusetts Health Connector and Department of Revenue 2012). The dashed lines are a linear approximation to the solid curves, and I use the slope of the dashed lines to calculate the age and household size dependent average marginal labor income tax rate created by the individual mandate for households between 150 and 300 FPL.[10] As in Mulligan (2013), this approach prevents the results from being driven by the "cliffs" or "notches" in the law, such as those visible in Figure 1's solid curves. The $147 average work disincentive shown in the Table 1's second row is the product of the average marginal tax rate of 3.7 percent and the $3,959 monthly earnings of the "median earner." The $147 amount is shown in all three columns because this form of individual mandate relief is an implicit income tax rather than an implicit unemployment benefit.

A person experiencing hardship is exempt from the individual penalty. The hardship exemption acts as an implicit tax on work to the extent that not working allows a person to be classified as experiencing hardship. The text of the Massachusetts law is unclear as to the exact relation between employment and hardship for the purposes of granting the exemption. I assume that, conditional on not having insurance and being in a household above 300 percent FPL, the penalty is paid only when working or out of the labor force because the unemployed are eligible for a hardship exemption.[11] The $95 average value of the hardship exemption shown in Table 1 is the population-weighted

[9] CPS data suggest that, in 2006 (before Romneycare), the uninsurance rate among non-elderly working household heads and spouses was less in MA than in the New England region generally, which itself was less than the nationwide rate.

[10] In order to translate a slope from Figure 1 into a marginal tax rate, I divide it by the dollar amount of the federal poverty line, which is a function of household size.

[11] Long before Romneycare, MassHealth (Massachusetts' Medicaid and CHIP program) had health insurance assistance programs for the unemployed. One of those, without asset tests, is the Medical Security Program for unemployed in families up to 400 percent of FPL (Community Resources Information 2013). For this reason, the hardship exemption is not relevant for unemployed persons below 300 or 400 percent of FPL.

average of the two 300%+ FPL penalties shown in Figure 1, converted to monthly 2014 dollars.

Although Table 1's participation weights for the individual mandate penalty reflect the fraction of the working population that is uninsured, the weights are different from the national ACA weights in Mulligan (2013), for several reasons. First of all, Massachusetts had fewer uninsured than the United States did, even before health reform. For this reason, my first step in calculating Table 1's individual mandate weights is to rescale the weights in Mulligan (2013) by the ratio of the uninsurance rate in Massachusetts to the uninsurance rate nationwide, with the rates measured in the March 2006 (2011) CPS, respectively, among non-poor median earners aged 27-64.[12] Second, work incentives under the Massachusetts penalty are different depending on whether the uninsured's household is above or below 300% FPL, which is why Table 1 has two individual mandate rows while the corresponding table in Mulligan (2013) has only one. The single weight from Mulligan (2013) is distributed between the corresponding two rows in Table 1 according to the propensity of non-poor working uninsured Massachusetts household heads and spouses ages 27-64 to be below or above 300% FPL.

Third, under Romneycare, an insured adult living with (more specifically, part of the same household for tax purposes) an uninsured person has their work incentives affected by the penalty for violating the individual mandate because the insured adult's income is part of the uninsured's household income.[13] Table 1's weights for the sliding scale individual penalty therefore need to double count uninsured people who are married, regardless of whether their spouse is uninsured, because a single penalty alters work incentives for both spouses. I make the double counting by rescaling those weights by one plus the fraction of the non-poor working uninsured Massachusetts household heads and spouses ages 27-64 who are married with spouse present.

[12] Both the ACA and Romneycare exempt the poor from the individual mandate penalty.

[13] The ACA assesses a penalty on the uninsured as the maximum of a flat dollar amount per uninsured family member and a percentage of household income, and Mulligan (2013) uses the latter to calculate statutory marginal tax rates. When the percentage of income applies, it doesn't matter whether the household had, say, two uninsured adults rather than one.

Jumping onto and Sliding Along the Income Scale: Romneycare's Subsidy Components of the Marginal Tax Rate Index

Massachusetts adults not offered insurance by an employer in the last six months, not eligible for Medicare or Medicaid, and living in a family with income between 100 percent and 300 percent FPL are, under Romneycare, eligible to participate in Commonwealth Care (hereafter, CommCare), which was a choice of four health insurance plans subsidized by the state and managed by Medicaid Managed Care Organizations (Blue Cross Blue Shield of Massachusetts Foundation 2011).[14] Figure 2's stair-shaped function shows the 2010 sliding scale payment schedule (Massachusetts Health Connector 2010), which ends at 300% FPL. As an approximation of what it cost for someone above 300% FPL to buy coverage similar to CommCare (if such coverage were permitted and desirable to consumers: more on this below) through their employer's cafeteria plan, I take CommCare spending per participant of $4,954, multiply it by a tax exclusion factor, and display the amount as a solid horizontal line in Figure 2.[15]

Romneycare's income-based healthcare payment schedules, such as the two shown in Figure 1, potentially create several types of work disincentives for persons in households between 100 and 300 percent FPL. First, a household head or spouse is denied access to the payment schedule as long as he or she holds a job that offers health insurance, and (with a delay) granted access when not employed. Second, a household head or spouse can, with a delay, be granted access *as a consequence* of moving from full-time employment to part-time employment if that move results in a loss of opportunity for ESI. Third, working fewer weeks per year or hours per week enhances the Commcare subsidies for persons who work in a job not offering health insurance and participate in CommCare.

[14] Recently a fifth plan was added that is managed by an insurance company (Blue Cross Blue Shield of Massachusetts Foundation 2011).

[15] Massachusetts Health Connector (2010, Table 2) reports Commcare spending net of enrollee contributions, so to calculate the $4,954 I add back those contributions, estimated to be a weighted average of the stair-steps shown in Figure 1 using as weights the CommCare participant demographics reported by Blue Cross Blue Shield of Massachusetts Foundation (2011). I assume that premiums paid through cafeteria plans avoid personal income taxes at an 18 percent marginal rate and employee payroll taxes at a 7.65 percent marginal rate, which makes the tax factor equal to 0.7435. For the purpose of preparing Figure 2, I did not tax-adjust CommCare premiums, assuming that they are not paid with after-tax dollars (the assumption does not affect the dashed line and the calculations that depend on its slope).

Jumping onto the Income Scale for Health Payments

A person with ESI who would be eligible for CommCare when not employed forgoes the value of that subsidy when working. That value depends on the plan features, that person's household income (which determines the premium paid), and the availability of alternative subsidies. For many years before Romneycare, Massachusetts already had health insurance assistance for the unemployed through its MassHealth Medical Security Plan and MassHealth Essential programs. I therefore assume that Romneycare did not significantly add to the value of assistance available to persons leaving an ESI job for unemployment and thereby enter in Table 1 a zero in the unemployment column for "HI subsidies for persons w/ ESI at work."[16] I also assume that Romneycare adds little value to the assistance available to households below 150% FPL, because Massachusetts already had Medicaid for adults up to 133 percent FPL and children up to 200 percent FPL (Powell 2012).[17]

CommCare is a new source of assistance for persons leaving an ESI job to be out of the labor force or to work part time without ESI (and in a household between 150 and 300% FPL), which is why benefits are entered in the columns of Table 1 for the other labor supply margins. If participants valued the subsidy at what it cost Massachusetts taxpayers, the value of jumping onto the schedule would be the vertical distance between their position on Figure 2's stair-step and the horizontal line representing total cost. Among Massachusetts heads and spouses aged 27-64 with ESI and household income between 150 and 300% FPL, the average vertical distance is $4,198 in 2014 dollars.

CommCare has features that probably make it unattractive to a number of households in the eligible income range, which suggests that participants may not value the coverage as much as it costs taxpayers. CommCare is for adults only: parents who left ESI (or left the unsubsidized individual purchase market) for CommCare would have to put their children on Medicaid/CHIP, buy separate coverage for them, or leave them uninsured. CommCare is typically Medicaid managed and does not have the same

[16] Take-up of the programs may have been low, but so is CommCare takeup (more on this below).
[17] Due to a lack of precise data (e.g., small sample sizes, income and health plan definitions that differ between MassHealth and the CPS), I do not attempt to quantify the aggregate value of Commcare subsidies for adult health insurance going to Massachusetts households between 133 and 150% FPL.

network of providers as unsubsidized plans have. Medicaid may carry a social stigma. Persons cannot join CommCare until they have been six months without the opportunity for affordable insurance. For these reasons, I take the participant value of CommCare coverage to be 75 percent of the tax-adjusted cost shown. $262 per month (2014 dollars) is therefore entered in the middle column of Table 1's "HI subsidies for persons w/ ESI at work": it is my estimate of the value of the new subsidy made available by Romneycare for persons leaving an ESI job to exit the labor force and live in a household between 150 and 300% FPL, thereby "jumping onto" the sliding income scale for Commcare premiums.

Persons in ESI jobs can jump onto the sliding scale with an even lesser reduction in hours (than they would by exiting the labor force) by moving to a part-time position that does not offer ESI, because it is the offer of ESI that makes them ineligible for CommCare. The "reduced hours" column therefore scales up the $262 from the OLF column by a factor reflecting the facts that (i) the hourly subsidy is greater for hours reductions that cross the threshold for ESI eligibility than it is for labor force exits and (ii) some hours reductions do not cross the threshold.[18] The result is a benefit amount of $301.

The corresponding program weight is small because only 9 percent of Massachusetts median earners both have ESI and are living in a family between 150 and 300% FPL.[19] I discount the percentage with a factor of 0.51 because no more than 51 percent of non-elderly Massachusetts heads and spouses who live in families between 150 and 300% FPL participate in CommCare when they are not working.[20] The resulting weight is 0.05 and is entered in the OLF column of Table 1's middle panel.

If persons with ESI lost their coverage when they moved to a part-time, then the reduced hours column would have the same weight as the OLF column. In fact, a fraction of part-time workers are eligible for ESI. I therefore scale the reduced hours weight accordingly, using the same factor as Mulligan (2013) does.

[18] This is the same (nationwide) factor used by Mulligan (2013).
[19] The percentage is even less among all non-elderly Massachusetts heads and spouses.
[20] It is not clear whether the Current Population Survey codes CommCare as Medicaid or as non-group private coverage, so I estimate an upper bound on CommCare participation among CPS respondents to be the sum of the two coverage types.

Commcare's similarity to Medicaid and its low enrollment may help explain why Kolstad and Kowalski (2012) found that employees accepted lower wages when their employers began offering health insurance under Romneycare: employer insurance in Massachusetts (including the insurance workers obtain through cafeteria plans) is valuable to employees because the alternative is something like Medicaid, or no insurance at all. But that doesn't mean that employers who begin to offer insurance under the ACA can be sure that their employees will accept lower wages, because a significant fraction of those employees could obtain coverage, plus a subsidy, without employer assistance, and that coverage will be good enough for their Senator (Mulligan 2013).

Sliding Along the Income Scale for Health Payments

The third disincentive associated with the income scales like the one shown in Figure 2 involves "sliding down" – rather than jumping onto – the income scale by working less during the calendar year. This case applies to persons who participate in CommCare, or has family members participating, even when working. Two points on the scale are of primary interest for calculating such a person's work incentives: one point when working more and a second when working less. The person's CommCare penalty for working more is, as a share of household income added by working more, the slope of the line connecting the two points on the scale divided by the dollar amount of the FPL applicable to his family.

Unlike the disincentives associated with jumping onto the income scale, the marginal tax rates from sliding along the income scale are especially sensitive to the exact position on the scale because the scale has four discrete notches or cliffs in it. For example, a person whose family earns 195 percent of FPL when he works less and 205 percent of FPL when he works more would face a CommCare marginal tax rate of about 28 percent. In order to emphasize results that are not especially sensitive to notches and cliffs, I approximate the slopes of the sliding scales by averaging the various slopes, weighting by the width of the income interval over which they apply. Geometrically, the weighted average slope is equal to the slope of the dashed secant shown in Figure 2. I

used the weighted average slopes only for the disincentives associated with sliding along the income scale and not those associated with jumping onto the income scale.

The weighted average slopes still vary across households according to family situations, so I average the weighted average slopes across non-elderly working Massachusetts household heads and spouses in families between 150 and 300 percent FPL who neither have employer-sponsored health insurance or health insurance through a family member. When multiplied by the same 0.75 participant-valuation factor, that average is about 10 percent of earnings, which is the $400 per month shown in the fourth row of Table 1.[21] The same entry is shown in all of the columns of that row because the disincentive depends on income, and not whether a specific income level is achieved through unemployment, out of the labor force, or reduced hours.

As of August 2011, CommCare had only about 54,000 participants (some of them not working) who were above 150% FPL and thereby would not have been assisted by Medicaid absent Romneycare. More than 2.3 million other non-elderly working heads and spouses in Massachusetts do not receive CommCare and thereby could not slide along its income scale for premiums unless they were married to a CommCare participant.[22] My estimate for the program participation weight is therefore (i) the fraction of median earners in in Massachusetts who are in families between 150 and 300% FPL times (ii) the ratio of 150-300% FPL CommCare participation (regardless of work status) to the total number of non-elderly heads and spouses in Massachusetts (regardless of work status) in families between 150 and 300 FPL times (ii) one plus an estimate of the fraction of CommCare participants who are married.[23] The resulting

[21] The $400 entries in Table 1 are greater than the $262 entry because the latter represents a median earner who obtains the (value associated with the) maximum CommCare subsidy by eliminating his earnings for a period of time, and those earnings are about 290 percent of FPL. The former represents, among other things, a median earner without ESI whose work decision reduces his household income by 200% of FPL – from 300% to 100% FPL – and thereby obtains the (value associated with the) maximum CommCare subsidy. In other words, the former case involves more subsidy per dollar of income foregone and thereby has a proportionally greater entry in Table 1.

[22] Some of the 2.3 million could jump onto the sliding scale by working less: they are represented by the program participation weights for "HI subsidies for persons w/ ESI at work."

[23] As with the individual mandate penalty, CommCare participation by one spouse creates an implicit tax on both spouses' incomes. I estimate the fraction married among CommCare participants as the March 2011 CPS fraction married among non-elderly heads and spouses without ESI and without insurance through a family member and with household income between 150 and 300% FPL. This adjustment, which increases the bottom line marginal rate, was not

weight is 0.03 and is the same for all three labor supply margins because movements along the sliding income scale reflect income changes and not specifically employment or hours changes.

Romneycare's Medicaid/CHIP Expansion

The Massachusetts reform increased the family income limit for children's Medicaid/CHIP eligibility from 200% FPL to 300% FPL (Blue Cross Blue Shield of Massachusetts Foundation 2011, 10). In principle, the limit increase could be a substitution effect toward or away from working, depending on whether a person's labor supply absent the program put his family closer to the old or new income limit (Yelowitz 1995). The work-discouraging effect probably dominates for median earners, who by themselves earn almost 300% FPL when working, plus spousal income. My purpose here is to calculate an upper bound on this effect, noting that this upper bound turns out to be extremely low in comparison with the marginal tax rates from the ACA.

Mulligan (2012) uses the framework (1) to (nationally) model the Medicaid program between 2007 and 2011 with a program participation weight of 0.47, a constant benefit index of $358 per month (FY 2010 dollars), and a constant eligibility index (one). Assuming for the moment that Massachusetts would have had the nationwide average Medicaid program absent Romneycare, the impact on the overall benefit index of Romneycare's Medicaid expansion is shown in equation (2):

$$\left(E_{M,2010}/E_{M,2006}-1\right)\omega_M E_{M,2006}B_M=\left[\left(E_{M,2010}-1\right)\omega_M\right]B_M \qquad (2)$$

where *M* denotes the Medicaid program, 2010 denotes Romneycare eligibility rules, and 2006 denotes eligibility rules absent Romneycare. The equality follows from the normalization of the eligibility index to one absent Romneycare.

In order to conform with Table 1's presentation (which does not have a separate panel for eligibility indices), I enter equation (2)'s square bracket term in the middle

made by Mulligan's (2013) analysis of the ACA because the adjustment is more complicated for ACA exchanges that offer both family and individual insurance plans (CommCare is for individuals).

panel for program participation weights and the B_M term in the top benefit panel. I take B_M to be the same as in Mulligan (2012) and convert it to 2014 dollars.

Massachusetts appears to have slightly more Medicaid participation per non-elderly working heads and spouses, so I rescale the nationwide participation weight of 0.47 to be 0.48 for the purposes of examining Massachusetts.[24] The final necessary parameter is the percentage change in Massachusetts Medicaid eligibility as a consequence of the Romneycare CHIP expansion, $E_{M,2010}$-1. Absolute changes from March 2006 among children in families between 200 and 300% FPL can be estimated from various waves of the March CPS, and show increases of -7,661; 10,747; 4,667; and 25,315 for the years 2007-2010, respectively. In order to err in the direction of exaggerating the marginal tax rate effects, I take the largest change of 25,315, which is 2.0 percent of total Massachusetts Medicaid enrollment as measured by the March 2010 CPS. Equation (2)'s square bracket term is therefore 0.01, which is entered in Table 1's middle panel for all three labor supply margins.

Romneycare Subsidies Interact with Other Safety Net Programs

A multitude of social safety net programs predated Romneycare and served to reduce work incentives. The Romney replaces or substitutes for some of them, and thereby might reduce work incentives less than the Ronneycare provisions would if they were introduced by themselves into a world with no safety net. The Medical Security Plan and other Medicaid programs have already been examined above; this subsection examines UI and uncompensated care.

Unemployment insurance (UI) is a major safety net program, and the benefits paid by the UI program are implicitly taxed by Romneycare because UI benefits are part of the household income that determines a household's assistance with health insurance premiums. In particular, persons laid off from a non-ESI job before Romneycare would find their UI benefits taxed at normal marginal personal income tax rates but under Romneycare those marginal rates jump about 10 percentage points for CommCare

[24] US and MA numbers of working non-elderly heads and spouses are taken from the March 2011 CPS. US and MA Medicaid enrollment are taken from (Kaiser Family Foundation 2013) for December 2009.

participants as a result of CommCare's "sliding scale" premium assistance. For someone receiving $1,462 per month in UI benefits – about the average among UI-eligible persons with earnings potential near the Massachusetts median – that's an extra $155 per month in taxes.

If all of the unemployed received UI benefits, then the participation weight (for the unemployment margin) on the implicit taxation of UI benefits would be equal to the weight on "HI subsidies for persons w/o ESI at work" because the implicit taxation of UI benefits occurs by moving along the sliding scale for the HI subsidies, as people without ESI will (conditional on CommCare participation) do as they move in and out of employment. Because some of the unemployed do not receive UI benefits, I rescale this weight by the propensity of the unemployed to receive UI benefits, which is Mulligan's (2012) program participation weight for the UI program.

The uninsured sometimes receive uncompensated care from health providers, and uncompensated care is likely means-tested. To the extent that Romneycare reduces reliance on uncompensated care, it may reduce the implicit income tax associated with it. I am not aware of a calculation of the average marginal tax rate from uncompensated care, but it can be estimated by assuming that its value is a linear function of household labor income and noting that: (a) the uninsured paid, in 2008, a nationwide aggregate of $30 billion in health expenses (another $56 billion was uncompensated care for those patients) and (b) aggregate labor income among the uninsured was $510 billion.[25] This puts the average marginal labor income tax rate (including in the average those among the uninsured who do not use any health care) from uncompensated care of 5.9 percent. According to this estimate, when spending a month prior to Romneycare without his $3,959 earnings, an uninsured person could expect to save an average of $233 in medical expenditures by increasing his uncompensated care. After Romneycare, this help might not be necessary because he would have private HI coverage. Thus, -$233 per month is shown in the top panel of Table 1 as a Romneycare impact on the amount of benefits available as a consequence of not working.

The participation weight on the uncompensated care program is an estimate of the impact of Romneycare on the fraction of non-elderly working heads and spouses without

[25] Kaiser Commission on Medicaid and the Uninsured (2008, 1).

health insurance. The estimate is taken as the difference between the Massachusetts uninsurance rate in 2010 and the same rate in 2006.

Conclusions

Orders of Magnitude

The bottom panel of Table 1 accumulates the results of the top and middle panels. Its top row begins by, conditional on a margin for reducing labor supply, multiplying each program's benefit index by its program participation weight and then summing across programs. The combined effect of Romneycare is to add about $14 per month in the assistance that people with median earnings potential get when they spend time unemployed, and about $27 per month when they reduce labor supply on one of the other two margins.

The final two rows of Table 1 report the results of aggregating across labor supply margins using the weights shown in the table reflecting the relative contribution of each margin to the reduction in aggregate work hours during the recession of 2008-9 (Mulligan 2012). Romneycare adds $20 per month to the overall statutory index. This assistance is in addition to the cash flow assistance they already get from unemployment insurance, food stamps, tax policy, and a host of other safety net programs.

$20 per month is 0.4 percent of the total full-time compensation of a Massachusetts head or spouse of roughly median earnings potential. Thus, I conclude that Romneycare added 0.4 percentage points to the typical marginal labor income tax rate in Massachusetts.

With the exception of the employer penalty, the dollar amounts in Table 1's top panel are an order of magnitude greater than the $20 overall average. However, as indicated by the corresponding weights in the middle panel, less than 10 percent of the Massachusetts workforce was presented with the new work disincentives. The employer penalty may affect a greater fraction of the workforce, but its magnitude is only $25 per month. Thus Romneycare's average marginal tax rate increase can be roughly understood as a significant implicit tax for a small fraction of the Massachusetts population plus a small employer penalty.

Table 2, reproduced from Mulligan (2013), has the same format as Table 1 except that Table 2 relates to the nationwide disincentives created by the ACA.[26] The ACA adds about 4.9 percentage points to marginal tax rates: about twelve times Romneycare's addition.

The 0.4 (Massachusetts) and the 4.9 (nationwide) percentage point additions were calculated for the purpose of "before-after" aggregate labor market analysis. That is, if all other determinants of Massachusetts tax rates had been constant between 2005 and 2010, a typical Massachusetts non-elderly head or spouse faced 0.4 additional percentage points of labor income taxation in 2010 than they did in 2005 when Romneycare was not yet in effect. Per capita work hours in Massachusetts would, all else the same, fall during that time frame in an amount commensurate with the size of the tax increase and the sensitivity of work hours to tax rates. If all other determinants of national tax rates remain constant between 2013 and 2015, the typical non-elderly American head or spouse will face 4.9 additional percentage points in 2015 than they did in 2013. Per capita work hours in the United States would, all else the same, fall during that time frame in an amount commensurate with the size of the tax increase and the sensitivity of work hours to tax rates.

The tax rate components shown in Tables 1 and 2 also permit before-after analysis of employment per capita, hours worked per employee, and the unemployment rate. The tax rates and components shown in this paper are not quite the right calculations for predicting the hypothetical effects of implementing Romneycare nationwide or of implementing the ACA in Massachusetts because, among other things, Massachusetts workers are different from the national average and because both health reform laws interact with each other and with the rest of the social safety net.

Table 3 decomposes the twelve-fold difference between the ACA and Romneycare into its program-specific components. Each row of the table is a program potentially affecting the reward to work. Each entry is a monthly dollar amount calculated as the sum across the three labor supply margins of each of the program's benefit indices (from the top panel of Table 1 or Table 2) times the corresponding program participation weight (middle panel) times the corresponding labor force

[26] As noted throughout the paper, whenever possible and appropriate the same techniques and data sources were used for Table 1 as with Table 2.

weight.[27] The left column is Romneycare (Table 1), the middle column is the ACA (Table 2), and the last column is the ratio of the ACA dollar amount to the Romneycare amount. Table 3's dollar entries are components of health reform's impact on the average marginal tax rate (shown in Table 3's final row) because the latter is the ratio of the column sum of dollar entries (shown in the top TOTAL row) to the monthly compensation of the median earner.

The primary difference between Romneycare and ACA employer penalties is the nominal amount: $295 versus $2,000, respectively. Also significant are the facts that the ACA penalty is not business tax deductible, that Massachusetts employers are especially likely to offer health insurance even without a penalty, and that the MA penalty cannot be avoided by moving to part-time work. Overall, the ACA employer penalty is 11 times more important.[28]

With their individual mandate relief, both Romneycare and the ACA create five or six dollars per month of work disincentive, although I noted above how they do so in different ways. The next two rows of Table 3 show how both "sliding along" and "jumping onto" the sliding income scale for health insurance assistance involve more work disincentive under the ACA than under Romneycare. In both cases, the ACA has roughly twice the benefit index because the subsidy is more valuable. The ACA's participation weight for sliding along the scale is more than twice as large as Romneycare's because Massachusetts was offering new subsidies to households in roughly the 150-300 FPL range, whereas the ACA is offering them in the 100-400 FPL range.[29] The most dramatic ACA-Romneycare difference comes from the weight associated with jumping onto the sliding scale, which is greater for the reasons above,

[27] Mulligan (2012) interprets the sum of products as the program's contribution to the reward to work for the average marginal worker (i.e., a worker who adjust labor supply on each of the three margins in the proportions indicated by the margin weights).

[28] Dubay, Long and Lawton (2012) note that one of the Romneycare thresholds for large employer is 11, as compared to the 50 employee threshold in the ACA, and that fewer employers fall under an 50 employee threshold. On the other hand, holding constant the per-employee penalty, the cost of crossing a 50-employee threshold is greater than crossing an 11-employee threshold because the penalties levied on employees below the threshold.

[29] This is the same reason that the ACA's entry for implicit taxation of UI benefits is also greater in magnitude than Romneycare's entry.

plus higher expected takeup rates, plus the fact that Romneycare comes after other forms of assistance for Massachusetts workers leaving ESI jobs.[30]

Expanding Medicaid is the only area where Romneycare has a noticeably greater contribution to marginal tax rates than the ACA does, but even Romneycare's contribution in this regard averages only four dollars per month because such a small part of the Massachusetts population is affected by that expansion.

Overall, the ACA will add 11 times more dollars to work disincentives than Romneycare did. In percentages of total compensation, which is somewhat greater in the Massachusetts workforce than in America's generally, the ACA adds twelve times more. This bottom line result is so dramatic because program participation rates and dollar benefit amounts (or costs) per participant are multiplicative in their average effects, and the ACA involves larger dollar amounts per participant and is expected to directly alter work incentives for larger fractions of its population.

A New Approach to Taxation

Arguably Romneycare taxes work in more unique ways than the ACA does, without using any of those taxes with much intensity. From a tax-history perspective, Romneycare is notable in that it separately taxes both earnings and hours worked.[31] It taxes aggregate hours worked by making employer penalties proportional to full-time equivalent employees, which are measured according to total hours worked at the employer. Given the propensity of employers to offer health insurance to full-time employees but not part-time employees, and that Romneycare creates incentives for offering health insurance, Romneycare also indirectly affects incentives for part-time work.

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[30] "Massachusetts is the only state in the nation to offer a health care plan for unemployment insurance claimants, by providing assistance with the cost of existing health insurance premiums or by covering the cost of actual medical expenses." (Massachusetts Executive Office of Labor and Workforce Development 2013) An exception to this was a temporary federal COBRA assistance program under the American Recovery and Reinvestment Act (Mulligan 2012).

[31] Another difference between Romneycare and the ACA – less relevant for calculating marginal labor income tax rates than for understanding insurance coverage – is that Romneycare uniquely expanded coverage in part by leveraging federal tax rules excluding employer-provided health insurance from the payroll and personal income tax bases (see especially Romneycare's cafeteria plan provisions).

The ACA goes further in the direction of taxing hours worked by fully exempting part-time employees from employer penalties and thereby making subsidized health insurance easily available for part-time employees. As shown by the $27 entry in Table 1 and the $208 entry in Table 2, both laws tax the weekly hours margin of labor supply about as much as they tax the other two margins.

Federal Lessons from Massachusetts

Because the ACA's work disincentives are at least an order of magnitude greater than Romneycare's, one cannot reasonably conclude from the Romneycare experience alone that the ACA would not significantly contract the labor market. In principle, one could obtain an estimate of Romneycare on the Massachusetts labor market and then multiply it by roughly 12 to make a forecast of the ACA's nationwide effect. However, not only would that be a bold exercise in extrapolation, but it would also require hyper-accurate estimates of the Massachusetts-average Romneycare effect.

With the exception of the employer penalty, the Romneycare benefit indices in the top panel of Table 1 are of the same order of magnitude as the ACA benefit indices in the top panel of Table 2. Thus, there are subpopulations of Massachusetts that may have experienced something like the national average disincentive from the ACA (without employer penalties) and a Massachusetts subpopulation's behavioral change might be used to forecast the national average. I am not aware of studies of the appropriate Massachusetts subpopulations, such as heads and spouses without ESI and living in households with income near 150 and 300 percent of FPL. More important, this approach would require accurate estimates for small groups, which may be almost as difficult as obtaining hyper-accurate estimates for the statewide effect.

It would help to know the extent of take-up of premium assistance under the ACA. However, this paper noted that Romneycare and the ACA are quite different in terms of the types of insurance that is subsidized, with Romneycare subsidizing close substitutes for Medicaid and the ACA subsidizing potentially close substitutes for employer-provided insurance.

Another approach would be to obtain estimates of the ACA's tax effects from elsewhere and, treating Romneycare as having approximately zero tax effects (as Kolstad

and Kowalski (2012) conclude), interpret the Massachusetts experience as evidence of the per capita non-tax effects of health reform that could be added to the tax effects.[32] However, given that orders of magnitude separate the two laws' tax incentives, they may also separate their non-tax effects.

This paper quantifies employment and hours distortions from health reform. Estimates like these are necessary, but not sufficient, for a complete cost-benefit analysis of health reforms, which must also quantify impacts on health and other behaviors. Health impacts, for example, may well be valuable enough to offset significant labor market distortions. My work so far only permits us to conclude is that the national labor market costs of the ACA far exceed, in per capita terms, the Massachusetts labor market costs of Romneycare.

[32] The non-tax effects could be effects of access to health care, or wealth effects, or changes in the composition of labor demand.

Table 1: Romneycare and Related Components of the Statutory Marginal Tax Rate Index
Calendar year 2010, average among MA household heads and spouses with median earnings potential

Benefit Index Amounts (constant 2014 dollars per month)

	Margins for Reducing Labor Supply		
Program	Unemployed	OLF	Reduced hours
Employer shared responsibility penalty	25	25	25
Individual mandate relief: sliding scale	147	147	147
Individual mandate relief: hardship exemptio	95	0	0
HI subsidies for persons w/o ESI at work	400	400	400
HI subsidies for persons w/ ESI at work	0	262	301
Medicaid/CHIP expansion for children	389	389	389
Implicit taxation of unemployment benefits	-155	0	0
Move off implicit uncompensated care tax	-233	-233	-233

Program Participation Weights (fractions)

Program	Unemployed	OLF	Reduced hours
Employer shared responsibility penalty	0.17	0.17	0.17
Individual mandate relief: sliding scale	0.03	0.03	0.03
Individual mandate relief: hardship exemptio	0.02	0	0
HI subsidies for persons w/o ESI at work	0.03	0.03	0.03
HI subsidies for persons w/ ESI at work	0	0.05	0.04
Medicaid/CHIP expansion for children	0.01	0.01	0.01
Implicit taxation of unemployment benefits	0.02	0	0
Move off implicit uncompensated care tax	0.03	0.03	0.03
Statutory index, all ACA programs	**14**	**28**	**27**
LFS weights	0.583	0.089	0.328
Statutory index, all ACA programs & all LFS	**$20/month = 0.4% of employer cost**		

Table 2: ACA and Related Components of the Statutory Marginal Tax Rate Index
Calendar year 2015, average among household heads and spouses with median earnings potential

Benefit Index Amounts (constant 2014 dollars per month)

	Margins for Reducing Labor Supply			
Program	Unemployed	OLF	Reduced hours	growth rate after 2014
Employer shared responsibility penalty	192	192	220	starts at 192 in 2015,then grows at wages +1.6%/yr
Individual mandate relief	103	0	0	grows with inflation after 2016
HI subsidies for persons w/o ESI at work	832	832	832	
HI subsidies for persons w/ ESI at work	508	508	582	grows 1.6%/year more than wages
Implicit taxation of unemployment benefits	-301	0	0	
Move off implicit uncompensated care tax	-201	-201	-201	grows with wages

Program Participation Weights (fractions)

Program	Unemployed	OLF	Reduced hours	growth rate after 2014
Employer shared responsibility penalty	0.23	0.23	0.23	
Individual mandate relief	0.09	0	0	all program participation weights are constant by definition
HI subsidies for persons w/o ESI at work	0.07	0.07	0.07	
HI subsidies for persons w/ ESI at work	0.23	0.23	0.18	
Implicit taxation of unemployment benefits	0.05	0	0	
Move off implicit uncompensated care tax	0.05	0.05	0.05	
Statutory index, all ACA programs	**207**	**211**	**208**	
LFS weights	0.583	0.089	0.328	
Statutory index, all ACA programs & all LFS	**$208/month = 4.9% of employer cost**			

Table 3. Romneycare and the ACA Compared on Marginal Tax Rate Components

constant 2014 dollars per capita per month

Program	Romneycare	ACA	ACA as a ratio to Romneycare
Employer penalty	4	47	11
Individual mandate relief	5	6	1
HI subsidies for persons w/o ESI at work	11	61	5
HI subsidies for persons w/ ESI at work	5	113	23
Medicaid/CHIP expansion for children	4	0	0
Implicit taxation of unemployment benefits	-2	-8	5
Move off implicit uncompensated care tax	-8	-10	1
TOTAL (2014 $ per capita per month)	20	208	11
TOTAL (percentage of compensation)	0.4%	4.9%	12

Figure 1. Massachusetts Individual Penalty Amounts

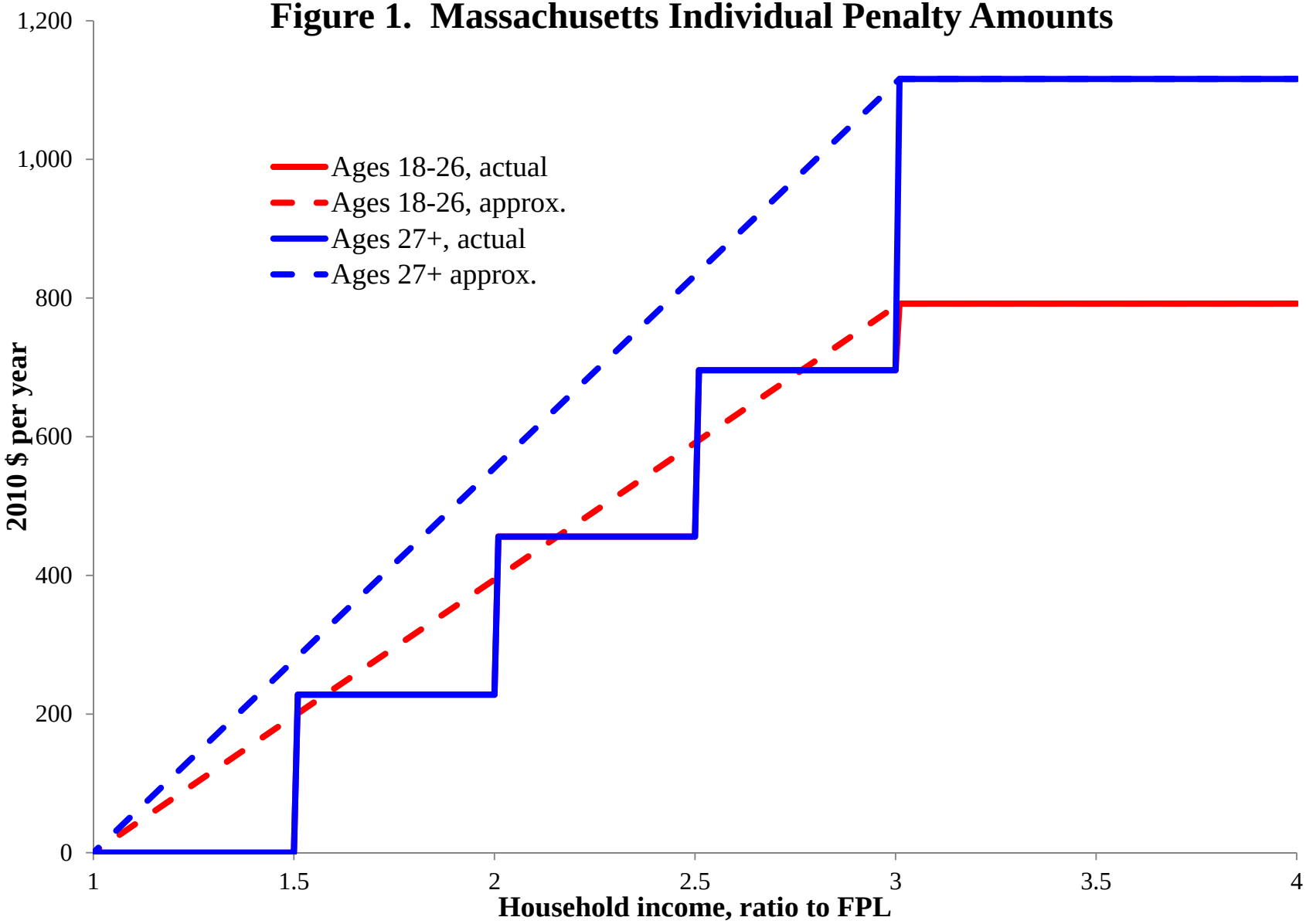
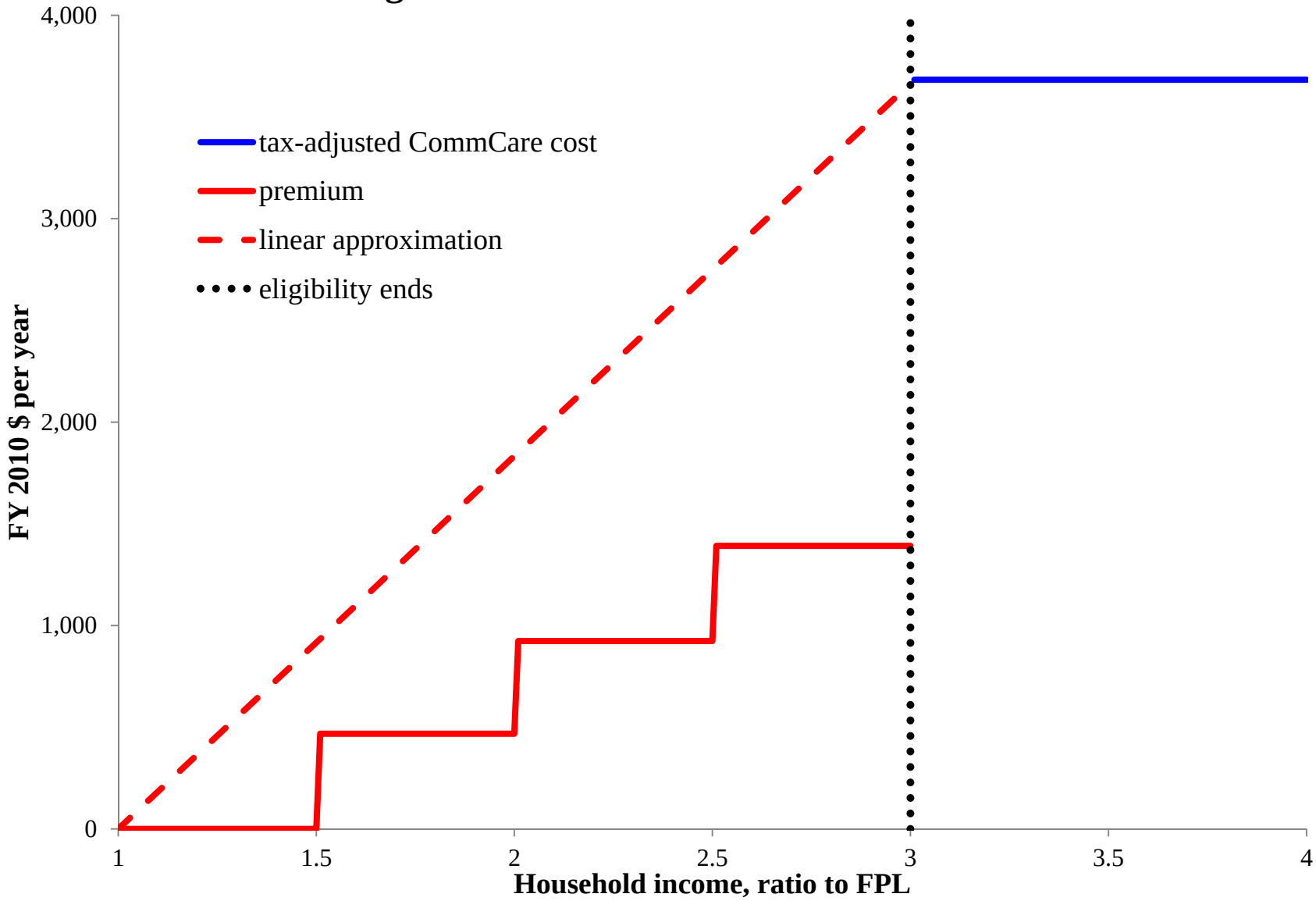


Figure 2. CommCare Premiums and Costs



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