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ESSAYS IN THE SOCIAL DETERMINANTS OF HEALTH AND PUBLIC HEALTH POLICY

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by

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DISSERTATION

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DEDICATION

I feel it right and proper to dedicate this work to my wife Stefanie. She is the love of my life, my partner, and my best friend. Without her, I could not have done what I have now done.

I too owe a great debt of gratitude to my son and my daughter. In each their own way, they have sacrificed much as I have pursued this work. Time we missed together can never be reclaimed yet, selflessly, they smiled each time I left encouraging me on to some unknown and abstract goal. They remind me what joy there is in life, what innocence feels like, and what power there is in youth and trust. I'm lucky to have such wonderful children.

Finally, I would feel remiss if I failed to recognize the role of my mother, who now watches over and manages my progress from above, and my father, whose keen ear, thoughtful mind, and ever present words of wisdom have stoked the fires of my determination and perseverance.

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ABSTRACT

There is broad-based qualitative evidence arguing that stress is a public health concern. In the search for causality however, economists investigating public health concerns are often limited to a narrow subset of socio-economic status (SES) factors which are not well suited to the evaluation of stress/health effects. As a result, economists have a difficult time answering the "how" and "why" questions which emerge from the well-respected SES/health gradient. This dissertation focuses on a subset of stressors credibly affiliated with SES to address two pathways underling the established SES/Health gradient. Chapter 2 uses the Panel Study of Income Dynamics to test financial strain (FS) and high-frequency job switching (JS) effects on health. Using dynamic panel random effects ordered probit specifications, we find support for FS and JS effects on self-assessed health status. Of course, policy recommendations that follow are unimaginably vast. In chapters 3 and 4, we focus on breaking down the grand policy consideration of reducing financial strain into politically viable actions. First, we develop and test a pragmatic policy analysis method against observable outcomes from two health policies made by the state of Alaska. In terms of reducing individual year-over-year

health insurance premium volatility, the presented method performs better than the commonly relied upon actuarial methods. The implication is that adoption of such analytical methods may result in improved population health. Chapter 4 evaluates the effects of childhood retrospective circumstances on the experiences of adult financial strain. Results suggest school experiences, feelings of loneliness, parental work habits, and maternal relationships are key predictors of adult financial strain.

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Chapter 1: Introduction

1.1. Overview

The establishment of the 2010 Patient Protection and Affordable Care Act (ACA) was developed, in part, as a solution to concerns over availability of insurance coverage and access to care. At the same time, the ACA spearheaded a national movement toward zero-cost preventive care. While the validity of the ACA is hotly debated, the ACA's access and preventive care intentions have largely avoided open political conflict. The surprising unity of purpose inherent in this fact demonstrates a national health policy commitment to principles laid down in Social Determinates of Health (SDH) research. Siding decisively on the socio-economic status causes health side of the economic debate that has raged for almost half a century, our national policy perspective implies that preventive care improves health. It is unclear today whether the benefits of embracing SDH priorities outweigh the costs.

Continued debate around the legitimacy of the ACA, problematic program design, and a long history of attacks which target risk-sharing transfers and subsidization continue to increase carrier level uncertainty. Increasing uncertainty has sparked a period of increasing premium inflation and volatility, increased cost-sharing, and rapidly increasing deductibles. So, while preventive care has become a permanent part of our national health conscience, so too has increasing levels of financial strain and uncertainty around the "shock" burden of adverse health events. A compounding feature of the American economic landscape is the trend toward precarious employment that undermines income stability and increases both the frequency of job changes and

associated search costs. This dissertation emerged as a natural curiosity around the question, "are increasing tendencies to live financially strained and decreasing opportunity for long-term stable employment reducing individual health stocks?" The impetus of Chapter 2 is to answer this question.

There is a great deal of economic history underpinning the well accepted socioeconomic status health gradient (Halliday, 2007). In Chapter 2, we use this historical work as a stepping off point to inform on two potential SDH transmittal pathways running from SES to health. To do so, this research uses an unbalanced panel consisting of eight waves of the Panel Study of Income Dynamics PSID from 1999 through 2013. Theoretical motivation for this work is drawn from Muurinen (1982) who posits that health outcomes are likely driven by an individual health depreciation factor which is, "endogenously related to choices made by the individual." The theoretic model is developed from the perspective that the efficiency of converting human capital into income is not costless, that this cost varies across individuals, and that it is observable in health outcomes. In this way, this research is built on the standard assumption that the process of income generation is a function of human capital (Becker, 1967; Becker, 1994) which is stitched into Grossman's, 1972 health investment model. Emergent hypotheses are that both financial strain and job-switching frequency cause negative health consequences. Estimation proceeds with the dynamic panel random effects ordered probit specification with correlated random errors, and corrections for the initial conditions problem. This work differs from historical research across two important dimensions. First, following the course set by (Contoyannis et al., 2004), this study uses a small T large N dynamic longitudinal survey and differs from prior research on financial

strain in this respect. Second, we develop and test the theoretical relationship between job switching frequency as a causal mechanism in the relationship between SES and health. We find that both variables are negatively related to self-assessed health status SAHS, however they effect the individual in different ways. Financial strain "shock" is negative but has no permanent effect which we attribute to consumption smoothing, and job-switching frequency exhibits a long-term effect but no meaningful short-term effect. Of course, policy implications run counter to the national trends of increasing financial strain and increasing transience in employment, and are thus so broad in declaration as to be essentially meaningless. As a result, we take two approaches to narrowing the scope of policy recommendations. Taken in order, Chapter 3 develops a pragmatic policy evaluation method to assist policy makers in reducing individual level cash-flow shocks which emerge as a result of imprecise health and health insurance policy.

The development of our policy analysis tool is predicated on a recent trend toward state management and modification of ACA related policy directives. Although states have the option of applying for a 1332 waiver to waive or modify elements of the ACA, few states have the internal capacity to accurately define appropriate values for health and health insurance policy measures often deferring to the federal benchmarks which poorly characterize state needs. To further complicate matters, decisions which effect many are often made on the backs of allegory and hyperbole during rushed sessions and through analysis periods crammed into overnight hours. Having firsthand experience with this world, it became clear that an actionable path to reducing financial strain shocks was to formalize and operationalize the decision making process around a simple to implement quantitative low overhead model of policy change. We develop our model

around reinsurance program design although the methodology is applicable to many program design efforts.

The overwhelming majority of 1332 waiver applications relate to establishment of state run reinsurance programs. Access to requisite state level information is made publically available through the transparent waiver process.   Leveraging this information resource, our research develops a generalizable quantitative health policy evaluation algorithm. Using simulation and sensitivity modeling, the model is adapted to two policy changes which took place in Alaska: the expansion of their Medicaid program, and then the implementation of a state funded conditions based reinsurance program. As a third validation test of the model's predictive power we test against the actuarial analysis generated for the State of Washington's proposed attachment point reinsurance model. In the case of Washington State, the model predicted extensive unanticipated liability which was sufficiently compelling to motivate a change in program parameters. Across validations, the model predicted results were both statistically credible and reduced year over year premium volatility relative to the comparable actuarial approaches taken. Because the population of insured act as an intra-liminal shock absorber for state and carrier error terms, adoption of such an evaluative method is supportive of reducing individual level expense volatility. Reduced volatility in expected health and health services cost directly effects a reduction in financial strain and the rate of consumption of individual health stock. In chapter 4, we turn our analytical lens to adolescent circumstances and experiences in order to inform policy makers on youth programs which are predictive of adult financial strain.

Chapter 4 presents a case study of Caucasian adolescent conditions, behaviors, and experiences and their effects on the probability of adult financial strain. Our research thus fully embraces SDH preventive aims. SDH theoretical categorization of relevant factors is broad. SDH factors thought to influence health run the gamut leaving few stones unturned: poverty, hunger, occupational exposure to hazards and relations at work, social and economic effects ranging from illness to the experiences of gender relations and racism, home circumstances, self-efficacy, dietary intake, habitual tendencies, accumulated deficits of ones' past, schooling, marital status, socioeconomic status, and position in the life-course (Lee and Sadana, 2011). Such a broad spectrum of interlinked influences necessarily cuts across variables of class, housing stock, the education system, and the operation of markets in goods and labor (Solar & Irwin, 2007). SDH research is thus both wide with opportunity and fraught with pitfalls. In this study, we employ both conventional statistical modeling and machine learning approaches to evaluate a battery of retrospective childhood circumstances on adult tendencies toward financial strain. This research uses eight waves of the PSID (1999 – 2013) and integrates the Childhood Retrospective Circumstances Survey which queries 2013 participants in the PSID on childhood and adolescent events, situations, and behaviors. With greater than one hundred twenty variables focusing on disparate domains including: health, education, social, neighborhood, and family influences coupled with SAH theories that imply a multitude of interconnections, this research uses Principle Component Analysis to reduce the variable count into orthogonal components which group correlated variables without a-priori assumptions. We use both individual and ensemble techniques (decision tree and random forest) machine learning algorithms to evaluate component sensitivity

effects with respect to accurate prediction of adult financial strain. After normalization of results, we use combination forecasting ((Bates and Granger, 1969; Bohara, McNown & Batts, 1987) to weight model sensitivities for aggregation. Coefficient directional effects and significance are recovered from bootstrapped training session for our preferred random forest model. These results are validated against a variety of logit specifications which are qualitatively similiar. Results are consistent with the perception that students that enjoy school, tend to be more financially stable in adulthood. Additionally, fathers' work habits are a robust role modeling tool. We also find a pair of counter intuitive findings: first, mother's work habit is positively correlated with offspring tending toward financial strain in adulthood, and second, that close affectionate maternal relationships seem to coincide with higher levels of adult financial strain in later life. Past research (Reed et. al. 2016; Swartz et. al. 2011; Fingerman et. al. 2012; Kirkpatrick, 2013; West et. al. 2012; Suitor et. al. 2017) is consistent with the second finding; that easy to approach, forgiving and attentive parents may provide more robust safety nets thus inhibiting the development of sound financial behavior in offspring. In combination with mom's employment characteristics, we posit a direction for future research; that is, the role of mom's employment history and mother/adolescent social relationships that emerge in this research seem to suggest that it is more beneficial to have a strict, and present mom within the household and less beneficial to have an absent but easy/forgiving mom in terms of adult tendencies toward adult financial strain. We find this vein for future research compelling in the context of: increasingly fully employed mothers, helicopter parenting, youth contending with increasingly precarious employment, and rising compulsory health insurance expenditures.

This dissertation contains several key contributions. Briefly summarized, in Chapter 2, we use dynamic panel analysis applied to the study of financial strain. Defining financial strain in the method of Zeldes(1982), we find evidence that financial strain is not endogenously determined thus helping to inform on the existing indecision prevalent in the study of income/health relationships. Our findings of the shock nature of financial strain on health is unique in the literature. Embracing the precarious employment literature, we introduce job-switching frequency as a measure of employment stability breaking from the traditional snapshot measure of unemployment using aggregated transitions into and out of employment constructed from the PSID employment calendar. Or rational is that this measure more accurately represents an individuals' predilections enforcing more distance between behavior and circumstance. Our finding of a negative and permanent effect validate this approach to the study of precarious employment in future literature. In chapter 3, we use a simple participation constraint as a backbone for building consensus among decision makers with respect to development of health policy. The contribution is two-fold, by developing policy around a participation constraint, decision makers can easily identify the required data breadth and depth simplifying collection of relevant information resources which often span departments buried in silos protected with substantial legal limitations. Further, the formal expression of assumptions and simulated Monte-carlo sampled confidence intervals around outcomes provides substantially more informational depth than existing actuarial methods. As a result, the consolidation of relevant decision making information is greatly improved defining limitations, the range of unexpected liabilities, and potential market distortions more clearly and accurately than methods historically used. To our

knowledge, this approach is unique in state government. In chapter 4, accepting the breadth and interactions of SDH factors across disciplines, we employ machine learning techniques to sift out salient predictive relationships. Our combination forecasting method of weighting and aggregating model results based on their relative predictability is a relevant contribution to SDH research.

Chapter 2: The Effects of Financial Strain and Job Switching on Health

2. Introduction

This research draws inspiration from Muurinen (1982) who posits that health outcomes are likely driven by an individual health depreciation factor which is, "endogenously related to choices made by the individual." Continuing along the established line of economic research relating to the socio-economic status SES/health gradient (Adams, Hurd, McFadden, Merrill, & Ribeiro, 2003; Deaton, 1999, 2003; Fletcher, Sindelar, & Yamaguchi, 2011; Grossman, 1972; Halliday, 2007; Jacobson, LaLonde, & Sullivan, 1993; Lindahl, 2005; Newhouse & Friedlander, 1980; Smith, 1999, 2004a, 2004b; Sullivan & Von Wachter, 2009; Wagstaff, Van Doorslaer, & Paci, 1989; Wilkinson & Marmot, 2003), this work links research on the social determinants of health, (Babiarz, Widdows, & Yilmazer, 2013; Benach, Benavides, Platt, Diez-Roux, & Muntaner, 2000; Gallo et al., 2006; O'Neill, Prawitz, Sorhaindo, Kim, & Garman, 2006; Sullivan & Von Wachter, 2009; Wilkinson & Marmot, 2003) with the aforementioned economic research relating to the SES/health gradient. It contributes to addressing the causal gap prevalent in the socio-economic SES/health literature.

We develop our theoretic model from the perspective that the efficiency of converting human capital into income is not costless, that this cost varies across individuals, and that it is observable in health outcomes. This approach builds on the standard assumption that the process of income generation is a function of human capital (Becker, 1967; Becker, 1994). Indeed, a long history of interdisciplinary research has wrestled with the nature of the relationship between education, precarious employment,

and health implicitly supporting our hypotheses.[1] We investigate whether observable efficiency 'frictions' cause negative health outcomes. From a policy perspective, this work is important on two fronts. First, it highlights the health effects of human interactions with economic systems. Second, in an international context, this research introduces evidence that inclusion of financial strain measures (or access to financial leverage metrics), may help to reduce confounding that biases international comparisons of national health systems outcomes (Shaw, Benzeval, & Popham, 2014).

Historical works which frame our analysis have been conducted by several notable authors. Lyons & Yilmazer (2005) tackle a similar research question to the one proposed in this research. Using a limited cross-sectional sample, the authors find "little evidence that financial strain contributes to poor health." The endogenous financial strain variable is conditioned on a variable denoting an income state which is significantly different from average income which is explicitly not caused by a health shock. The sample for which this value was non-zero represented approximately 20% of the financial strain cases. Likewise (Meer, Miller, & Rosen, 2003) perform a similar analysis instrumenting wealth shocks with a small sample (approximately 5% of the sample) for which inheritance is greater than zero. Conditioned on inheritance, the authors find that the perceived effect of wealth on health fails to remain statistically significant. In both these works, the analytical window and the relative proportion of the population that suffers a shock is quite limited. In a parallel vein of research, Contoyannis, Jones, & Rice, 2004 test the effect of income shocks on SAHS. Their

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[1] For representative works see (Benach & Muntaner, 2007; Benach, Vives, Amable, 2014).

random effect dynamic probit exogenous specification finds little evidence of income's

effect on SAHS.

Recent literature is split between endogenous and exogenous treatments of SES

on Health (Babiarz et al., 2013; Contoyannis et al., 2004; Cuesta & Budría, 2015;

Gathergood, 2012; Lau & Leung, 2011). In this work, we treat financial strain

exogenously.[2] This research differs from historical works across two important

dimensions. First, following the course set by (Contoyannis et al., 2004), this study uses

a small T large N dynamic longitudinal survey and differs from prior research on

financial strain in this respect. Second, we develop and test thetheoretical relationship

between job switching volatility which we consider as a causal mechanism in the

relationship between SES and health.

The remainder of this research is organized along the following lines: Theoretical

Motivation and Development, Data, Empirical Specification, Results and Discussion, and

Concluding Remarks.

2.1.   Theoretical Motivation and Development

We assume that individuals are rational utility maximizing agents facing a

dynamic optimization problem across independent variables: Health, Leisure, and a

bundle of non-health related consumption. Utility is discounted by an individual facing

potentially time variant time preferences. As in Grossman (1972), an individual's Health

is presumed to evolve over time. Consistent with (Muurinen, 1982) individual

observable characteristics are allowed to effect the rate at which health stock is

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[2] Endeogeneity is tested and rejected. Discussion is relegated to Appendix 2.

consumed. Individuals are assumed to face a lifetime earnings budget constraint which depends on wealth, wage, leisure, sick and health activity time, and consumption of non-health related goods. The underlying problem can be framed as the maximization of utility subject to a lifetime budget constraint and a health production function. The optimal health production function is thus derived.[3]

$$H_{it}^* = f(\text{H}_{it-1}, \text{P}_t^x, \text{P}_t^I, \text{w}_{it}, \text{A}_{it}, \text{r}_t, \theta_{it}, \text{q}_{it}; \eta_i, \text{D}_i, \text{D}_{it}) \ . \tag{1}$$

Where H_{it}^* is the chosen level of health, a function of last periods health, prices of consumption goods both non-health and health $\text{P}_t^x, \text{P}_t^I$, the wage rate w_{it}, family assets A_{it}, the rate of return on investment r_t, an individual time preference θ_{it}, and the rate of consumption of existing health q_{it}. These chosen factors are then conditioned on individual level unobservable random variation η_i, and time invariant and time variant demographic characteristics $\text{D}_i, \text{D}_{it}$.

2.2.   The Estimation Model

The information requirements of the theoretical model are broad. To conform the theoretical model to available data, several simplifying assumptions are required. In our data, prices and consumption data is limited. We therefore make a simplifying assumption and treat this estimation as a reduced form model; we do not consider individual consumption choices beyond the propensity to spend within or in-excess of

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[3] See Appendix 2 for derivations.

earnings. Specifically, we assume that the difference in assets over time is equal to total income including returns on assets less health and non-health consumption. This is to suggest that the change in individual wealth is equal to current income less purchases. The change in assets can therefore be thought of as a function of income Y_{it}, consumption of non-health and health goods $P_t^X X_{it}, P_t^I I_{it}$ respectively, and the individual discount rate θ_i.

$$\partial A = f(Y_{it}, P_t^X X_{it}, P_t^I I_{it}, \theta_i) \ . \tag{2}$$

Zeldes, 1989 exploits this relationship defining financial strain as a ratio of assets to income. This method has become a standard in financial strain related research. As such, in the empirical specification for our model, all price, income, and time preference is captured by the financial strain variable F_{it}^S.

Our research considers financial strain F_{it}^S and job switching volatility J_{it}^S as observables which inform on the consumption of health $q_{it} = f(F_{it}^S, J_{it}^S)$. As such, J_{it}^S substitutes directly into the health production function. As a further simplifying assumption, we assume that all individuals face the same investment rate of return r_t culminating in the empirically testable health production:

$$H_{it}^* = f(H_{it-1}, F_{it}^S, J_{it}^S; \eta_i, D_i, D_{it}) \ . \tag{3}$$

Hypotheses which directly emerge from the empirically testable health production function are defined:

H₀: Economic strain is not costless and is observable in the relationship between

job switching volatility and health. Our theory posits a negative relationship.

H₁: Financial Strain reduces the optimal quantity of health demanded.

The empirical model for the conditional demand for health function arises naturally:

$$H_{it}^* = \beta_1 H_{it-1}^* + \beta_2 F_{it}^S + \beta_3 J_{it}^S + \sum_{j=1}^{K} \vartheta_j D_{ji} + \sum_{l=1}^{M} \gamma_l D_{lit} + \eta_i + u_{it} \tag{4}$$

Where H_{it}^* and H_{it-1}^* are measured conventionally as a categorical Self-Assessed Health

measure.   The vectors of demographic variables D are broken into groups of time-

invariant and time-variant variables respectively denoted by the subscripts t and it and

indexed by j and l. The standard unobservable individual effect is $\eta_i \sim N(\mu, \sigma_\eta^2)$ while

the residual is treated conventionally $u_{it} \sim N(0, \sigma_u^2)$.

2.3.   Data

The Panel Study of Income Dynamics (PSID) over the period 1999 – 2013 is used

for this study. The PSID is a paid multi-generational steady-state panel design

longitudinal survey supported by the National Science Foundation, the Office of

Economic Opportunity, the Assistant Secretary for Planning and Evaluation of the

Department of Health and Human Services, the Departments of Labor and Agriculture,

the National Institute for Child Health and Human Development, and the National

Institute on Aging. The PSID underlies more than 2,000 publications, of which some

appear in top economic and sociology journals. [4]

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[4] For a full background on the development and characteristics of the PSID, see (McGonagle & Schoeni, 2006)

Methodological studies by (Belli, 2004; Belli, Shay, & Stafford, 2001) have shown the PSID Employment History Calendar interviewing methodology "leads to consistently higher quality retrospective reports in comparison to traditional standardized question-asking methods."   The biennially collected data used in this research is comprised of variables from the individual, family, and wealth surveys.

While the PSID is an expressive and deep data collection, there are several structural limitations to the dataset: cumulative attrition through the aging process and intermarriage and divorce process, periodicity, focus on head and wife of head as representative of the entire family, health information that is largely retrospective, and immigrants to the US are not continually represented in the sample. Also, periodic modification including the addition and subtraction of survey questions is a perpetual difficulty. To minimize the effect of these known limitations, several assumptions and data management processes were invoked to limit the introduction of systematic bias.

The initial dataset for the period 1999 – 2013 consists of 58,595 observations across 7,495 family groups. The research is constrained to a panel of individuals aged between 25 and 65[5]. The resulting panel consists of 7,495 family units and 58,589 observations. The PSID methodology limits much of the individual data available to interviewees who claim themselves, head, wife, or "wife", the latter representative of unmarried couples. This reduces the potential universe of relevant observations to 51,867 across the same 7,495 family groups. Allowing individuals to enter the panel after 1999 and leave the panel prior to 2013 (attrition) creates an unbalanced panel of 38,314

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[5] Individuals enter the dataset when they turn 25, and are aged out of the study when they turn 65 or when they answer yes to the survey question, "Are you currently retired?" This assumption suggests that 'retirement' denotes a state where JOBSWITCHING and FSTRESS are downward biased.

observations. The exclusion of missing observations within estimated models further reduces the estimation datasets to between 16,615 and 21,137 observations. The unbalanced panel exhibits a minimum of 1 observation, a maximum of 8, and a mean observation value ranging from 4.4 – 4.8 dependent on model specification. Financial measures *NWEALTH*, *CASHALL*, and *INCOME* are normalized on 2009 dollars. In regressions which do not employ inverse probability weights, robust standard errors are used to minimize biases induced by panel autocorrelation and heteroscedasticity.

With respect to measures of income and wealth, in-sample mean deflated family income is $91,191 which is significantly higher than the national average $81,761 during the same period[6]. With the sample representing higher average family income, analysis of financial and employment variables will tend to be biased downward relative to the general US population.

2.3.1. **Summary Statistics and Variable Construction**

A complete list of variables, descriptions, and summary information is presented in Table 1. In this section we extrapolate on the data manipulations that occurred in constructing relevant variables for analysis. For brevity, descriptions of variables that are unmodified can be referenced in Table 1.

[Insert Chapter 2: Table 1 here]

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[6] U.S. Bureau of the Census, Mean Family Income in the United States [MAFAINUSA646N], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/MAFAINUSA646N, May 6, 2017. Current dollars normalized on 2009 CPI =100 derived from https://fred.stlouisfed.org/series/CPIAUCNS

Financial strain, FSTRESS is derived from (Zeldes, 1989) and defined

$$
FSTRESS_{it} = \begin{cases} 1 \; if \; \dfrac{LN\_NWEALTH_{it}}{(LN\_FAMINC_{it} + LN\_FAMINC_{it-1})/2} < 1/6 \\[4mm] 1 \; if \quad LN\_CASHALL_{it} < \dfrac{1}{6} * LN\_FAMINC_{it-1} \\[4mm] \quad 0 \qquad\qquad Otherwise \end{cases} \tag{5}
$$

In this measure, financial strain is encountered when a family's wealth is less than 1/6 of

income averaged over the last two periods, or when cash available is less than two

months of prior period income. *NWEALTH* is constructed as a sum of eight asset types:

value of farm or business, imputed value of checking account, imputed value of other real

estate, imputed value of stocks and bonds, imputed value of vehicles, imputed value of

other assets, imputed value of annuities or IRA accounts and home equity. *FAMINC* is

defined as taxable income for the period and is the sum of HEAD and WIFE and Other

family members and includes transfer payments and Social Security income. In this

research, FAMINC is constrained to a minimum value of ($0.01) in order to facilitate log

transformation. Likewise, *CASHALL* is defined as the sum of cash on hand and bank

checking and savings account balances. It is likewise constrained to a positive (0.01)

which explicitly rejects bank account overdrafts and recognizes that even the most

destitute can, by and large, produce some currency. All income and asset classes are log

normal transformed.

Job Switching volatility *JOBSWITCHING* is also a constructed variable. Using

the PSID employment calendar, we rely on recollection data, which considers monthly

employment status for the year prior to the interview. We also incorporate the spot measure of employment taken at the time of the interview. In this way, we have a total of thirteen (13) observations over the two-year window between surveys. Transitions out of employment, and into employment are summed under the assumption that employment status held in December of the year preceding the interview remains until the employment question is asked at the time of interview. Likewise, employment status at the time of the interview is assumed to remain until January of the following year. The unemployment question at the time of the interview categorizes the type of unemployment across eight(8) categories. For simplicity, we code *UNEMP*=1 if "temporarily laid off," on "sick leave," or "looking for work," and code *UNEMP*=0 if "working now," or are categorized as "Student," "Other; 'workfare'; in prison or jail." We do not distinguish between voluntary or involuntary bouts of unemployment. The remaining two categories "Retire" and "Permanently disabled" are dropped from analysis.

Unemployment is coded *MUNEMP*=1 if the interviewee responds that they were not working on their primary job during at least part of the month, and zero otherwise. We restrict analysis to primary employment only as opposed to consolidating tertiary employment. In this way, we reflect a conservative measure of job switching volatility. We measure both transitions into and out of the workforce under the assumption that while they represent different income and cost opportunities, they also reflect strain inducing change. The 'count' of employment transitions is assumed a random variable which implies that there is no systematic change in employment status correlated with

either survey or non-survey years. The inclusion of secondary job effects is left to future analysis.

2.4.   Empirical Specification

Following in spirt the methodological considerations of Contoyannis et al., 2004, we use dynamic panel ordered probit primary specification in this research. Consistent with our empirical model, the reduced-form specification for the latent variable models we estimate takes the general form

$$y *_{it} = \vartheta y_{i,t-1} + x_{it}^{'} \beta + z_{it}^{'} \delta + \eta_i + u_{it} \ (i = 1, 2, 3, ... N; t = 2, 3, 4, ...T) \tag{6}$$

where $y *_{it}$ is a latent expression of an individual's underlying health condition observable only through the ordinal scale of *SAHS*. Formally, $y *_{it}$ may be thought of as falling into bins of unknown dimension. Bins are numerically defined $s_{it} = (1, 2..., 5)$ and $y *_{it}$ may be thought of as a first order Markov process. In equation (6) η_i represents the individual specific time-invariant unobservable random-effect assumed to be uncorrelated with regressors. The set of potentially endogenous and time invariant regressors is defined by $z_{it}^{'}$, while $x_{it}^{'}$ represents the set of time variant strictly exogenous variables.

Regression results are derived from of the Ordered Probit Dynamic Panel specification where the probability of observing a category of SAHS reported at time y_{it} conditional on the regressors $x_{it}^{'}$, $z_{it}^{'}$ and individual effect η_i is:

$$P_{itj} = P(y_{it} = j) = \Phi(\mu_j - x'_{it}\beta - z'_{it}\delta - \eta_i) - \Phi(\mu_{j-1} - x'_{it-1}\beta - z'_{it-1}\delta - \eta_i) \qquad (7)$$

Where $\Phi(.)$ represents the standard normal distribution function. Models allow for the

individual effect to be correlated with the regressors ala (Chamberlain, 1979; Wooldridge

2002, Mundlak, 1978) and correct for the initial conditions problem (Heckman, 1981).

The parameterization of the individual effect takes the form

$$\eta_i = \eta_0 + \bar{x}'_i \eta_2 + H_0\lambda + T'\gamma + e_i \qquad (8)$$

in which $\bar{x}'_i$ is a vector of means of time varying strictly exogenous variables while

$e_i \sim N(0, \sigma_e^2)$, H_0 is the initial observation represented as a vector of dummy variables

capturing potential SAHS states with "Very Good Health" *SAHS*=5 as the base category.

T is a vector of time dummies.

The assumption that the density of the random effect is $N \sim (\mu, \sigma_\eta^2)$ allows the

individual effect to be integrated out yielding the operationalized log-likelihood function

$$\ln L = \sum_{i=1}^{n} \left\{ \ln \int_{-\infty}^{+\infty} \prod_{t=1}^{T} P_{itj} \left[\frac{1}{\sqrt{2\pi\sigma_\eta^2}} e^{\left(\frac{-\eta^2}{2\sigma_\eta^2}\right)} \right] d\eta \right\} \qquad (9)$$

which can be estimated by Gauss-Hermite quadrature.

Dynamic panel SAHS specifications are defined by inclusion of a lagged

dependent variable. The additional regressor relates the estimation to a base-period. In

this sense, the initial observation of the base-period becomes a predictor of the next observation. This estimation feature is known as the initial conditions problem.

2.4.1. **Initial Conditions**

The initial conditions problem is defined when one cannot claim the initial observation as deterministic. Heckman (1981), defines two methodological considerations under which treating the initial observation as deterministic may apply: exogeneity of the variable and, the observed value of the underlying data generating process is in equilibrium. We consider these two methodological assumptions in order. Our data presents with strong serial correlation, and the first observation is not the first instance of individual SAHS. Therefore, it is hard to argue exogeneity, and treating the lagged dependent variable as deterministic would produce a miss-specified model. Second, if the lagged dependent variable is stationary then no informational gain is achieved by including the initial observation. Given strong state dependence within an individual over-time, this is not an unattractive alternative with respect to our data, however, as pointed out by Contyanis et al. 2004, inclusion of *AGE* and time trends violates this assumption. Therefore, we find it hard to argue that SAHS is stationary. As a result, we treat the initial condition as stochastic.

2.4.2. **Attrition Bias**

In an unbalanced panel potential for bias caused by non-random attrition exists. We perform several tests of attrition to determine the effect and magnitude of potential biases. Attrition biases may arise for several reasons: death, transition into and out of the dataset by marriage, and the possibility of non-random choice to not continue participation in the survey.

Table 2 estimates the probability of being observed in each wave. The estimations use the base set of variables for our structural models and then include initial self-assessed health status *INITIAL_HEALTH_STATUS*. Results demonstrate clear evidence of negative and significant non-random attrition attributable to *FSTRESS*, and *JOBSWITCHING*. *INITIAL_HEALTH_STATUS* findings are also negative however significance varies across model specifications. In general, attrition appears to effect those with higher levels of mean financial strain, higher mean frequency jobswitchers, and those with poorer initial health status. As intuition may suspect, the gradient on initial health status increases as health moves further from the base category of very-good SAHS. While necessary for bias, attrition is not itself, sufficient.

[Insert Chapter 2: Table 2 here]

Verbeek & Nijman, 1992 propose several variable addition tests to identify bias. In this work, we use two variable addition tests performed on pooled ordered-probit with cluster corrected standard errors, CRE, and initial conditions corrections. We include a dummy variable *ALLPERIODS* that takes the value of 1 if the individual is observed in all periods, zero otherwise. We also include a count of the number of waves for which the individual was observed *PERIODCOUNT*. Table 3 presents these results for our *SAHS* outcome variable. Significance in these two variables across our preferred specification would indicate that our panel likely suffers attrition driven bias. The positive and significant coefficient of *PERIODCOUNT* suggests that healthier individuals tend to participate for longer periods while the *ALLPERIOD* variable's insignificance

across preferred specifications Table2: Model 5 suggests that full participation is not a cause of additional bias. We conclude that bias induced by attrition will tend to produce conservative estimates in our structural equations. In order to control for the effects of bias, we test both unweighted and weighted panels using inverse probability weights IPW following (Wooldridge, 2002).

[Insert Chapter 2: Table 3 here]

2.4.3. **Correlated Random Error Considerations**

Correlation between the random effect and time variant regressors, implies that the outcome variable y is correlated with the error term yielding biased estimation. Restoring the mean zero assumption requires isolating the effect of unobserved effects on covariates. Mundlak, Chamberlain and subsequently Wooldridge(2002) approaches develop around the inclusion of time-invariant means for all time-varying regressors to isolate the correlated random effect. Coefficients on these correlated random error (CRE) control variables cannot be easily interpreted for they are constructed on past present and future observations. To explore the possibility of permanent effects, we construct past-average means for our variables of interest. We address issues of potential bias which arise by this modification estimating both strict CRE and our relaxed CRE formulation for *FSTRESS* and *JOBSWITHCING*. Results are substantively similar across specifications. We use the modified CRE estimation to support our discussion of permanent effects.

2.5.   Results and Discussion

We present twelve models to explore the relationship between our variables of interest and SAHS outcomes. All models reflect the random effect ordered probit estimation methodology. The first six models (Table 4) are constructed from the full unbalanced panel. The second six (Table 5) disaggregates results from Table 4: Models 4-6 across gender. We consider the models in order. Table 4: Model 1, applies no CRE conditioning and presents as our naïve baseline, Table 4: Model 2, modified CRE corrections on our preferred specification, and Table 4: Model 3, strict enforcement of CRE conditioning. All models present qualitatively similar results. Table 4: Models 4-6 repeats specifications Models 1-3, imposing inverse probability weighting to control for biases introduced by attrition. Although model fit degrades when IPW are added (Table 4: Models 4-6), given the qualitatively similar responses across regressions, we prefer the IPW weighted regressions to the simple unbalanced panel in consideration of the potential effects of attrition based biases previously noted.[7]

[Insert Chapter 2: Table 4 here]

In our preferred full panel specification Table 4: Model 5, several salient features emerge. First, although the sign on *YSCHOOL* is consistent across models. In our preferred specification, only the CRE time invariant *MEAN_YSCHOOL* is strongly and

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[7] Although our model of financial strain includes the great recession. We control for period specific fixed effects by including dichotomous variables for each survey period using 2001 as the base category. Full results can be found in Appendix 1, Table A1. We find significant and negative period specific effects in 2005, 2009 and 2011 relative to the base time period 1999. We attribute a non-significant finding in 2007 as corollary with the recessional period 2001.

economically significant (0.0550) corroborating the trend toward treating *YSCHOOL* as a

stationary variable in adults. In the case of stationary variables of gender MALE, and

race *NON_WHITE*, we find the conventional and expected relationships suggesting that

MALE report slightly better health than *FEMALE* (.0543) at conventional confidence, and

minorities report a strongly significant tendency to report poorer *SAHS* (-.134). With

these results buttressing historical findings, we turn our attention to variables of interest.

The contemporaneous "shock" coefficient on financial strain *FSTRESS* is both

economically (-.124) and statistically significant (<5%). Interestingly, the shock effect of

JOBSWITCHING fails to achieve significance or sign consistency across specifications.

However, the permanent effect of *PAST_JOBSWITCHING_AVERAGE* is both

statistically and economically significant (-0.059) and consistent across models.

Conversely, *PAST_FSTRESS_AVERAGE* fails to achieve significance although it

maintains the expected negative sign across all models. With respect to our theoretical

motivation, this evidence supports both hypotheses: that *FSTRESS* and *JOBSWITCHING*

have a negative effect on SAH. That said, the way these conditions effect health is, albeit

intuitive in hindsight, somewhat surprising. *FSTRESS* appears to be driven by the stress

that emerges from the onset of financial strain. The lack of a *FSTRESS* permanent effect

suggests that, in general, individuals practice consumption smoothing; they adjust to their

financial circumstances, and adjust rather quickly. This short duration effect is countered

with the permanent *JOBSWITCHING* effect. We believe the economic and significant

coefficient of *PAST_JOBSWITCHING_AVERAGE* is symptomatic of underlying distress

which accumulates as an individual struggles with stable employment.

[Insert Chapter 2: Table 5 here]

While general results are quite interesting, subtle variation emerges between the sexes with respect to health effects. Table 5: Models 1-6 disaggregate IPW regression results from Table 4: Models 4-6 into *MALE* and *FEMALE* independent regressions. Results across specifications are qualitatively robust. Referring to Table 5: Models 3 and 4 (the *MALE* and *FEMALE* specific representations of our preferred specification), we find that gender effects vary across *AGE* with the marginal effect being negative and significant for *MALE* (-0.241), and positive for *FEMALE* (0.125). This finding implies that as individual's age, men are more likely to report poorer health, while women tend to report improving health. Both *MALE* and *FEMALE* are negatively effected by financial shock -0.155 and -0.102 with corresponding confidences of ($<1\%$) and ($<5\%$) respectively. What stands out to us is the difference in the way permanent *PAST_JOBSWITCHING_AVERAGE* effects the sexes. Higher permanent job switching volatility has no significant effect on men, but is negative (-0.0825) and significant for women. We believe this a fruitful vein for future research. Why is it that women who, by the nature of childbearing, tend to enter and leave the workforce at higher rates than men report poorer SAHS? To us, this immediately raises questions of the psycho-social stressors of skills erosion (diminishing human capital value), and being "disconnected" from the economic playing field. Conceivably, there is a third unobservable factor that effects both job switching volatility and SAHS consistent with Fuchs (1982) comments. We find a strong motivation to continue this vein of research exploring female

perceptions of economic self-worth in the context of employment lapses driven by the child-rearing experience.

As a byproduct of our research, we shed light on a dynamic that appears to underlie the common finding that minorities suffer lower SAHS than their Caucasian counterparts. While our data reflects this long-standing relationship, our preferred male and female specifications find that the result is primarily driven by minority females who report significantly poorer health than their male and Caucasian counterparts. In light of the recognition that the negative effects of higher frequency job-switching disproportionately effect females, and that minority females report lower SAHS, we feel that there may exist a relevant socio-economic relationship between the two. We encourage further research along this line of inquiry.

From a health policy perspective, our research provides evidence that it may be important to focus outreach on employment stabilization. We find the international trend toward increasingly prominent precarious employment situations quite worrying. Our research finds support for the conventional wisdom of temporary income stabilization across shocks. However, we feel that attention focusing on womens' experiences with employment lapses may also be important to highlight. Further, we suggest that at a higher level of abstraction, habitually used temporary income assistance may provide observable evidence of higher level jobswitching and provide a means for targeting a subset of high volatility job switchers. Our findings encourage policy makers to look at both financial assistance programs and job stability programs when considering individual economic stability.

2.6.   Concluding Remarks

In this research, using a dynamic panel random effects ordered probit mythology, we explore two possible mechanisms that are hypothesized to underlie the accepted SES/Health gradient: financial strain, and job switching volatility. Using a multi-year unbalanced longitudinal panel from the Panel Study of Income Dynamics we confirm the expected presence of the well understood SES/Health gradient, demonstrate the magnitude of and correct for panel bias induced by various forms of attrition, test and reject endogeneity in the relationship of SAHS and financial strain and find support for our theoretically based hypotheses: financial strain and job switching volatility produce negative health effects. Our key results are summarized in Figure 1.

[Insert Chapter 2: Figure 1 here]

We find that higher job-switching frequency resulted in a strong negative and permanent effect on self-assessed health which is consistent with grey literature prevalent in sociological and psychological disciplines. Extending past research into the effects of income and financial strain on health (Contoyannis et al., 2004; Lyons & Yilmazer, 2005) we find a strong causal significant negative relationship between financial strain and self-assessed health. The "shock" effect is however, short lived. We find no evidence of permanent effects. One possible explanation for the lack of permanence is consumption smoothing. In this sense, our work is supportive of the vast body of academic work on smooth consumption. Our research suggests that the process of adjustment is quite rapid.   From a policy perspective investment directed at employment

stability should not be overlooked in favor of programs that reinforce financial

buttressing. Our work also suggests that the two policy forks may work cooperatively by

targeting different underlying dynamics.

2.7.   Tables and Figures

2.7.1.   Table 1: Summary Statistics

Variable		Mean
Observations		21717
HSTATUS	Self-Assessed Health Status scale 1-5 with 1= Very Poor Health and 5=Very good health	3.771
		(0.915)
FSTRESS	Financial Strain using Net Wealth including Equity	0.172
		(0.377)
JOBSWITCHING	A count of job transitions within the period	0.392
		(0.732)
AGE	Age	45.047
		(9.979)
AGE2	Age Squared divided by 10	212.878
		(89.238)
AGE3	Age Cubed divided by 100	104.745
		(62.507)
NON_WHITE	Dummy variable where 0= Caucasian	0.274
		(0.446)
YSCHOOL	Number of years in formal education	13.873
		(2.202)
MALE	Dummy variable where 1=Male	0.430
		(0.495)
HINSURANCE	Dummy variable denoting whether any family member is covered by health insurance	0.943
		(0.231)
STABLEMAR	Dummy variable =1 if married in prior survey and current survey to same spouse	0.741
		(0.438)
NUMFAMCH	Number of children in the household that are under 18 years of age	0.945
		(1.176)
INITIAL HSTATUS 1	Dummy variable = 1 if HSTATUS at first observation = 1	0.005
		(0.068)
INITIAL HSTATUS 2	Dummy variable = 1 if HSTATUS at first observation = 2	0.054
		(0.226)
INITIAL HSTATUS 3	Dummy variable = 1 if HSTATUS at first observation = 3	0.248
		(0.432)
INITIAL HSTATUS 4	Dummy variable = 1 if HSTATUS at first observation = 4	0.381
		(0.486)
TIME2	Dummy variable = 1 if Year equal 2001	0.137
		(0.343)
TIME3	Dummy variable = 1 if Year equal 2003	0.136
		(0.342)
TIME4	Dummy variable = 1 if Year equal 2005	0.140
		(0.346)
TIME5	Dummy variable = 1 if Year equal 2007	0.144
		(0.351)
TIME6	Dummy variable = 1 if Year equal 2009	0.146
		(0.353)
TIME7	Dummy variable = 1 if Year equal 20011	0.149
		(0.356)
MEAN_AGE	CRE variable: time invariant mean of AGE – avg. all observations	43.999
		(9.327)
MEAN_AGE2	CRE variable: time invariant mean of AGE2 – avg. all observations	204.073
		(80.976)
MEAN_AGE3	CRE variable: time invariant mean of AGE3 – avg. all observations	98.902
		(55.086)
MEAN_YSCHOOL	CRE variable: time invariant mean of YSCHOOL – avg. all observations	13.848
		(2.136)
MEAN_HINSURANCE	CRE variable: time invariant mean of HINSURANCE– avg. all observations	0.944
		(0.159)
MEAN_STABLEMAR	CRE variable: time invariant mean of STABLEMAR – avg. all observations	0.721
		(0.383)
MEAN_NUMFAMCH	CRE variable: time invariant mean of NUMFAMCH – avg. all observations	0.964
		(0.968)
MEAN_FSTRESS_Z2	CRE variable: time invariant mean of FSTRESS_Z2 – avg. all observations	0.171
		(0.291)
MEAN_FSTRESS_Z1	CRE variable: time invariant mean of FSTRESS_Z1 – avg. all observations	0.296
		(0.250)
MEAN_JOBSWITCHING	CRE variable: time invariant mean of JOBSWITCHING – avg. all observations	0.421
		(0.398)
PAST_JOBSWITCHING_AVERAGE	Modified CRE variable: time invariant mean of JOBSWITCHING- avg. past observations	0.498
		(0.597)
PAST_FSTRESS_AVERAGE	Modified CRE variable: time invariant mean of FSTRESS_Z2 – avg. past observations	0.163
		(0.318)

2.7.2.   Table 2: Attrition Tests, Pooled Probit Specification, IPW clusters

VARIABLES	Y=Observed InitCond unbalanced	Y=Observed InitCond unbalanced	Y=Observed InitCond unbalanced	Y=Observed InitCond unbalanced	Y=Observed InitCond unbalanced	Y=Observed InitCond unbalanced	Y=Observed InitCond unbalanced	Y=Observed InitCond unbalanced
MEAN_FSTRESS	-0.0130	-0.229***	-0.0130	-0.234***	-0.245***	-0.228***	-0.0887	0.0210
	(0.0805)	(0.0869)	(0.0805)	(0.0770)	(0.0735)	(0.0716)	(0.0701)	(0.0722)
MEAN_JOBSWITCHING	-0.120***	-0.0676	-0.120***	-0.0818**	-0.139***	-0.195***	-0.250***	-0.191***
	(0.0425)	(0.0466)	(0.0425)	(0.0401)	(0.0379)	(0.0372)	(0.0372)	(0.0384)
MEAN_AGE	1.470***	2.041***	1.470***	1.157***	0.935***	0.995***	0.390***	-0.650***
	(0.169)	(0.198)	(0.169)	(0.157)	(0.150)	(0.148)	(0.146)	(0.157)
MEAN_AGE2	-0.264***	-0.386***	-0.264***	-0.203***	-0.158***	-0.178***	-0.0517	0.177***
	(0.0386)	(0.0448)	(0.0386)	(0.0360)	(0.0345)	(0.0342)	(0.0339)	(0.0367)
MEAN_AGE3	0.153***	0.240***	0.153***	0.113***	0.0795***	0.0963***	0.00820	-0.158***
	(0.0285)	(0.0328)	(0.0285)	(0.0267)	(0.0257)	(0.0255)	(0.0254)	(0.0276)
MEAN_YSCHOOL	-0.0262**	-0.0174	-0.0262**	-0.0117	-0.00950	0.0291***	0.0264***	0.0364***
	(0.0109)	(0.0117)	(0.0109)	(0.0105)	(0.0102)	(0.0100)	(0.00993)	(0.0102)
MALE	0.102**	0.231***	0.102**	0.162***	0.0998**	0.00431	-0.0832**	-0.0592
	(0.0435)	(0.0472)	(0.0435)	(0.0421)	(0.0407)	(0.0401)	(0.0396)	(0.0406)
NON_WHITE	-0.170***	-0.0782	-0.170***	-0.117**	-0.151***	-0.194***	-0.107**	-0.134***
	(0.0523)	(0.0562)	(0.0523)	(0.0504)	(0.0488)	(0.0478)	(0.0475)	(0.0483)
INITIAL HSTATUS=1	-0.738***	-0.676***	-0.738***	-0.228	-0.677***	-0.351	-0.464*	-0.704***
	(0.252)	(0.255)	(0.252)	(0.257)	(0.248)	(0.247)	(0.239)	(0.249)
INITIAL HSTATUS=2	-0.220**	-0.197*	-0.220**	-0.375***	-0.356***	-0.332***	-0.355***	-0.423***
	(0.0949)	(0.101)	(0.0949)	(0.0906)	(0.0890)	(0.0868)	(0.0868)	(0.0882)
INITIAL HSTATUS=3	-0.170***	-0.154**	-0.170***	-0.159***	-0.190***	-0.222***	-0.311***	-0.292***
	(0.0594)	(0.0636)	(0.0594)	(0.0571)	(0.0553)	(0.0543)	(0.0540)	(0.0549)
INITIAL HSTATUS=4	-0.0985*	-0.0720	-0.0985*	-0.0888*	-0.122**	-0.128***	-0.183***	-0.121**
	(0.0525)	(0.0568)	(0.0525)	(0.0508)	(0.0493)	(0.0489)	(0.0486)	(0.0498)
Constant	-24.96***	-34.08***	-24.96***	-19.87***	-15.96***	-16.49***	-6.920***	8.391***
	(2.403)	(2.829)	(2.403)	(2.206)	(2.093)	(2.061)	(2.022)	(2.170)
Observations	4,895	4,895	4,895	4,895	4,895	4,895	4,895	4,895

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

2.7.3. Table 3: Variable Addition Bias Test - Random Effects Ordered Probit Model with IPW, modified CRE, and Strict CRE estimations for M, F, and Combined

VARIABLES	Model 5m MODCRE Outcome= SAH Unbalanced	Model 5f MODCRE Outcome= SAH Unbalanced	Model 5m/f MODCRE Outcome= SAH Unbalanced	Model 6m STRICTCRE Outcome= SAH Unbalanced	Model 6f STRICTCRE Outcome= SAH Unbalanced	Model 6m/f STRICTCRE Outcome= SAH Unbalanced
ALLPERIODS	-0.0878	-0.0255	-0.0557	-0.122**	-0.0574	-0.0895**
	(0.0553)	(0.0474)	(0.0361)	(0.0597)	(0.0526)	(0.0396)
PERIODCOUNT	0.0774***	0.0700***	0.0728***	0.0632***	0.0664***	0.0658***
	(0.0164)	(0.0122)	(0.00973)	(0.0148)	(0.0111)	(0.00885)
Observations	7,362	9,659	17,021	9,349	12,368	21,717
Number of uniqueid	1,801	2,502	4,303	2,037	2,858	4,895

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Table only Includes only variables of interest, complete estimation can be found in Appendix Table 2A

2.7.4. Table 4: Random Effects Ordered Probit Results with Inverse Probability Weights, Full, Modifed, and Excluded CRE controls

	T4_MODEL 1 m/f NO-IPW Outcome SAH xtoprobit unbalanced	T4_Model 2 m/f NOIPW-MODCRE Outcome SAH xtoprobit unbalanced	T4_Model 3 m/f NO IPW FULL CRE Outcome SAH xtoprobit unbalanced	T4_Model 4 m/f IPW SAH-FSTRESS all corrections unbalanced	T4_Model 5 m/f IPW-MODCRE Outcome SAH xtoprobit unbalanced	T4_Model 6 m/f IPW FULL CRE Outcome SAH xtoprobit unbalanced
FSTRESS	-0.132***	-0.124***	-0.0781**	-0.131***	-0.124***	-0.0770**
	(0.0347)	(0.0348)	(0.0351)	(0.0350)	(0.0352)	(0.0355)
PAST_FSTRESS_AVERAGE	-0.0552	-0.0358		-0.0505	-0.0330	
	(0.0491)	(0.0504)		(0.0493)	(0.0506)	
MEAN_FSTRESS			-0.0832			-0.0995
			(0.0705)			(0.0728)
JOBSWITCHING	-0.00390	-0.00415	0.0192	-0.00135	-0.00156	0.0216
	(0.0145)	(0.0146)	(0.0142)	(0.0147)	(0.0148)	(0.0143)
PAST_JOBSWITCHING_AVERAGE	-0.0551**	-0.0532**		-0.0611**	-0.0590**	
	(0.0254)	(0.0257)		(0.0256)	(0.0258)	
MEAN_JOBSWITCHING			-0.101***			-0.105***
			(0.0331)			(0.0347)
MALE	0.0501*	0.0528*	0.0773***	0.0514*	0.0543*	0.0791***
	(0.0281)	(0.0284)	(0.0288)	(0.0282)	(0.0285)	(0.0297)
NON_WHITE	-0.151***	-0.140***	-0.157***	-0.146***	-0.134***	-0.148***
	(0.0339)	(0.0344)	(0.0353)	(0.0340)	(0.0345)	(0.0362)
YSCHOOL	0.0612***	0.0123	0.00116	0.0596***	0.0116	-0.000527
	(0.00671)	(0.0189)	(0.0170)	(0.00670)	(0.0186)	(0.0170)
STABLEMARRIAGE	0.00111	-0.103*	-0.107**	0.00155	-0.107*	-0.116**
	(0.0323)	(0.0556)	(0.0475)	(0.0322)	(0.0554)	(0.0473)
MEAN_YSCHOOL		0.0560***	0.0726***		0.0550***	0.0726***
		(0.0205)	(0.0188)		(0.0203)	(0.0188)
MEAN_STABLEMARRIAGE		0.157**	0.157***		0.163**	0.172***
		(0.0678)	(0.0605)		(0.0677)	(0.0608)
SIGMA2_U	0.372***	0.379***	0.529***	0.360***	0.367***	0.533***
	(0.0421)	(0.0422)	(0.0329)	(0.0423)	(0.0424)	(0.0344)
N	17,021	17,021	21,717	17,021	17,021	21,717
CLUSTERS	4,303	4,303	4,895	4,303	4,303	4,895
LOG LIKELIHOOD	-16783.75	-16763.91	-21385.73	-21206.46	-21181.86	-27367.76
AIC	33629.5	33603.81	42849.47	42474.92	42439.73	54813.52

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Non-significant controls excluded from results for brevity. Full results can be found in the appendix Table A4

2.7.5.   Table 5: Random Effect Ordered Probit Results - Separate Male and Female Results

	T5_MODEL4m IPW Outcome SAH unbalanced	T5_MODEL4f IPW Outcome SAH unbalanced	T5_Model 5m IPW-MODCRE Outcome SAH unbalanced	T3_Model 5f IPW-MODCRE Outcome SAH unbalanced	T3_Model 6m IPW FULL CRE Outcome SAH unbalanced	T3_Model 6f IPW FULL CRE Outcome SAH unbalanced
FSTRESS	-0.164***	-0.109**	-0.155***	-0.102**	-0.124**	-0.0419
	(0.0539)	(0.0459)	(0.0546)	(0.0459)	(0.0526)	(0.0479)
PAST_FSTRESS_AVERAGE	0.0763	-0.119*	0.106	-0.106		
	(0.0789)	(0.0632)	(0.0808)	(0.0648)		
MEAN_FSTRESS					0.0808	-0.208**
					(0.128)	(0.0896)
JOBSWITCHING	0.000360	-0.00512	0.000133	-0.00495	0.0211	0.0223
	(0.0231)	(0.0191)	(0.0233)	(0.0191)	(0.0223)	(0.0188)
PAST_JOBSWITCHING_AVERAGE	-0.0393	-0.0818**	-0.0325	-0.0825**		
	(0.0421)	(0.0321)	(0.0428)	(0.0323)		
MEAN_JOBSWITCHING					-0.105*	-0.115***
					(0.0607)	(0.0415)
AGE	-0.372***	0.0595	-0.392**	0.252*	-0.237**	-0.0107
	(0.127)	(0.110)	(0.156)	(0.140)	(0.115)	(0.101)
AGE2	0.0771***	-0.0155	0.0719**	-0.0668**	0.0359	-0.00811
	(0.0278)	(0.0243)	(0.0339)	(0.0308)	(0.0256)	(0.0226)
AGE3	-0.0532***	0.0115	-0.0499**	0.0489**	-0.0243	0.00671
	(0.0197)	(0.0175)	(0.0239)	(0.0221)	(0.0185)	(0.0166)
NON_WHITE	-0.0927*	-0.183***	-0.0783	-0.175***	-0.123**	-0.173***
	(0.0547)	(0.0433)	(0.0554)	(0.0439)	(0.0579)	(0.0461)
YSCHOOL	0.0741***	0.0512***	0.0259	0.000762	-0.00556	0.00434
	(0.0105)	(0.00864)	(0.0314)	(0.0223)	(0.0278)	(0.0217)
STABLEMARRIAGE	0.131**	-0.0676*	-0.0325	-0.153**	-0.111	-0.110*
	(0.0566)	(0.0394)	(0.0843)	(0.0743)	(0.0738)	(0.0621)
MEAN_YSCHOOL			0.0549	0.0579**	0.0937***	0.0570**
			(0.0342)	(0.0244)	(0.0305)	(0.0240)
MEAN_STABLEMARRIAGE			0.290***	0.113	0.360***	0.0620
			(0.110)	(0.0882)	(0.102)	(0.0771)
SIGMA2_U	0.368***	0.346***	0.379***	0.350***	0.558***	0.506***
	(0.0654)	(0.0544)	(0.0660)	(0.0543)	(0.0556)	(0.0427)
N	7,362	9,659	7,362	9,659	9,349	12,368
CLUSTERS	1,801	2,502	1,801	2,502	2,037	2,858
LOG LIKELIHOOD	-8991.395	-12178.79	-8976.221	-12163.77	-11570.78	-15751.45
AIC	18042.79	24417.57	18026.44	24401.53	23217.56	31578.91

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Non significatnt controls excluded from results for breviety. Full results can be found in the appendix Table A5

2.8. Figures

2.8.1. Figure 1: Summary Table of Findings

	Temporary SAHS Effect	Permanent SAHS Effect
Financial Strain	–	0
Job-switching	0	–

Directional effect of an increase in FSTRAIN or JOBSWITCHING on SAHS.

Chapter 3: State Level Operationalization of Health Policy: A pragmatic approach to predicting changes in premiums and aggregate market profitability

3. Introduction

Policy development at the institutional level requires increasingly sophisticated analysis. In many cases there exists little infrastructure to facilitate cross organization/nor public-private cooperation. As a result, it is not uncommon for decision makers to have little or no authority to compel relevant informational sharing. Without this authority, decision makers are often forced to make due with limited data, sparsely connected collations, and little recourse. In order to combat internal informational limitations and exogenous strategies which may lead to sub-optimal, or inefficient policy making, we develop a pragmatic generalized quantitative model to assist stake holders and state decision makers in objective policy development through quantitative evaluation of proposed legislation. In this research, we use proposed health insurance market reforms upon which to develop and validate our model however the generalized modeling approach is easily adapted to other markets.

A primary feature of the Affordable Care Act (ACA) is state level health policy innovation. To implement state-level health policy innovations, the 1332 innovation waiver can be sought by states to waive elements of the ACA. Early evidence from the

development of 1332 waivers suggests wide variation in innovation design. Across

reforms which implement a reinsurance program, divergence in reform design suggests a

gap in underlying theory (see Table 1 below). A detailed review of existing theory

confirms a sparse set of tools available to assist policy makers in operationalizing health

reinsurance market innovation development. Existing theory is primarily focused on two

topics: the prevalence and minimization of distortionary incentives in service and

payment programs, and the effects of uncertainty on profit maximization.

[Insert Chapter 3: Table 1 here]

Research by [Zhu, Layton et al. 2013; Layton, McGuire et al. 2016; Geruso and

McGuire 2016; Layton, Ellis et al. 2015] explore efficiencies of payment and risk

adjustment methodologies imposed by the ACA. This literature explores the relationship

between reinsurance programs and problems of adverse selection, regulatory price

distortions, and moral hazard. Findings are consistent across authors; reinsurance

programs are found to be effective at minimizing distortionary incentives and there is no

argument that reinsurance programs can be, and often are, market benefiting.

With respect to incentives for adverse selection in health plan payment systems,

distortionary effects of regulation are taken up by (Layton, Ellis et al. 2015). The authors

focus on the relationship between total plan revenues and costs. The research focuses on

the development of ratios which may be used to inform on price distortions caused by

premium regulation, adverse selection in the market, and inefficiencies generated by

benefit distortion to attract more profitable customers. In the evaluation of policy, the ratios may assist regulators in understanding responses to proposed policy, however, there exists no quantitative means of evaluating profitability trade-offs among different payment systems.

Purchases of optimal reinsurance is taken up in expected utility maximization theory and focuses on carrier reinsurance choices as profit maximizing decisions. Bernard and Tian (2009) use a static single period model to derive optimal reinsurance contracts given Value at Risk VaR and Conditional Tail Expectations (CTE) regulatory constraints. The authors consider the risk-based cost of reinsurance a function of the cost of required capital. Their research questions focus on variation in reinsurance behaviors between carriers in the context of price competition. They find that exponentially growing risk causes exponentially growing risk premiums; an insurer has the choice of rapidly escalating fixed costs (the reinsurance premium) or rapidly growing VaR capital requirements.[8] This relationship creates an incentive to forgo the purchase of reinsurance coverage for excessive risk in favor of passing the cost of excessive risk on to the insured.

Rapid increases in the cost of excessive risk is taken up in (Zhang 2013). Zhang focuses on carrier reductions in capital requirements by ceding risk to a reinsurer and the subsequent increase in the reinsurer's capital requirements. Using this analysis frame, optimal reinsurance contracts are defined by the degree of correlation between carrier risk

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[8] A function of the variance in patient cost.

and reinsurer total risk. The solution is optimized when total required capital is minimized across carrier and reinsurer. In the face of price competition, the author concludes that incentive alignment exists between parties with reinsurance an attracting equilibrium. At the same time, the author confirms conflicting incentives between carrier and regulator.[9] The conflict in incentives between carriers and regulators is a common theme throughout the literature. Bernard and Tian, 2009 sum up the conflict noting that the social-planner/regulator, would prefer adverse states of the world to be considered, and that firms would attempt to limit exposure to large losses. Growing national interest in managing health insurance cost is inhibited by this lack of incentive alignment.

One potential answer to aligning incentives is the institution of compulsory reinsurance at the state or national level funded by assessments or taxes. Yet, there is little guidance on the form and composition of such programs especially at the state level where local market distortions may require heterogeneous approaches to policy. Our research fills a critical gap in the literature. We develop a predictive model which may be used to evaluate alternative compositions of health insurance market reforms; identify appropriate threshold values to utilize, and/or define, available funding; and objectively evaluate the potential for unanticipated program liabilities or market distortions. The remainder of the paper is dedicated to the Conceptual Framework and Model Development; Numerical Examples, Simulation, and Results; Policy Scenario Analysis; and Concluding Remarks.

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[9] From a policy perspective, substantive market reforms are hindered by opposed incentives between carrier and regulator; profit maximizing firm behavior is predicated on passing excessive risk cost to the consumer while regulator intentions are predicated on protecting consumers from the cost of excessive risk.

3.1. Conceptual Framework and Model Development

We approach model development from the perspective that it is sufficient to determine whether there exists at least one institutionally feasible coordinated strategy of regulation that can be demonstrated to promote a more efficient outcome than that of the status-quo. This approach is consistent with (Ostrom, Gardner et al. 1994) and we use the common pool resource dilemma as a stepping off point. Our pragmatic approach focuses on inputs which may be effected by policy levers and credible prediction of changes in market outcomes. In this work, we focus on health insurance market reforms for their parallel with common pool resource dilemmas but the generalized model can be conformed to a variety of policy intentions.

Our reinsurance based model is premised on several explicit assumptions. First, expected medical expenditures are reasonable approximations to ex-post cost. Layton, Ellis et al. (2015) confirms this assumption finding that reinsurance models are robust to, "reasonable assumptions about the social planners and consumers' ability to predict future medical spending." Balbas et al. 2015 supports the use of "simple functions" of the form $\sum_{i=1}^{n} a_i X_{Bi}$ as useful to yield the optimal reinsurance problem. We therefore adopt the simple functional form for exposition. The model may be easily adopted to the calculus of integration without loss of fidelity and such modification is recommended if the model is to be used as a basis to develop optimal social reinsurance theory (Balbás, Balbás et al. 2015). Our third primary assumption is that market profitability can be expressed using firm level profit functions. In this sense, our model reflects a single

producer made up of many sub-producers. The effect of chosen parameter values may therefore effect sub-producers differently. Caution should be taken to minimize competitive distortions which may arise by uniform application of parameters across sub-producers.

3.1.1. **The Model**

Our model is postulated on a simple participation constraint of the form $E(\Pi_A) \geq E(\Pi_B).$[10] From the regulator's perspective, appropriate regulatory structure can be tackled and transparent negotiation on model inputs for both the current period (B) and the post period (A) can be defined, agreed upon by committee, and tested to assure all parties that the proposed solution is at least as good and the status-quo. Profit in the pre and post policy states are defined:

$$\Pi_A = N_A \bar{r}_A - N_A \sum_{q=1}^{Q} P_{Aq} E(c_{Aq}) + (A_A - 1)\varphi_A N_A \bar{r}_A + H_A + \eta_A G(B_A - 1) - \delta_A N_A \bar{r}_A \tag{1}$$

$$\Pi_B = N_B \bar{r}_B - N_B \sum_{q=1}^{Q} P_{Bq} E(c_{Bq}) + (A_B - 1)\varphi_B N_B \bar{r}_B + H_B + \eta_A G(B_B - 1) - \delta_B N_B \bar{r}_B + \Omega \tag{2}$$

In the generalized model, where equality is enforced across periods (*B*) and (*A*) and there exists no explicit objective of altering market profitability $\Omega = 0$, pre and post state aggregate market profitability are identical. Omega, Ω may be thought of as a residual term used to satisfy a clearly articulated set of regulatory intentions which reflect market profitability changes.

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[10] Which states that the expected aggregate profit available to industry after the policy change is equal to or greater than the expected aggregate profit available to the industry before the policy.

Regulatory action parameters in the proposed model consist of several malleable features: Carrier assessment φ_x attached to total written premiums, the number of covered lives N_x and average market premium $\bar{r}_x$. The assessment may or may not be subsidized by state tax credits $(A_x - 1)$. In our model, it is possible that consumers find themselves without insurance coverage between enrollment opportunities. The net-cost of those who would like to be insured but are caught between open enrollment periods G (a catchment pool) is thus captured. Funding of the catchment pool is left to the reader as a natural extension to the model. For expositional ease, we assume that the cost of the catchment pool is absorbed by carriers but may be subsidized by state tax or other credits $(B_x - 1)$. The weighting factor η_x allows for the size of the catchment pool to be modified, a function of the type and intent of H_x. In many cases η_x will simply reflect (0,1) where there is or is not a catchment pool. The carrier portion of revenues which may be used for overhead and profit δ_x may be adjusted across states, however, in many cases this is constrained by law to a value of 15% or 20% depending on the market under consideration. Finally, we introduce H_x as a formal method to deal with high cost patients.

We develop two distinct methods of H_x: conditions based reinsurance and attachment point reinsurance. A conditions based reinsurance program defines a number of high-cost health conditions which define a known population of individuals N_x. This group's expenses are then covered by a reinsurance program formally defined.

$$H_x = N_x(1-w)\sum_{i=1}^{I} P_i E(c_i) \tag{3}$$

A patient's membership in this program may exempt all or a portion of carrier expenses $(1-w)$ related to the patient. The model is developed in the context that a population may be subdivided into groups of individuals who suffer a qualifying condition $i \in I$ and each group i can thus be assigned a probability P_i within the population and an expected cost $E(c_i)$. It is assumed that the probabilities of succumbing to any condition i are independent and identically distributed such that $\sum_{i=1}^{I} P_i = 1$.

The attachment point reinsurance model allows the population of the program to be defined by accrued costs in excess of an attachment-point. In this sense, an attachment-point reinsurance program does not discriminate across what types of health issues are covered. Rather any individual who accrues sufficient yearly cost is passed to the reinsurance pool. We model a simplified attachment-point reinsurance program as an "outlier risk sharing" model. Outlier risk sharing models are defined as mandatory reinsurance for insurers without risk-adjusted premiums (Van Barneveld, Lamers et al. 2001) (Zhu, Layton et al. 2013).[11] Formally we express the model

$$H_x = N_x P_I (L < E(c_i) \le T)(1-w)(E(c_I)-L) + N_x P_I (E(\overline{c}_i) > T)\left[(E(\overline{c}_I)-L)(1-w)+(E(\overline{c}_i)-T)\right] \tag{4}$$

---

[11] The authors point out that in outlier-risk-sharing models, health plans are (partially) reimbursed for the expenditures of a member above a certain threshold and these programs have been shown to protect against predictable losses at a relatively modest cost.

where there is a total population N_x which can be evaluated to determine the probability $P_I(\bullet)$ of incurring patient costs between $L < E(c_i) \leq T$ where L reflects an attachment point, and T a limit to reinsurance plan liability[12]. It is typical for claims in excess of this funding level to revert to the carrier. For this proportion of the population $E(c_i)$ reflects the average patient cost, and as with the conditions based reinsurance program, a cost-sharing requirement $(1 - w)$ may be imposed where w represents the proportion of the carriers responsibility $0 \leq w \leq 1$.

In either model, a limit to the reinsurance fund may be adopted by conditioning the reinsurance program on a probability of the costs of the patients exceeding available funds $(1 - P(c \leq f))$.

$$E(H_x) = P(c \leq f)E(c) + (1 - P(c \leq f))\big(E(f) - E(c_n) > E(f)\big) \tag{5}$$

In this case, the expected value of H_x is the weighted average of the probability of being compensated for costs $E(c)$ up to the entire value of the reinsurance fund f plus the probability that some portion of the expected benefit must be given up to cover patients in excess of fund reserves $E(c_n) > E(f)$.

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[12] At the state level, it is common for a fixed value fund be available limiting a state's liability.

3.2.   Numeric Examples, Simulation, and Results

In this section, we modify our participation constraint model to evaluate two distinct policy shifts in Alaska's management of the health insurance industry:

- In the third quarter of 2015, Alaska implemented a Medicaid expansion program.

- Beginning January 2017, Alaska implemented a conditions based reinsurance program.

3.2.1. Alaska's Medicaid Expansion Fall 2015

Alaska maintains a conditions based high-risk pool. To conform our generalized model to Alaska's market Medicaid discussion environment, we form our basic model on a NO state health program prior.[13] Additionally, we found in interviews with state insurance regulators that carrier impact analyses of Medicaid expansion which were relied upon in the rate review process postulated a negligible change in the individual market population. Constrained by this frame of reference, we proceed under the assumption that $N_B = N_A$ and by extension $P_A = P_B$ employing the large sample property $P_q = {n_q}/{N} ; n_q \in N$. Further, we assume that the manner in which estimated costs are calculated across a comprehensive battery of illness states q remains unchanged. Without a new state sponsored program to fund high cost patients $H_X = 0$, several associated

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[13] Without alteration in the form or expectations of the high-risk pool, past and future effects are equal value constants which cancel each other out.

model constraints are removed: no new assessment φ_X nor a compensatory state tax

rebate A, nor a requirement for a catchment pool of any size η funded by assessment B.

It is further assumed that the direct patient care ratio which defines carrier overhead δ

remains unchanged across the Medicaid expansion. In order to inform on expected rate

changes, all savings in the individual market generated as a result of Medicaid expansion

would be passed on to the consumer implying the possibility that $\overline{r}_B \neq \overline{r}_A$. In the case of

Alaska's Medicaid expansion, the pre-policy period (2015) suffered an aggregate market

loss of 30 million dollars. With finalized rates for 2016 effectuated by the end of

September 2015, quality predictions about the year's profitability were in hand[14]. As a

result, we allow for adjustment of the pre-market aggregate profitability state

$\Omega = \$30,000,000$; i.e. The new premium $\overline{r}_A$ becomes our output of interest. We conform

our model to the following explicit assumptions

$$\{N_B = N_A; P_A = P_B; q_B = q_A; A_B = A_A; B_B = B_A; \eta_A = \eta_B; \delta_A = \delta_B; H_X = 0; \varphi_X = 0; \eta_X = 0\}$$

which allow the pre and post profit functions from (1) and (2) across the participation

constraint to be expressed.

$$\Pi_A = N\overline{r}_A - N\sum_{q=1}^{Q} P_q E(c_{Aq}) - \delta N\overline{r}_A \geq N\overline{r}_B - N\sum_{q=1}^{Q} P_q E(c_{Bq}) - \delta N\overline{r}_B + \Omega = \Pi_B \qquad (5)$$

---

[14] New Mexico Office of Superintendent of Insurance personnel confirm that carriers tend to understand their yearly profitability with a high degree of certainty during in the third Quarter of the year. Further, this information is used in the final rate setting requests for the following year. MLR reports from CCIIO (https://www.cms.gov/apps/mlr/mlr-search.aspx#/?state=AK&reporting_year=2015; last accessed 11/27/2017) confirm that Premera BCBS underwriting loss occurring in Alaska were 30M in 2015, and 26M in 2014. Faced with a large underwriting loss in 2014 and third quarter predictions of a greater loss in 2015, using a pre-state market in equilibrium would not be a true reflection of the dynamic in the rate setting process for 2016.

Solving[15] (5) for the post policy change premium $\overline{r}_A$,

$$\overline{r}_A \geq \overline{r}_B + \frac{\sum_{q=1}^{Q} P_q E(c_{Aq}) - \sum_{q=1}^{Q} P_q E(c_{Bq})}{(1-\delta)} + \frac{\Omega}{N(1-\delta)} \tag{6}$$

it becomes immediately clear that premium changes sought in the year 2015 during the

discussion of and analysis of Medicaid expansion are driven primarily by perceptions in

the aggregated change of expected patient cost of the group $E(c_{Aq})$. Medical inflation is

of course a positive constant. In this case

$$\sum_{q=1}^{Q} P_q E(c_{Aq}) > \sum_{q=1}^{Q} P_q E(c_{Bq})$$

making the expectation of the right hand side of (6) unequivocally positive with $0 \leq \Omega$.

This implies $\overline{r}_A > \overline{r}_B$ for the post-policy state.

3.2.1.1.   Evaluation of Alaska's Medicaid Expansion

In all model predictions, we follow (Layton, McGuire et al. 2016), and treat cost-

risk[16] as a normally distributed random variable $E(c_x) \sim N(\mu, \sigma^2)$. By extension risk-

premium is proportional to the variance of the cost distribution. Our prediction strategy

is two pronged. In the first step, using a log-linear regression, we recover estimates of

patient cost growth over time for two data sources:

- Tomczyk 2016 report[17] (Model 1: Table 2)

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[15] See appendix 3 for solution steps and details.

[16] The cost risk is the distribution of the average costs of the consumer market participants. Because the cost risk is a distribution of averages, the central limit theorem implies that the distribution will be approximately normal.

[17] In their analysis, the authors synthesized 2014 ACS data with comprehensive carrier claims data across the period January 2015

- Bureau of Labor Statistics Community Population Survey[18] Medical Care in the U.S. City Average over the period 1990-2016 (Table 2: Model 2).

Table 2 presents growth rate results from the log-linear regression across the two different data sources. As one might expect, the forward looking projections from Tomczyk (2016), Table 2: Model 1, diverge significantly from the historical BLS estimation (Table 2: Model 2) in both the magnitude of the growth rate, and the year over year variation around that growth rate. The higher rate of average cost growth from the Tomczyk, 2016 analysis is consistent with evidence that Alaska has a historically higher average medical cost growth-rate than the rest of the country (Snyder, 2014). In this we find support for the Tomczyk, 2016 annual cost growth-rate. However, the Tomczyk, 2016 forward looking projection used to derive the average medical cost growth-rate is effectively linear exhibiting little year-over-year (YOY) trend variation. With a wide geographic region of limited population and medical infrastructure, it is not unreasonable to assume that small disruptions in the medical delivery infrastructure may generate larger cost distortions than in more robust and stable medical delivery infrastructures of neighboring states. With the divergence in first step estimates, step two predictions are modeled under three alternative scenarios.

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through September 2016 to develop their forward looking prediction of total patient cost for the period 2015 to 2026. Using this projection, Table 2: Model 1, we recover the assumptions used to create the forward looking projection with $\mu_w = 9.26\%$, $\sigma_w^2 = .000006$ with standard error of $\sigma_w = .24\%$ which represents an approximately linear projection of negligible year over year volatility.

[18] https://data.bls.gov/timeseries/CUUR0000SAM?output_view=pct_12mths last accessed 1/02/2018: 1990-2016; include annual averages.

[Insert Chapter 3: Table 2 here]

In Table 3: Prediction 1, we use Tomczyk 2016 (Table 2: Model 1) results as inputs. In table 3: Prediction 2, we use BLS (Table 2: Model 2) results as inputs. In Table 3: Prediction 3, we combine the Alaska specific (Tomczyk 2016) growth-rate with the BLS estimation of growth rate volatility. We feel this estimation captures the best information available[19] and is our preferred model.

[Insert Chapter 3: Table 3 here]

For each simulation, we randomly draw 5000 health cost changes from the underlying distribution and calculate expected patient cost in the next period

$E(c_{Aq}) = (1 + E(MI))E(c_{Bq})$ where $E(c_b) = \$7,724$ is calculated by dividing the Estimated Individual Market Cost 2015 (\$217.5m) by the number of market participants (28,159) in the individual market in 2015 noted by (Tomczyk 2016). Further, we allow $\Omega = 30m$ which, as previously noted, reflects mounting concern during 2015 of substantial individual market losses and is confirmed by 2015 CCIIO MLR reports and subsequently reported by (Milliman 2017)[20] as the total market loss for the period.

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[19] Tomczyk and coauthors work for Oliver Wyman a Marsh & McLennan actuarial company. Their knowledge of the Alaska individual market is assumed to reflect front line knowledge gleaned from conversations and document review by State of Alaska personnel. However, their method of projection cannot be determined. As a result, while we find the growth rate plausible, such drastic YOY differences between national historical averages and that produced by Wyman give us cause for concern. We thus superimpose national volatility on the local growth rate.

[20] Treatment of Ω as an additional random variable only suits to unnecessarily increase the distribution of predicted results. For validation we preferred to narrow the distribution rather than inflate it.

Average premium for 2015, $\bar{r}_B = 6,738$ is also gleaned from (Milliman 2017). The

weighted average approved market premium for 2016 (Table 3) was 39.35%[21] implying

$\bar{r}_A = \$9,390$. Finally, $\delta = .15$, is set by ACA statute for the individual market.

Across all three simulations, the approved rate exceeds our predicted AYP 95%

confidence bound implying an expected market profitability change

$E(\Omega|_{Approved\,Pr\,emium}) > 30m$. Actual health insurance market profit in 2016[22] adjusted for

risk adjustment and federal transitional reinsurance and risk corridor exogenous

payments[23] implies a change in actual market profitability of $30m + [$11.5m] which,

falls outside the confidence bounds of Estimation 1 and within the confidence bounds of

Estimation 2 and Estimation 3.[24]

3.2.2. Alaska's Reinsurance Program January 1, 2017

In early discussions about 2017 premiums, Premera, the final remaining carrier in

the state, made clear to regulators that they would be asking for an increase on the order

of 42%. Development of the reinsurance program was catalyzed by these discussions, as

was the development of the corresponding 1332 waiver application. This set of decisions

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[21] For 2016, two companies produced rate increases: Moda with a 39.60% premium increase and 72.69% market share, and Premera with a 38.70% premium increase and 27.31% market share. Our used 39.35% premium increase is the weighted average increase across the two carriers.

[22] Laurel Andrews,: "Premera books $18 million profit from Obamacare plans in Alaska, prompting state review." Alaska Dispatch News, March 31, 2017 wherein Premera defines the breakdown of 2016 profitability.

[23] Exogenous federal transfers and intra-state company transfers are not considered. With respect to federal transfers, instability in the payment make the amount impossible to predict. With respect to intra-state company level transfers, the model predicts aggregate market profitability changes, by including company transfers a double counting of that amount occurs.

[24] Note that model fit is more sensitive to price fluctuation than differences in average trends. Model results explicitly suggest that cost volatility drives premium change.

was compressed into a brief timeline which limited information available to stakeholders about the effects of Medicaid expansion. [25] Alaska's Reinsurance Program was signed into law June of 2016, nine months after Medicaid expansion had been enacted. We will now briefly discuss our assumptions about information available to stake-holders during this period.

[Insert Chapter 3: Figure 1 here]

Figure 1 assumes that carriers were able to observe changes to Medicaid applications through March 2016 explicitly assuming that they began their formal 2017 rate preparations in April.[26] The data presents with two potential Medicaid expansion effects. First, a comparison of the slopes of the trends before and after the expansion (Red and Green trend lines) suggest a discontinuous shift from Red to Green with an increasing rate of decay to the mean. Alternatively, they could assume that there was a linear trend (blue line) which suggests a moderate shift in the historical trend of Medicaid applications, but a relatively stable expectation for the population covered by Medicaid.

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[25] It is not uncommon for carriers to begin discussion with regulators early in the year in order to get appropriate information to streamline the rate review process which begins in April, however the nature of rate adjustment negotiations make it impossible to know on what date the state became aware of the proposed escalation in rates. The political effort to bring a bill before a special session requires a minimum of two months to prepare, and likely much more time. This suggests that carriers were informing their decision making on no more than four months of information relating to Medicaid expansion. We assume that by February 2016, there was mounting concern about the upcoming rate submission cycle and, coming on the heels of Medicaid expansion, we allow that carriers were able to observe changes in Medicaid applications through March 2016. This suggests that, sometime in April decisions about Medicaid expansion effect on 2017 rates were being concretized.

[26] Note however that if carriers actually began to consider rates before April, the slope of the green line becomes increasingly negative implying a regression to the mean across a policy induced spike in enrollments. Thus, the longer window presents a more conservative expression of the likely change in the individual market driven by Medicaid expansion.

In 2015, there were 106,249 individuals without health insurance in the state of Alaska. Enrollment in the individual market in February 2015 consisted of approximately 21,256.[27] Change in the Medicaid pool driven by the expansion would be drawing individuals from both the uninsured population and the individual market population.[28]

In early 2016 as rate decisions were being made for 2017 and discussions about state funded reinsurance were fomenting, the evidence suggested that Medicaid expansion was a negligible factor in the individual market and consistent with carrier impact reports submitted during discussions of Medicaid expansion. Indeed, even with an additional 7 months of data on Medicaid Applications, the Actuarial Analysis and Certification produced by (Tomczyk 2016) as part of the Alaska 1332 waiver application[29] confirms a lack of appreciation for the potential Medicaid effect on the composition of the individual market.

With the creation of a state funded conditions based reinsurance pool in June 2016, for implementation January 1, 2017, carriers began to reevaluate submitted 2017 rate requests. With approximately eight weeks to evaluate market changes induced by

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[27] By February 1, 2015, it was apparent that fewer than 6433 individuals purchasing qualified health plans in the individual market were dually eligible. It remains unclear whether carriers or state regulators recognized the potential for the exchange population to fall by more than 30%. https://data.cms.gov/Marketplace-Qualified-Health-Plan-QHP-/2015-Qualifying-Health-Plan-Selections-by-Househol/xby3-i2st

[28] Even if the growth was being drawn strictly from the individual market it would represent a rate of decline of 3.7% and this would be a hard assumption to justify since the uninsured population dwarfed the exchange population by a ratio of greater than five to 1.

[29] https://www.commerce.alaska.gov/web/Portals/11/Pub/Alaska-1332-Waiver-Application-with-Attachments-Appendices.pdf?ver=2017-01-05-112938-193 ,Table 8 – Alaska Coverage Distribution by Category and Income to Poverty Ratio. Indeed, the actuarial firm identified fewer than half of the dually eligible individuals as likely to shift from exchange to Medicaid coverage. In an interview with the insurance department August 2017, it was revealed that the process of applying for Medicaid is cumbersome and timelines were further strained by a need to ramp up staff to deal with the volume of application. None of this information was available at the time carriers were having to submit rates for 2017.

reinsurance, and the failure of the state Co-op, Moda, the last remaining carrier Premera

had to appraise a substantially more complicated model than for Medicaid Expansion.

To approximate this market decision environment, we modify our model to allow

for variation in N and correspondingly P across the policy transition. Alaska requires

carriers to cede premiums that they collect on patients that qualify for the reinsurance

fund. To satisfy this constraint, we impose an assessment $\varphi_X = \dfrac{N_A^S}{N_A}$ across all premiums

exactly equal to the dollar value of ceded premiums. Further, collapse of Moda, Alaska's

other carrier, and the transition of their risk pool into Premera's risk pool implies an

additional market change. We allow for this by relaxing the assumption of equality in

$E(c_{xq})$ across policy states so that we may vary the relationship in our policy scenario

simulation. Formally our restrictions are noted:

$$\{N_B \geq N_A^H - N_A^S; P_A \neq P_B; E(c_{Aq}) \neq E(c_{Bq}); q_B = q_A; A_B = A_A = 0; B_B = B_A = 0; \eta_A = \eta_B = 0; \delta_A = \delta_B; H_X = 0; \varphi_X = \frac{N_A^S}{N_A}; \eta_X = 0\}$$

We thus express the market decision equation from (1) ,(2),(3) and (5) across the

participation constraint

$$\Pi_A = N_A \bar{r}_A - N_A \sum_{q=1}^{Q} P_{Aq} E(c_{Aq}) + \left[P(c < f + N_A^S \bar{r}_A)\left((1-w)\sum_{n=1}^{N_A^S} E(c_n) - N_A^S \bar{r}_A \right) + (1 - P(c < f + N_A^S \bar{r}_A))\left((1-w)\sum_{n=1}^{N_A^S} E(c_n) - N_A^S \bar{r}_A - \sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S \bar{r}_A) \right) \right] \quad (7)$$

$$-\delta N_A \bar{r}_A - N_A^S \bar{r}_A \geq N_B \bar{r}_B - N_B \sum_{q=1}^{Q} P_{Bq} E(c_{Bq}) - \delta N_B \bar{r}_B + \Omega = \Pi_B$$

In (7) a carrier receives revenues $N_A \bar{r}_A$ from which the expenses for all patients

are deducted. The conditions based health reinsurance program reimburses the carrier a

portion $(1-w)$ for expenses $\sum_{n=1}^{N_A^S} E(c_n) < f$ where w is the carrier's portion of cost-

sharing and $f + N_A^S \overline{r}_A$ the amount which will be allocated to medical expenditures from

the reinsurance pool. Solving[30] (7) for the post policy change premium $\overline{r}_A$

$$\overline{r}_A \geq \frac{N_B \overline{r}(1_B - \delta) + \left[N_A \sum_{q=1}^{Q} P_{Aq} E(c_{Aq}) - N_B \sum_{q=1}^{Q} P_{Bq} E(c_{Bq}) \right] - (P(c < f) - 1) \sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S \overline{r}_A) - (1 - w) \sum_{n=1}^{N_A^S} E(c_n) + \Omega}{(N_A(1 - \delta) - 2N_A^S)} \tag{8}$$

we derive our predictive model. Equation (8) is not easily interpreted however several

structural and intuitive relationships bare mention. As in our simple Medicaid expansion

case, the weighted pre-policy revenues, and expected cost differential for the average

market patient feature predominantly in the rate equation. It is also clear that the number

of individuals that are to be ceded to the reinsurance pool N_A^S is of critical importance in

defining post policy premiums where a higher number of ceded individuals is associated

with a reduced post policy premium. It naturally follows that lower expected patient

costs of the reinsurance group $\sum_{n=1}^{N_A^S} E(c_n)$ imparts a premium reducing effect. Likewise,

increases in potential cost to insurers (a reduction f) imposes a premium increasing

effect. Operationally, the equation must be solved iteratively with the probability of cost

in excess of the reinsurance funding $P(c > f) = f(\overline{r}_A),$[31] itself a function of the finalized

rate $\overline{r}_A$.

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[30] See appendix 3 for solution steps and details.

[31] We begin our iteration process with the known \$55m Alaska contribution, then after recovering the initial $\overline{r}_A$, we include the

initial $\overline{r}_A$ value in the calculation of $P(c > f)$ and solve again for the output $\overline{r}_A$. We continue this iteration process until the

difference between the stepwise values of $\overline{r}_A$ is less than .0001.

3.2.2.1.   Evaluation of Alaska's Reinsurance Program

We implement simulation of outcomes with respect to Alaska's conditions based reinsurance program in parallel to that of analysis of the Medicaid expansion. To the cost and variance predictions of the prior analysis, we add substantial additional information. Recognizing that across the rate decision period in 2016 development of the 1332 waiver was occurring, we continue reliance on the 1332 Actuarial Analysis produced by (Tomczyk 2016) to reflect individual market participations before $N_B = 24,064$ and after $N_A = 23,822$.[32] Expected average patient medical expenditure for 2016 is constructed as $E(c_{2016}) = c_{2015}(1+\mu)$ where $\mu = [.0926, .0727]$ reflecting differences in rates of growth YOY for (Tomczyk 2016) and BLS analysis respectively. From our prior analysis, we adopt the 2016 market average premium $\bar{r}_B = \$9,390$ and inflate it by the approved premium increase for 2017 $\bar{r}_A = \$9,390(1+.072) = \$10,065$. The state of Alaska committed $f = \$55,000,000$ to fund the first year of the reinsurance program and carriers are expected to cede premiums that they collect from the population subject to reinsurance compensation $N_A^S \bar{r}_A$ which is satisfied by iteratively solving the model (8) at each simulation step. The probability of reinsurance costs in excess of the allocated funding is calculated as the area under the normally distributed yearly expected reinsurance pool cost.

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[32] We posit that these populations may also be treated as random variables. However, in the spirit of trying to minimize the distribution around our output, and consistent with the prior analysis, we treat these as deterministic values and confine our simulation to a single random variable.

$$0 \le P(c > f + N_A^S \overline{r}_A) \le 1 = \int_{-\infty}^{+\infty} E(c)dc - \int_{-\infty}^{f+N_A^S\overline{r}_A} E(c)dc \qquad (9)$$

The normally distributed yearly expected reinsurance pool cost is defined using data supplied by the state of Alaska. The cost data which delineates the cost and number of encounters for each condition group[33]. We calculate the expected weighted cost per visit $E(C_w)$

$$E(C_w) = \sum_{g=1}^{G} w_g E(c_g); \quad E(c_g) = \frac{\sum_{j=1}^{J}\sum_{y=1}^{Y} c_{jy} v_{jy}}{\sum_{j=1}^{J}\sum_{y=1}^{Y} v_{jy}}; \quad w_g = \frac{\sum_{j=1}^{J}\sum_{y=1}^{Y} v_{yj}}{\sum_{g=1}^{G}\sum_{j=1}^{J}\sum_{y=1}^{Y} v_{gyj}} \qquad (10)$$

and derive the weighted variance v_w (Equation 11) of $E(C_w)$. Across equations 10 and 11 w_g is proportion of visits attributable to each of the 33 conditions $g \in G$ across companies $j \in J$ across years $y \in Y$. Costs per group c_g are calculated across companies by year notated c_{jy} while visits are per year across companies are notated v_{jy} while R is the number of groups $_g$ with a non-zero weight[34].

$$v_w = \sum_{g=1}^{G} \frac{w_g (c_g - E(c_g))^2}{(R-1)R}; \quad c_g = \sum_{j=1}^{J}\sum_{y=1}^{Y} c_{yj} \qquad (11)$$

Expressing the variance as a proportion of expected cost $v_w / E(C_w)$ we apply this variance calculation to define the standard deviation of reinsurance pool costs from

[33] The cost data provided is confidential and is not publically available. Parties interested in obtaining this data are directed to the Alaska Division of Insurance, 333 Willoughby Ave, 9th Floor; Juneau, AK, 99801.
[34] In our data, we have positive weights for 30 of the 33 conditions of the Alaska reinsurance program.

which the normal distribution of pool expected expenses is derived. Using this method,

we calculate an $E(C_w) = \$78,135,359$ consistent with figures produced by Benefit

Management LLC[35] and from that report we adopt $N_A^S = 1300$ individuals.

Reinsurance Prediction Results

The requested rate increase for 2017, $10,065 falls outside our 95% confidence

prediction intervals (Table 4) for all models. This incongruity may suggest that rates set

for 2017 were excessive. To reconcile the model's predicted output we calculate the

Mean Industry Excess Profit Ω predicted by the model as we did in the Medicaid

expansion case. We calculate the difference between our predicted 95% confidence

bounds and multiply it across the individual market expected population thus we recast

our output in terms of expected market profitability change $E(\Delta\Omega|_{Approved\,Pr\,emium}) > 0$.

[Insert Chapter 3: Table 4 here]

Our results suggest unexpectedly large 2017 mean industry profits of $61m in our

preferred model (Prediction 3, Table 4). In light of the state's explicit expectation that all

savings of the reinsurance program be passed on to consumers in total, we would expect

to see a rate reduction of between 25.6% and 32.5% under the assumption that the

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[35]

https://www.wship.org/Docs/WSHIP%20Alaska%20Reinsurance%20Program%20Presentation%202017%2001%2011%20FINAL.pdf

standing zero-effect of Medicaid expansion on the individual market is maintained. This finding is confirmed with approved 2018 in Alaska falling 26.5%.[36]

3.3.   Policy Scenario Analysis

In this section, we explore the potential outcomes associated with alternative policy choices and test the model's predictions for sensitivity about the preferred predictive model (Prediction 3, Table 4). We test three alternative policies. In the first scenario (Scenario 1, Tables 5 and 6) we implement a cost-sharing expectation wherein a carrier is expected to pay for 15% of reinsurance patient costs, with the program compensating for the other 85% ($w = .15$). In the second scenario analysis (Scenario 2, Tables 5 and 6) we posit that under the repeal of the individual mandate, and consistent with adverse selection, average patient costs in the individual market will increase by 5%; medical cost inflation $\mu = .1426$.

[Insert Chapter 3: Table 5 here]

In our third simulation (Scenario 3, Tables 5 and 6) we consider both an increased cost of patients as in simulation 2, and a corresponding reduction in individual market participation. Consistent with current media, we assume that loss of the individual mandate will cause an exodus of individuals from the individual market which drives up

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[36] http://www.alaskajournal.com/2017-09-20/premera-cuts-rates-further-2018#.WfDb2luPLmE

the average cost of individuals who remain. In this simulation we retain the increased

cost of scenario 2, and add a 5% reduction in the post-policy population $N_A = 22,631$.

Table 5 below denotes the hypotheses relating to premium change and aggregate market

profitability which emerge directly from the analytical equation (8).

[Insert Chapter 3: Table 6 here]

Using the derivative of the analytical equation (8) with respect to changes in w,

$E(c_A)$, and N_A we define a directional expectation for changes in $\Delta \overline{r}_A$ and $\Delta \Omega$ relative

to the preferred prediction (Prediction 3, Table 4). Arrows in Table 5 denote the

expected direction of change. In the case where arrows are opposing for a given output

as in Simulation 3, the result may be thought of as ambiguous, conditional on the

magnitude of the changes in the input values $E(c_A)$ and N_A. Results of the Policy

Scenario Analysis are presented in Table 6.

Under all simulations, our predicted hypotheses are supported for changes in

average yearly premium $\Delta \overline{r}_A$ and Mean Industry Excess Profit $\Delta \Omega$ respectively.

Additionally in all cases the changes in the outputs are significantly different from the

baseline scenario with all achieving significance of $p<.001$. We find these results

reassuring in that the model appears to be quite sensitive to and able to differentiate

statistically significant changes in the outcomes of interest given relatively small changes

in the magnitudes of the inputs.

3.4. Concluding Remarks

In this work, we developed a pragmatic health-policy predictive model designed specifically to inform policy makers with credible operationalized decision information. We validate the model against two policy decisions made by the state of Alaska. First, their adoption of Medicaid expansion September 2015, and subsequently the deployment of a state funded reinsurance pool which began operation January 2017. Using only information available to carriers and regulators at the time, our simulation study accurately predicted market outcomes across these two events. In the case of Medicaid expansion, our model predicted a difference in market profitability of between $1.7m and $14m successfully capturing 2016 aggregate profits of 11.5m. Similarly, in the case of the reinsurance program implementation, our model's results implied the need for a significant reduction in premiums (between 25.6% and 32.5%) to maintain the explicit expectation that all proceeds from the reinsurance program be passed on to the insured. This finding is confirmed by 2018 Alaska rate approvals which represent a 26.5% reduction in premiums. We further test the model against several policy scenarios finding that the hypotheses relationships between the theoretical model and the operationalized model are consistent, and the model is quite sensitive to even small changes in the inputs which allows for statistically significant variation between policy alternatives to be accurately appraised. To complete a robust group of validation experiments, in Appendix 2, we evaluate an actuarial report produced for the state of Washington's conception of an attachment-point reinsurance program. Across these three diverse policy intentions, our model produced more conservative results than were

realized in implementation or developed by conventional actuarial analysis. The

narrower band of volatility around our model's results across disparate policy intentions

demonstrates the benefit of using this quantitative, pragmatic, market focused analytical

method over existing ad-hoc or actuarial methods which are prevalent in state

government.

3.5. Tables and Figures

State	Approved/Withdrawn/Pending	1332	Waived Sections of ACA	Reinsurance Program	Conditions List	Attachment Point	Detachment Point	Carrier Responsibility Cost Sharing	Cap	Covered Lives	Covered Lives Gains	State Funds	Permenant Solution	Forecast Change In Premiums
AK	A	Y	1312 (c)(1)	Y	33	N/A	N/A	N/A	$55,000,000	24,000	1,643	$55,000,000	N	-35.0%
CA	W	Y	1311(d)(2)(B)(i)	N	.	.	.	.	.	99,000	17,000	.	.	0.0%
HI	A	Y	1301 (a)(1)(C)(ii); 1301 (a)(2); 1304(b)(4)(D)(i) and (ii); 1311 (b)(1)(B); 1311(f)(3)(B); 1312(a)(2) and (f)(2)(A)	N	.	.	.	.	.	170,000	.	.	Y	0.0%
IA	W	Y	26 U.S.C. § 36B (26 I.R.C. § 36B);42 U.S.C.§18022(d);42 U.S.C. §18071	Y	N/A	$100,000	$3,000,000	15%	None	54,000	14,500	.	N	-50.0%
MA	P	Y	42 USC § 18071(c)(3)(a)	N	.	.	.	.	.	250,000	.	.	Y	-11.3%
MN	A	Y	1312 (c)(1)	Y	N/A	$50,000	$250,000	20%	None	150,000	20,000	$271,000,000	N	-25.0%
OK	W	Y	1312(c)(1)	Y	N/A	$15,000	$400,000	20%	None	150,000	22,000	$325,000,000	.	-30.0%
OR	A	Y	1312(c)(1)	Y	N/A	.	$1,000,000	50%	None	200,793	3,413	$90,000,000	.	-7.5%
VT	W	Y	1311(b)(1)(B); 1311(c)(3); 1311(c)(4); 1311(c)(5); 1311(d)(1); 1311(d)(1); 1311(d)(4)(A); 1311(d)(4)(B); 1311(d)(4)(c);1311(d)(4)(D); 1311(d)(4)(E); 1311(d)(4)(G); 1311(k); 1312(a)(2); 1312(f)(2)(A); 45 CFR 155.330(d)(2)(iii), 155.705(c); 45 CFR 155.720(i)	N	.	.	.	.	.	75,000	.	.	Y	.
ID		Y	Not Defined	Y	.	.	.	.	.	88,000	21,000	$16,000,000	.	.
NH		Y	1312 (c)(1)	Y	N/A	$45,000	$250,000	60%	None	40,000	.	$28,000,000		-7.3%

For definitions of sections referenced in "Waived Sections of ACA", see Appendix 1

3.5.1.   Table 1: 1332 Waiver Application Details

3.5.2. Table 2: Yearly cost trends used in Analysis

VARIABLES	Model 1: Wyman+ Y=lnCost	Model 2: BLS Y=lnCost
Year = growth rate = μ	0.0926***	.0727***
	(0.0024)	(0.0145)
Constant	19.12***	7.174***
	(0.0179)	(0.0576)
Observations	12	6
R-squared	0.9925	.8226

Standard errors in parentheses
+ From values extracted by Wyman (2016), with the exception of Cost 2015 calculated from Milliman (2017) as ($30m/.16)+30=2015 actual incurred claims.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

3.5.3. Table 3: Results Alaska Medicaid Expansion

Predicted Outcomes	Prediction 1 Recovered*	Prediction 2 BLS**	Prediction 3 Combined***
2016 Average Yearly Premium (AYP)	$9,111	$8,931	$9,111
AYP Confidence Bound	($9,070-$9,153)	($8,713-$9,148)	($8,893-$9,328)
Mean Industry Excess Profit (MIEP)	$7,833,998	$12,930,214	$7,857,088
MIEP Confidence Bound (millions)	($6.652 -$9.016)	($6.806 -$19.055)	($1.736 -$13.979)
Model Inputs			
Premium Pre-Policy		$6,738	
Average Patient Cost Pre-Policy		$7,724	
Individual Market Population Post-Policy		28,159	
Individual Market Population Pre-Policy		28,159	
Built-in 2015 Loss Recovery		30,000,000	
Medical Cost Inflation (MCI)	9.26%	7.27%	9.26%
Variation around MCI	0.24%	1.45%	1.45%
Expected Cost after Policy Change		$8,439	
Observed Market Outcomes			
Approved 2016 Annual Premium		$9,390	
2016 Aggregate Market Profitability****		$11.5m	

* Model cost growth rate and variance recovered from Tomczyk, 2016 Actuarial Analysis. In this analysis, Tomczyk projected a 10 year cost inflation. The projection is based on Tomczyk analysis of historical Alaska claims data and we feel this analysis provides crucial medical cost inflation information. However, there is little inherent variation in the forward looking projection evidenced by a very narrow confidence bound. We suspect that the limited variation is a function of smoothing inherent in forward looking projections.

** Model inputs estimated from Bureau of Labor Statistics regional health cost data. In this analysis, we use regional year over year medical cost inflation, and the observed variance around this trend. The regional analysis data presents a significantly lower medical cost trend than the Tomczyk analysis. Intuitively, this leads to an increase in predicted profits which, in light of the Tomczyk claims based analysis may not be warranted.

*** Marrying the Alaska specific growth rate of the Tomczyk, 2016 analysis with observed year over year growth rate variation from the regional BLS data, we define our preferred prediction methodology.

**** Laurel Andrews,: "Premera books $18 million profit from Obamacare plans in Alaska, prompting state review." Alaska Dispatch News, March 31, 2017 wherein Premera defines the breakdown of 2016 profitability. We exclude exogenous federal transfers and intra-state company transfers to eliminate industry level double counting.

3.5.4. Table 4: Results Alaska Conditions Based Reinsurance Program

Predicted Outcomes	Prediction 1 Tomczyk (2016)*	Prediction 2 BLS**	Prediction 3 Combined***
2016 Average Yearly Premium (AYP)	$8,010.19	$7,283.47	$7,507.75
AYP Confidence Bound	($7,668.82-$8,351.55)	($5,172.60-$9394.34)	($5,369.88-$9,618.62)
Mean Industry Excess Profit (MIEP)	$48,949,803	$66,261,608	$60,918,732
MIEP Confidence Bound (millions)	($40.817 -$57.081)	($15.976 -$116.546)	($10.741 -$111.204)
Model Inputs			
Premium Pre-Policy Change		$9,389	
Average Patient Cost Pre-Policy Change		$8,439	
Individual Market Population Post-Policy		23822	
Individual Market Population Pre-Policy		24,064	
Medical Cost Inflation (MCI)	9.26%	7.27%	9.26%
Standard Deviation around MCI	0.24%	1.45%	1.45%
State Reinsurance Fund		$55,000,000	
Expected Cost of Reinsurance Pool (RP)		$78,135,359	
Standard Deviation around RP****		$21,903,638	
Normalized Standard Deviation around RP		28.03%	
Market Profit Adjustments (Omega)		$0	
Reinsurance Pool Population Estimate		1300	
Observed Market Outcomes			
Approved 2017 Annual Premium		$10,065	
2018 Approved Premium Change		-26.50%	

* Model cost growth rate and variance recovered from Tomczyk, 2016 Actuarial Analysis. In this analysis, Tomczyk projected a 10 year cost inflation. The projection is based on Tomczyk analysis of historical Alaska claims data and we feel this analysis provides crucial medical cost inflation information. However, there is little inherent variation in the forward looking projection evidenced by a very narrow confidence bound. We suspect that the limited variation is a function of smoothing inherent in forward looking projections.

** Model inputs estimated from Bureau of Labor Statistics regional health cost data. In this analysis, we use regional year over year medical cost inflation, and the observed variance around this trend. The regional analysis data presents a significantly lower medical cost trend than the Tomczyk analysis. Intuitively, this leads to an increase in predicted profits which, in light of the Tomczyk claims based analysis may not be warranted.

*** Marrying the Alaska specific growth rate of the Tomczyk, 2016 analysis with observed year over year growth rate variation from the regional BLS data, we define our preferred prediction methodology.

**** Calculated as the weighted standard deviation across the 33 condition index of Carrier claim costs for years 2014, 2015, 2016

3.5.5. Table 5:Hypotheses - Policy Simulation Analysis

Hypothesized effect of changes in w, $E(c_A)$ and N_A on outcomes of interest $\overline{r}_A$ and Ω		Policy Simulation 1	Policy Simulation 2	Policy Simulation 3
		State institutes a 15% cost sharing requirement for state carriers	In response to revocation of the individual Mandate, patient costs are expected to increase 5%	Patient costs are expected to increase (5%) in response to (5%) exodus of healthy individuals from market.
$\dfrac{\partial \overline{r}_A}{\partial w} \geq \dfrac{\sum_{n=1}^{N_A^S} E(c_n)}{(N_A(1-\delta)-2N_A^S)} > 0 \ \forall \ N_A^S < \dfrac{N_A(1-\delta)}{2}$	$\Delta\overline{r}_A$	**+** *		
$\dfrac{\partial \overline{r}_A}{\partial E(c_A)} = \dfrac{N_A}{(N_A(1-\delta)-2N_A^S)} > 0 \ \forall \ N_A^S < \dfrac{N_A(1-\delta)}{2}$			**+**	**+**
$\dfrac{\partial \overline{r}_A}{\partial N_A} > 0$				**-**
$\dfrac{\partial \Omega}{\partial w} = -\sum_{n=1}^{N_A^S} E(c_n) < 0$	$\Delta\Omega$	**-**		
$\dfrac{\partial \Omega}{\partial E(C_A)} = -N_A < 0$			**-**	**-**
$\dfrac{\partial \Omega}{\partial N_A} = \left[\overline{r}_A(1-\delta) - \sum_{q=1}^{Q} P_{Aq}E(c_{Aq}) \right] \geq 0 \ \forall \ \overline{r}_A(1-\delta) > \sum_{q=1}^{Q} P_{Aq}E(c_{Aq})$				**+**

3.5.6. Table 6: Results Alaska Conditions Based Reinsurance Program – Policy Scenario

Predicted Outcomes	Baseline Baseline represented by perfered prediction (3) from table 4	Policy Simulation Analysis 1 State institutes a 15% cost sharing requirement for state carriers	Policy Simulation Analysis 2 In response to revocation of the individual Mandate, patient costs are expected to increase 5%	Policy Simulation Analysis 3 Patient costs are expected to increase (5%) in response to (5%) exodus of healthy individuals from market.
2016 Average Yearly Premium (AYP)	$7,507.75	$8,163.86***	$8,071.28***	$7,874.40***
AYP Confidence Bound	($5,369.88-$9,618.62)	($9,913.54-$6,414.19)	($10,182.15-$5,960.41)	($5,639.00-$10,109.80)
Mean Industry Excess Profit (MIEP)	$60,918,732	$45,288,890	$47,494,425	$52,184,467
MIEP Confidence Bound (millions)	($10.741 -$111.204)	($3.608 -$86.970)	(-$2.819 -$97.780)	(-$1.078 -$105.436)
Model Inputs				
Cost Sharing (w)	0%	15%	0%	0%
Market Population Post-Policy	23822	23822	23822	22631
Medical Cost Inflation (MCI)	9.26%	9.26%	14.26%	14.26%
Standard Deviation around MCI	1.45%	1.45%	1.45%	1.45%
Premium Pre-Policy			$9,389	
Average Patient Cost Pre-Policy			$8,439	
Market Population Pre-Policy			24,064	
State Reinsurance Fund			$55,000,000	
E(Cost) of Reinsurance Pool (RP)			$78,135,359	
Deviation of E(Cost) RP****			$21,903,638	
Market Profit Adjustments (Omega)			$0	
RP Population Estimate			1300	

Confidence derived from two sided T-test with Welch Satterthwaite degrees of freedom calculation and expressed in terms *** p<0.01, ** p<0.05, * p<0.1.
**** Calculated as the weighted standard deviation across the 33 condition index of Carrier claim costs for years 2014, 2015, 2016

y = -283.83x + 6967.4

y = 65.753x + 3210.5

y = -225.43x + 3872.3
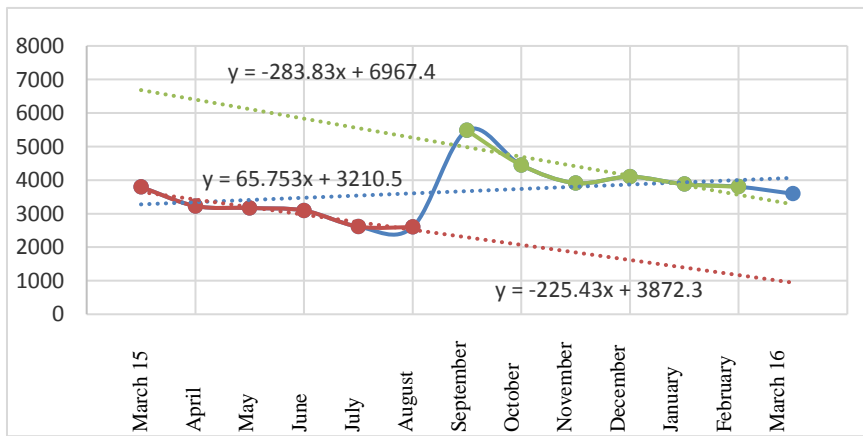
3.5.7.   Figure 1: Medicaid Applications March 2015 – March 2016

Chapter 4: Adolescent Circumstances and Financial Strain in Adulthood

4. Introduction

With efforts to repeal, replace, or materially augment the Affordable Care Act falling short of substantive change, the ACA's focus on preventive medicine appears to have become a durable feature of our national health conscience. The validation of the long held proposition that prevention is an important determinant in health outcomes implicitly aligns our national health policy agenda with Social Determinates of Health (SDH) research in an unprecedented way. Yet, little interest in addressing SDH concerns emerges in health related policy beyond politically expedient income/resource redistributions. In the rapidly evolving trend toward evidence based policy, the prevalence of "soft" variables and "grey" literature girding qualitative, anecdotal, and survey based evidence of the influence of SDH on health, limits potential for SDH considerations in health policy. To address this deficit, there is increasing interest in prediction of causal effects of SDH on health, however predictability has remained a challenge. Historical causal research routinely focuses on broad socio-economic status variables like income, race, and gender. As a result, underlying determinants which vary between individuals within race or gender, or income brackets remain qualitatively important but hard to quantify.

Historical SDH discourse has laid a strong theoretical foundation and defined many social experience factors which may be considered causal health pathways (Lee and Sadana, 2011). Factors are broadly categorized in terms of poverty, hunger, occupational exposure to hazards and relations at work, social and economic effects of aging and illness, the experience of ethnic and gender relations including racism, home circumstances, self-efficacy, dietary intake, habitual behaviors (both positive and negative), position in the life-course, accumulated deficits of one's past, schooling, marital status, and socioeconomic status (Lee and Sadana, 2011) With such a broad spectrum of potential influencing factors, interactions between them, and linkages to the broader macro variables of class, housing stock, the education system, and the operation of markets in goods and labor (Solar & Irwin, 2007) it is easy to see the difficulty in rigorous study of SDH and causality. As a result, several widely appreciated theoretical models have developed to inform on linkages between factors and outcomes. Of particular interest to this research, the eco-social theory[37] (Krieger, 2001) which provides a stepping off point in the development of our treatise. With respect to study methodology and empirics, several approaches have been historically leveraged.

Analytical methods used in SDH research focus on context analysis, case survey, cross-design synthesis, Bayesian approaches, meta-analysis, and qualitative comparative analysis (Pope, Mays & Popay, 2007). Empirical analysis of SDH is often stymied

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[37] The eco-social theoretical frame which considers lifestyle choice a function of chance determined by the environment in which people live.

because models of causation traverse across disciplines and analysis methods which academics traditionally keep separate (Lee and Sadana, 2011). Accepting these limitations, our research attempts to bridge this traverse, focusing on dynamic multiple analyses and variance decomposition modeling of 'soft' variables to gain inference in the correlations of adolescent experiences on adult probabilities of adult financial strain. Our research differs in the reliance on machine learning methods and statistical rigor to distill out salient data-driven relationships across a vast sea of 'soft' retrospective variables.

Machine learning is a relatively new phenomenon in SDH research with the preference for stochastic hypothesis based causality models (Seligman et al, 2017) which are, by the descriptions above, only applicable to a very narrow band of factors which may be politically actionable; some notable works (Adams, Hurd, McFadden, Merrill, & Ribeiro, 2003; Deaton, 1999, 2003; Fletcher, Sindelar, & Yamaguchi, 2011; Halliday, 2007; Jacobson, LaLonde, & Sullivan, 1993; Lindahl, 2005; Newhouse & Friedlander, 1980; Smith, 1999, 2004a, 2004b; Sullivan & Von Wachter, 2009; Wagstaff, Van Doorslaer, & Paci, 1989; Wilkinson & Marmot, 2003). Our methodological approach is developed to help inform on correlations between adolescent factors and adult financial strain which may be used to support qualitative theory. Our findings are correlative in nature, not necessarily causal. Of course, where our results reflect exogenously determined childhood experiences causality inference may be implied.

4.1.   **Data and Methodology**

Using the framework of Delen, (2010). we employ the widely used Cross Industry Standard Process for Data Mining (CRISP-DM). The CRISP-DM provides a structured and systematic way to conduct data-mining analysis. A six step process, we implement the first five steps. The sixth step is concerned with deployment of the algorithm which is beyond the context of this investigative case study. The first three steps of the CRISP-DM process are concerned with understanding the problem, data acquisition and pre-processing the data. The fourth step is focused on model development under a comparable analytic methodology, and the fifth and final step in our process is evaluative in nature assessing the validity and suitability of the models with respect to one another and the goals of the study.

Data for this study is pooled across 1999 – 2013 waves of the Panel Study of Income Dynamics (PSID). We integrate the Childhood Retrospective Circumstances Survey (CRCS) which was conducted in 2013 to gain insight into adolescent behaviors and experiences. The CRCS was administered to individuals age 19 and older (by January 1, 2013) who were household heads and spouses/partners in PSID families that participated in the 2013 wave of the PSID. The CRCS collects information on parents/guardians, parental relationship quality, childhood health conditions, socioeconomic status, neighborhood quality, friendships, school experiences, and young

adult mentoring.[38] We use this retrospective data to sift out adolescent factors that may contribute to the predictability of a negative SDH outcome, financial strain. Concern about correlation between variables in the CRCS led us to implement Principle Component Analysis (PCA) as a variable reduction technique.

PCA (Jolliffe, 1986) is a commonly applied statistical technique for data compression that produces a series of orthogonal linear combinations of variables. Each successive principle component generates a new linear combination of variables defined by maximizing the captured generalized variance that is uncorrelated with prior components. By arranging the data this way, it is possible to collect tightly correlated variables into groups which exert a single effect without enforcing a-priori assumptions on the nature of the relationships between variables. In our model, we use the top 20 principle components representing 45% of generalized dataset variation.[39] We use

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[38] In this analysis we do not use restricted data including exposure to the criminal justice system, mental health, drug use, and abuse among family members. While, results are not necessarily generalizable to these conditions, the publically available dataset does represent a continuum of behavioral interactions across family relationships and experiences. In this sense, debilitating mental health, drug and alcohol issues, and abuse might be considered an additional category of extreme negatives. We believe that where negative life factors are characteristic of an outcome, increasingly negative events which emerge in restricted data are unlikely to undermine that effect. We feel that bias introduced to the analysis through exclusion of these extremes tend to downward bias our results toward zero. The results we present are low estimates, constrained both toward the mean environment and the mean environment generally more hospitable than one might expect in a generalized population.

[39] The use of retrospective data collected across categorical variables is subject to both recall bais and individual level response heterogeneity.   Recall bias is poorly understood and population specific. For instance individuals suffering depression and anxiety tend to emphasize negative experiences, while healthy individuals tend to emphasize positive experiences. We cannot deduce nor infer the direction and intensity of recall bias in this population, nor the directional effect of unobservable random error. As a result, there is

orthogonal rotation of the factors to facilitate interpretation of composite components.

Orthogonal rotation increases the distance between variable factor loadings yielding more

meaningful cutoffs between 'important' and 'unimportant' contributing factors. Summary

statistics for the complete set of CRCS variables used to construct the principle

components (PC*) appear in appendix 1: Table A1. Component summary statistics, and

primary contributing factors are presented in Table 1. Contributing factors were defined

as factors with individual score values exceeding .30 in orthogonally rotated components.

[Insert Chapter 4: Table 1 here]

To minimize method sensitivity to variable scale, we normalize all components

~N(0,1) across analytical specifications. Several important modifications to the panel

dataset are introduced to conform the dataset for cross-sectional analysis using the

decision tree and random forest classification methods.

For each observation in the original unbalanced dataset, financial strain *FSTRAIN*

is developed using the method of Zeldes (1989) and is categorized as a dichotomous

variable where zero denotes the absence of financial strain, and one denotes the condition

of financial strain. Formally, financial strain is defined:

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significant noise in and between individual recollections. To minimize the latter, we
focus our analytical lens on the homogenous population subset of Caucasian participants.
Caucasian participants represent >70% of all respondents (2,803) with an analytical
dataset of 16,505 observations.

$$FSTRAIN_{it} = \begin{cases} 1 \; if \; \dfrac{LN\_NWEALTH_{it}}{(LN\_FAMINC_{it} + LN\_FAMINC_{it-1})/2} < 1/6 \\ 1 \; if \quad LN\_CASHALL_{it} < \dfrac{1}{6} * LN\_FAMINC_{it-1} \\ \quad 0 \qquad\qquad Otherwise \end{cases}$$

In this measure, financial strain is encountered when a family's wealth[40] is less than 1/6

of income averaged over the last two periods, or when cash available is less than two

months of prior period income.

Using the unbalanced longitudinal panel from the PSID, we collapse the dataset

generating composite average financial strain *FSTRAIN* and age *AGE* measures.

FSTRAIN takes on the value 1 if the individual's composite *FSTRAIN* average is greater

than the average score across the population, and zero otherwise. *AGE* is recast as a

dichotomous variable with a value of zero for individuals whose average panel age is less

than 40, and one for others. The *AGE* threshold[41] produces approximately equal

[40] NWEALTH is constructed as a sum of eight asset types: value of farm or business, imputed value of checking account, imputed value of other real estate, imputed value of stocks and bonds, imputed value of vehicles, imputed value of other assets, imputed value of annuities or IRA accounts and imputed household equity. FAMINC is defined as taxable income for the period and is the sum of HEAD and WIFE and Other family members and includes transfer payments and Social Security Income. In this research FAMINC is constrained to a minimum value of ($0.01) in order to facilitate log transformation. Likewise, CASHALL is defined as the sum of cash on hand and bank checking and savings account balances. It is likewise constrained to a positive (0.01) which explicitly rejects bank account overdrafts and recognizes that even the most destitute can, by and large, produce some currency. All income and asset classes are log normal transformed.
[41] Model results are qualitatively similar to alternative thresholds at AGE=35 and AGE=45. Results can be obtained from the author upon request.

proportions of "old" and "young". The collapsed cross-sectional dataset then expanded

on the number of times an individual was observed. In this manner, we explicitly

frequency weight individuals intentionally rationalizing that an individual who has been

observed more often will have a more representative *FSTRAIN* average value than those

who are have fewer observations. This approach simplifies the construction of

bootstrapped training datasets increasing the probability that bootstrap sampling

populates datasets with average *FSTRAIN* measures which are representative of an

individual's life-course.

4.2.   Empirical Method

It is often the case that dichotomous outcomes under a hypothesis of causality are

estimated using logistic regression. Yet, the logistic regression methodology is

predicated on the strong assumption of independence of observations. Given the

frequency weighting explicitly delineated above, it would be hard to argue independence

of observations[42]. Green, 2010 suggests that, in the presence of an inconsistent estimator,

a robust covariance matrix, "may not give it redemption" (Green, 2012, p. 733).

Consequently, the virtue of a robust covariance matrix in this setting is unclear.

Independence of observations is not an uncommon concern. As a result, there has been

an increasing use of alternative prediction methodologies (machine learning) for real-

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[42] In our case, the unbalanced panel of repeated observations potentially violates this assumption. As a test of robustness in our logistic estimation we collapse the panel to a quartile measure of financial strain and test the high and low quartiles. Results are consistent.

world prediction problems (Delen, 2010). In our analysis, we employ machine learning methodologies to overcome our known data limitations. We use both individual (decision trees, DT) and ensemble techniques (bootstrap aggregated random forest estimation, "bagged" RF) in our analytics. We turn our attention to a brief description of our estimation methods.

Individual level analysis, DT, is conducted with Classification and Regression Trees methodology (CART). In this analysis we use a modified CART structure. To allow for the potential for interactions and minor differences in scale of the regressors, we mitigate selection bias by using a curvature test selecting the split predictor which minimizes the p-value of the chi-square tests of independence between each predictor and the response. Variable effect on model predictive performance (sensitivity) is derived by summing changes in the probability at every node and dividing by the number of nodes (predictors). We allow trees to grow to a depth of 150 branches without pruning across specifications.[43]

RF is an ensemble classification method which consists of many decision trees[44] defined using an outcome, a random draw of a subset of regressors, and bootstrap replication of observations with replacement. In our model the number of regressors chosen for each tree is limited to $N_p = (X_n)^{1/2}$ where X_n is the total number of regressors available for estimation. Bootstrap replication is limited to the total number of

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[43] Additional complication of the decision tree fails to improve predictability while reducing influential component sensitivity.
[44] As s template tree, we use the optimal tree structure from the DT analysis.

observations in the original dataset and constrained to 30 "training" iterations. Both

specifications are validated using 10-fold (k-fold) validation.

To evaluate model results which differ in scale, we construct sensitivity measures

which define factor contribution to the probability of a successful prediction[45]. To do so,

we normalize each models sensitivities on the range zero to one. Machine learning

techniques also often ascribe factor importance values differently. Therefore, it is a

common practice to aggregate results across model specifications to produce a composite

measure of variable influence. While the technique of equally weighting results across

models in defining an average effect is common, we feel that models which are more

predictive ought to be weighted more heavily in the average effect than models which

produce weaker results. We implement a novel approach to aggregation of results. The

model factor sensitivity summation column of (TABLE 2) is constructed using weights

derived from a combination forecasting (Bates and Granger, 1969; Bohara, McNown &

Batts, 1987) methodology. Combination forecasting is a method of weighting predictions

as a function of model performance.

[Insert Chapter 4: Table 2 here]

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[45] False prediction is also a potential problem. We test our model with correlation
matricies, Wald tests, and explore alternative probability thresholds to explore the
validity of prediction. We find that the straying from the standard probability cutoff of .5
increases the false prediction rate.

To construct model contribution weights, we use a two-step process which is generalizable to any number of models under consideration. In step one, we regress the observed outcome on the predicted outcomes from the DT ad RF models under OLS without a constant using the criteria that $\beta_1 + \beta_2 + ... + \beta_n = 1$; Formally:

$$y_j = \left[\sum_{i=1}^{2} B_i x_{ij} + e \right]; \sum \beta = 1$$

In the first step, β values reflect the relative linear contribution of each models prediction x_i to accurate prediction of the outcome after controlling for the relative contributions of all other regressors. A models predictions x_i is a vector of predictions over the range [1-j] observations. An individual model's proportional contribution can then be calculated as a non-linear transformation of model parameters:

$$P_{B1} = \frac{1}{1 + \sum_{i=1}^{n} e^{\beta_i}}; \ P_{Bi>1} = \frac{e^{\beta_{i>1}}}{1 + \sum_{i=1}^{n} e^{\beta_i}}$$

Because factor sensitivities reflect only the relative contribution of a factor to a models successful prediction of an outcome, they are not directional in nature. To provide insight on directional effects of policy implementations, we produce directional indicators which indicate how a factor's sensitivity influences the probability of adult *FSTRAIN*. Factor coefficients are extracted for our preferred specification *RF* under the following methodology.

The "bagged" RF methodology uses bootstrap samples of the original dataset to construct repeated prediction estimations. Estimation coefficients are then averaged across bootstrap iterations producing the estimation method which is then validated against the true dataset. To create factor directional effects and significance, we average factor coefficient values across training iterations (Table 2) and calculate the variation in factor values across bootstrap samples to construct coefficient standard deviations. Coefficient robustness to alternative specifications is confirmed with several logistic regressions. Model results are presented in Appendix 1 Table XY. In Appendix 1: Table 2: model 1, we test the same cross-sectional data structure used in the DT and RF models. In Appendix 1: Table 2: model 2, we collapse the dataset into a single observation for each individual, and in Appendix 1: Table 2: Model 3, we test the bottom and top quartile of financial strain where the quartile is defined

$$(-\infty, x_{q0}], (x_{q0}, x_{q1}], (x_{q1}, x_{q2}], (x_{q2}, x_{q3}], (x_{q3}, +\infty)$$

and $x_{qi} = 100k / m; \; k \in (1, 2, ..., m)$. In this model, if $x_{q1} = x_{q2}$ then $(x_{q0}, x_{q1}]$ captures all observations and $(x_{q1}, x_{q2}]$ remains empty. Results are qualitatively similar across specifications.

4.3.   Results and Discussion

Variable sensitivity results are presented in Table 2, and graphically in Figure 1. We focus our attention on the first 5 factors which are both stronger in effect, and more consistent across model specifications than the remainder. Considering them in order of

magnitude, pc12: Happiness at school, pc10: The social dimension of often lonely, pc4:

Dad's work habits, pc6: Mom's work habits, and finally pc1: which, focuses on the

maternal relationship with emphasis on communication, understanding, ability to confide

in (mom), and the "closeness" of the relationship.[46]

[Insert Chapter 4: Figure 1 here]

Coefficient relationships are described in order. In Caucasian children, happiness

at school (pc12) is strongly predictive of reduced adult *FSTRAIN* in both economic and

statistical significance. Increasing loneliness also tends to diminish adult *FSTRAIN*.

While not immediately intuitive, considering the counterfactual of those who are unhappy

in school but never lonely we find it both plausible and intuitively appealing that they

may be more likely to adopt behaviors which lead to increased adult *FSTRAIN*. We are

encouraged to find a role modeling effect in which fully employed fathers (Pc4) tend to

produce offspring which are less likely to suffer *FSTRAIN* in later life. An unexpected

and somewhat puzzling result, is that as mothers' work habits (pc6) tend toward full-time

employment offspring tend toward adult *FSTRAIN*. At the same time, the coefficient on

pc1 (TABLE 3), is positive (+) and strongly significant <.01. The finding is somewhat

counter-intuitive implying that close affectionate maternal relationships seem to coincide

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[46] Across the small sample of NON-Caucasian participants, we found that pc1 was also the strongest predominant factor in predicting adult *FSTRAIN*. Coefficient sign is also consistent with the Caucasian population case study. In this sense, regardless of race/ethnicity, offspring's response is consistent.

with higher levels of *FSTRAIN* in later life. We find this result supportive of the

literature. See for example: (Reed et. al. 2016; Swartz et. al. 2011; Fingerman et. al.

2012; Kirkpatrick, 2013; West et. al. 2012; Suitor et. al. 2017) which promotes the

argument that, easy to approach, forgiving and attentive parents may provide more robust

safety nets thus inhibiting the development of sound financial behavior in offspring. At

the same time, our results are consistent with works by (Fan et. al., 2017; Herbst, 2014;

Desai et. al., 1989; Bianchi 2000; Vandell et al., 2010) which together suggest that

reduced maternal involvement in childhood and adolescence has adverse effects on adult

behaviors, cognitive reasoning, education, and financial wellbeing.

We suggest a direction for future research; that is, the role of maternal

employment history and the nature and evolution of the maternal/adolescent social

relationships that emerge as a result. In this research, our findings suggest that, among

Caucasian families, it is beneficial to have a strict and present mom within the household

and not as beneficial to have an absent but easy/forgiving mom with respect to adult

tendencies toward *FSTRAIN.*

While it is hard to distinguish influence across other factors both for their overlap

with one another and the inconsistency of sensitivity measures across specifications, we

would feel negligent if we did not draw attention to the cross specification consistency

with which pc14: non-relative mentorship in work and marriage is estimated. Although

a minor contribution to the predictability of adult *FSTRAIN*, across models the effect is

quite consistent, and economically significant at the <.01 confidence level with a negative

coefficient value supportive of existing mentorship programs. While this is encouraging,

given the low contribution of the factor to the predictability of *FSTRAIN*, we feel that attention and resources which focus on inspiring happiness in youth, particularly at school, and programs which foster an appreciation for and economic incentives toward forms of employment which are NOT precarious in nature would be a more efficient use of resources in the context of reducing adult *FSTRAIN*.

4.4.   Concluding Remarks

In this research, we focused on correlation of adolescent behaviors and experiences with a social determinant of health (adult financial strain) outcome. Although the data had significant limitations including the retrospective nature of responses and individual heterogeneity in defining cut-points between categorical responses, several salient relationships emerged. Mother/child relationship status and work history, father's work habits, and the importance of school and social behaviors stood out as import conceptual building blocks for social determinants of health policy considerations. At the same time, with respect to adult financial strain, non-relative mentorship appears to have a small but positive effect. Policy implications which stand out to us are, expand non-relative mentorship programs to include training on responsible financial stewardship as well as work and marriage. Further, we feel that development of programs to positively influence adolescent happiness in school would be beneficial as well as targeting and reducing the national trend toward precarious forms of employment in lieu of adopting full-time and permanent employees. Such measures may reduce the tendency for individuals to succumb to adverse SDH events.

Tables and Figures

4.4.1. Table 1: Summary Statistics for Analytical Dataset Before Normalization

Variable	Description	n =21114 Mean (Std. Dev.)
pc1	Mother: communicate, understands, confides in, quality of rel-status, close	-0.040 (2.065)
pc2	Bully in and out of school	0.012 (1.790)
pc3	Affection from mother and father, close relationship with father	-0.065 (1.742)
pc4	Father: work habits (full, part-time, self-employed, farming, etc.)	-0.061 (1.698)
pc5	Neighborhood safe day, night, and for kids, age 6-12	-0.033 (1.621)
pc6	Mother: work habits (full, part-time, self-employed, farming, etc.)	0.060 (1.565)
pc7	Mother: unemployment record	-0.004 (1.543)
pc8	Father: understanding, able to confide in	-0.024 (1.517)
pc9	Homes clean and taken care of	-0.027 (1.368)
pc10	How lonely	0.001 (1.343)
pc11	Neighborhood close-knit , helpful neighbors, age 6-12	-0.016 (1.326)
pc12	Happy at school	-0.012 (1.316)
pc13	Relative mentors in work and marriage	0.032 (1.312)
pc14	NON-relative mentors in work and marriage	0.016 (1.290)
pc15	Had measles and/or mumps (proxy for age/generation)	-0.016 (1.275)
pc16	Felt safe at school	0.017 (1.284)
pc17	Bullied in/out of school 13-16	0.008 (1.270)
pc18	Parent's relationship satisfaction	-0.035 (1.249)
pc19	Comfortable with friends	-0.007 (1.229)
pc20	Bullied 6-12	0.017 (1.221)

Prior to normalization; For components without a reference age, age is defined as 0-16, or the complete span surveyed. For example, because school doesn't begin until age 6, Happy at School reflects the combined school happiness questions of age 6-12 and ages 13-16.

4.4.2. Table 2: Model and Factor Sensitivities

Principle Component Description		Decision Tree	Random forest	Weighted Average
pc12	Happy at school	0.987	0.989	0.988
pc10	How lonely	0.958	1.000	0.986
pc4	Father: work habits (full, part-time, self-employed, farming, etc.)	1.000	0.857	0.906
pc6	Mother: Work Habits (full, part-time, self-employed, farming, etc.)	0.941	0.815	0.858
pc1	Mother: communicate, understands, confides in, quality of rel-status, close	0.747	0.710	0.723
pc2	Bully in and out of school	0.498	0.658	0.603
pc9	Homes clean and taken care of	0.311	0.647	0.532
pc7	Mother: Unemployment record	0.515	0.391	0.434
pc3	Affection from mother and father, close relationship with father	0.379	0.427	0.410
pc17	Bullied in/out of school 13-16	0.482	0.356	0.399
pc8	Father: understanding, able to confide in	0.234	0.472	0.391
pc19	Comfortable with friends	0.489	0.286	0.355
pc15	Had measles and/or mumps (proxy for age/generation)	0.489	0.153	0.268
pc11	Neighborhood close-knit , helpful neighbors	0.338	0.217	0.258
pc13	Relative mentors in work and marriage	0.323	0.103	0.178
pc5	Neighborhood safe day, night, and for kids, Age 6-12	0.239	0.112	0.155
pc14	Non-relative mentors in work and marriage	0.131	0.160	0.150
pc16	Felt safe at school (6-16)	0.069	0.159	0.128
pc18	Parent's relationship satisfaction	0.222	0.000	0.076
pc20	Bullied 6-12	0.000	0.011	0.007

Note: For components without a reference age, age is defined as 0-16, or the complete span surveyed. For example, because school doesn't begin until age 6, Happy at School reflects the combined school happiness questions of age 6-12 and ages 13-16.

4.4.3. Table 3: Random Forest Coefficients and Standard Errors - Caucasian

Variable	Description	Caucasian
pc1	Mother: Communicate, Understands, Confides in, Quality of Relationship-Status, Close	0.0222
		(0.0252)
pc2	Bully in and out of school, Age 6-16	-0.0308*
		(0.0159)
pc3	Affection from Mother and Father, Close relationship with Father	-0.1169***
		(0.0281)
pc4	Father: Work Habits (full, part-time, self-employed, farming, etc.)	-0.0830***
		(0.0180)
pc5	Neighborhood safe day, night, and for kids, Age 6-12	-0.1035***
		(0.0312)
pc6	Mother: Work Habits (Full, Part-Time, Self-Employed, Farming, etc.)	0.1086***
		(0.0192)
pc7	Mother: Unemployment record	0.0452**
		(0.0187)
pc8	Father: Understanding, Able to Confide in	0.1795***
		(0.0288)
pc9	Homes Clean and Taken Care of	0.0099
		(0.0293)
pc10	How Lonely, Age 6-16	-0.2337***
		(0.0220)
pc11	Neighborhood Close-knit , Helpful Neighbors, Age 6-12	0.0746***
		(0.0195)
pc12	Happy at School	-0.2260***
		(0.0234)
pc13	Relative Mentors in Work and Marriage	0.0753***
		(0.0247)
pc14	NON-Relative Mentors in Work and Marriage	-0.0882***
		(0.0243)
pc15	Measles and Mumps (Proxy for age/generation)	0.0601**
		(0.0250)
pc16	Felt Safe at School (6-16)	-0.0754***
		(0.0209)
pc17	Bullied in/out of School 13-16	0.0214
		(0.0251)
pc18	Parent's Relationship Satisfaction	0.0216
		(0.0258)
pc19	Comfortable with Friends 6-16	-0.1101***
		(0.0232)
pc20	Bullied 6-12	0.0553**
		(0.0230)

Confidence *<.10; **<.05, ***<.01

Bootstrapped Standard Error; learning samples = 30

For components without a reference age, age is defined as 0-16, or the complete span surveyed. For example, because school doesn't begin until age 6, Happy at School reflects the combined school happiness questions of age 6-12 and ages 13-16
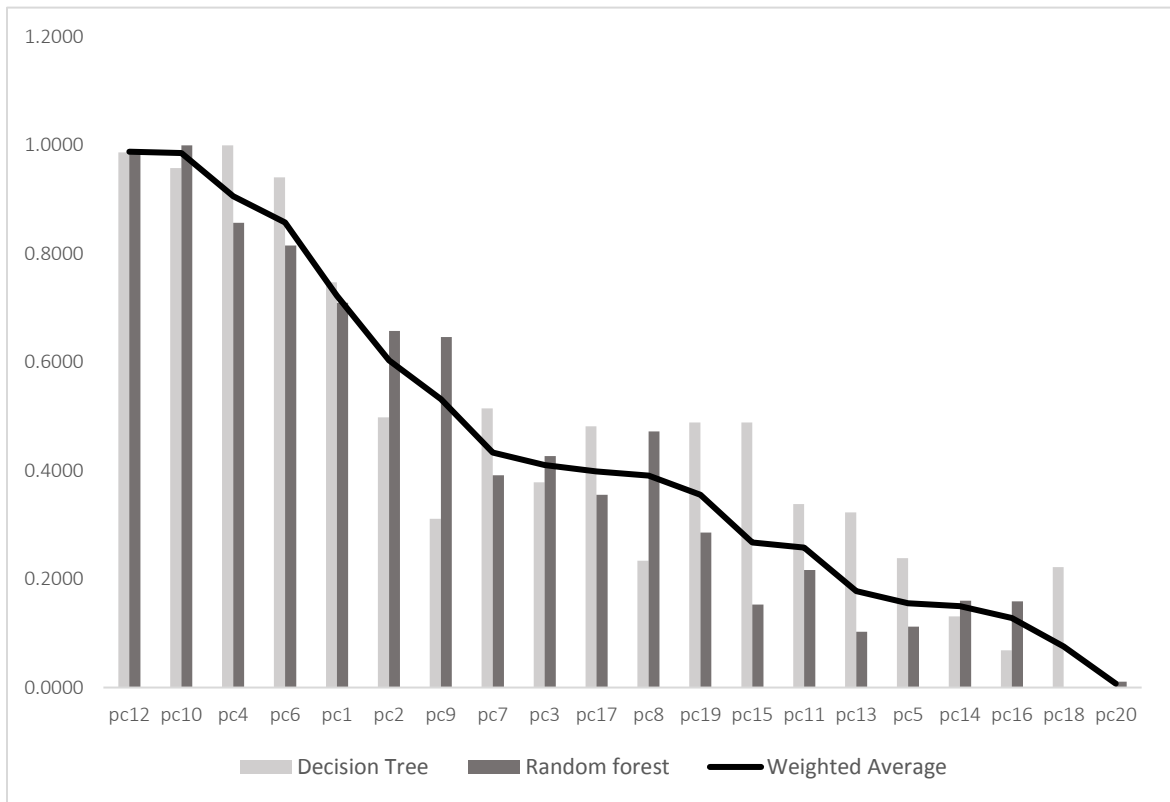
4.4.4. Figure 1:Model Sensitivities and Weighted Average Effects

Chapter 5: Extended Discussion and Conclusion

This dissertation set out to investigate two potential pathways that gird the accepted socioeconomic status health gradient. In chapter 2, we developed a theoretic argument and found statistical support for the hypotheses that financial strain and job-switching both negatively effected self-assessed health status (SAHS). There is long-standing research in support of the proposition that SAHS is positively correlated with health outcomes (see for example: Idler & Benyamini, 1997; Mossey & Shapiro, 1982; Woo & Zajacova, 2017). We conclude that a reduction in SAHS driven by financial strain and job switching therefore leads to poorer health outcomes. However, we found that financial strain and job switching effected change in SAHS differently. Financial strain, was associated with a "shock" effect but caused no permanent effect. On the other hand, higher frequency job switching resulted in no "shock" effect but is associated with a permanent effect. There is a long history of research that supports consumption smoothing in the face of financial shock (see for example: Baker & Yannelis, 2017; Gelman et. al., 2015), as well as both increased job searching costs associated with higher frequency job switching and a myriad of hidden costs including social identity erosion (see for example: Kidder & Raworth, 2004; Kalleberg, 2009; Benach et. al., 2014). In this sense, we find support for the existing literature.

In our research, natural policy implications are, of course, to implement programs which work against the natural flow of the United States' macro-economic environment which is tending toward increasingly precarious employment and higher levels of financial strain among the population (see for example: Kalleberg, 2017; Berger et. al.,

2018; Dobbie et. al., 2017; Wilshusen (2011); Wolff, 2016). With such broad and generalized policy suggestions, and significant experience in the development of policy and the operation of state government, it was clear to us that while valid, the scope of recommendations required policy makers to be more creative than is typically found in practice.

Recognizing the difficulty with developing policy around broad and generalized recommendations, in chapter 3, we turned our attention to the development of a policy analysis tool which we demonstrate superior to the existing actuarial methods used to predict premium and profitability changes in the broad insurance market; something that actuarial methods were never meant to handle (Borch, 1968). The measure we use to evaluate changes in the insurance marketplace are two-fold, first we appraise changes in individual level premiums, second, we evaluate changes in aggregate insurance market profitability. We find that the error term of actuarial methods falls to the individual in the form of higher premiums increasing the probability of financial strain ceteris paribus. By approaching prediction of future premiums and market profitability changes from a simple profit participation constraint, we develop and demonstrate a credible and simplified policy development method refocusing policy development on allocation of prediction error. We find that premium volatility may be reduced for large portions of the individual population while simultaneously exploring the range of negative and positive impacts for industry. The additional information may be effectively used to calibrate policy impacts across supply and demand considerations. However, there are still significant hurdles to overcome in future research.

Chapter 3's methodological development framed discussion of national health stock in terms of a common pool resource. In this manner we only needed to demonstrate improved efficiency over existing market mechanisms under the constraints of implementable institutional level action and the existence of sub-optimal outcomes as defined by the appropriators. To that end, we do not provide a means for optimal allocation of resources conceding "optimization" decisions to the combined experience of stake holder debate. In development of this chapter, there lay an implicit assumption; a reduction in events which may trigger financial strain will be effective at reducing financial strain in the general community. If the population isn't itself capable of exercising the intertemporal restraint required to manage existing resources optimally, then models as the one we propose here may offer improved process efficiencies, but they are unlikely to affect meaningful change in financial strain outcomes at the individual level. This led us to explore adolescent circumstances and experiences as predictors of adult financial strain.

To explore the adolescent experience adult financial strain relationship, chapter 4 focuses the analytical lens on retrospective circumstances data from a supplemental survey associated with the Panel Study of Income Dynamics, the Childhood Retrospective Circumstances Survey. With more than 120 variables covering disparate circumstances from family and school dynamics to childhood chronic diseases and neighborhood compositions, and Social Determinates of Health crossing boundaries and interacting without regard to discipline or theory, we felt it unwise to exert a-priori assumptions to define the interrelationships between variables. As such, we employ

principle component analysis and individual and ensemble machine learning techniques to tease out of the data salient correlations between adolescent events and adult financial strain circumstances. We found that strong predictors of adult financial strain are related to feeling of loneliness, happiness at school, father's work history, and maternal relationships. The directional relationships are consistent with high functioning academic loners, those who enjoy school, and mother's that are both present and relatively strict having lower levels of financial strain in adulthood. Father's work experience supports traditional role modeling. While our findings are consistent with historical research on self-efficacy in the transition to adulthood (for example see: Mortimer et al., 2016) and life-course studies (see for example: Schoon, 2013), we recognize that our case study of Caucasians, bounded by data-mining techniques is neither representative nor can causality be inferred. As such, our policy recommendations are made less as a declaration of need, rather it is supportive of existing programs that facilitate a responsible caretaker at home, stricter and less forgiving parenting styles, enjoyment at school, and efforts to help father's achieve fulltime stable employment. With the added potential benefit that such programs reduce an individual's probability of becoming financially strained in later life, we feel that, where possible, funding for such programs may provide benefit greater than those conceived of at inception.

References:

6. References Chapter 1

Bates, J. M., & Granger, C. W. (1969). The combination of forecasts. *Journal of the Operational Research Society*, *20*(4), 451-468.

Bohara, A., McNown, R., & Batts, J. T. (1987). A re-evaluation of the combination and adjustment of forecasts. *Applied Economics*, *19*(4), 437-445.

Becker, G. S. (1967). Human capital and the personal distribution of income: An analytical approach (No. 1). *Institute of Public Administration.*

Becker, G. S. (1994). Human capital revisited. In Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education (3rd Edition) (pp. 15-28). *The university of Chicago press*.

Contoyannis, P., Jones, A. M., & Rice, N. (2004). The dynamics of health in the British Household Panel Survey. *Journal of Applied Econometrics, 19*(4), 473-503.

Fingerman, K. L., Cheng, Y. P., Wesselmann, E. D., Zarit, S., Furstenberg, F., & Birditt, K. S. (2012). Helicopter parents and landing pad kids: Intense parental support of grown children. *Journal of Marriage and Family*, *74*(4), 880-896.

Grossman, M. (1972). On the concept of health capital and the demand for health. *Journal of Political economy, 80*(2), 223-255.

Halliday, T. J. (2017). Earnings Growth and Movements in Self-Reported Health. *Review of Income and Wealth*, *63*(4), 760-776.Halpern-Manners, A., Warren, J. R., Raymo, J. M., & Nicholson, D. A. (2015). The impact of work and family life histories on economic well-being at older ages. *Social Forces*, *93*(4), 1369-1396.

Kirkpatrick Johnson, M. (2013). Parental financial assistance and young adults' relationships with parents and well-being. *Journal of Marriage and Family*, *75*(3), 713-733.

Lee, J. H., Sadana, R., & Commission on Social Determinants of Health. (2011). Improving equity in health by addressing social determinants.

Muurinen, J.-M. (1982). Demand for health: a generalised Grossman model. *Journal of Health economics, 1*(1), 5-28.

Reed, K., Duncan, J. M., Lucier-Greer, M., Fixelle, C., & Ferraro, A. J. (2016). Helicopter parenting and emerging adult self-efficacy: Implications for mental and physical health. *Journal of Child and Family Studies*, *25*(10), 3136-3149.

Suitor, J. J., Gilligan, M., Pillemer, K., Fingerman, K. L., Kim, K., Silverstein, M., & Bengtson, V. L. (2017). Applying within-family differences approaches to

enhance understanding of the complexity of intergenerational relations. *The Journals of Gerontology: Series B*, *73*(1), 40-53.

Swartz, T. T., Kim, M., Uno, M., Mortimer, J., & O'Brien, K. B. (2011). Safety nets and scaffolds: Parental support in the transition to adulthood. *Journal of Marriage and Family*, *73*(2), 414-429.

West, A., Lewis, J., Roberts, J., & Noden, P. (2017). Young Adult Graduates Living in the Parental Home: Expectations, Negotiations, and Parental Financial Support. *Journal of Family Issues*, *38*(17), 2449-2473.

7. References Chapter 2

Achen, C. H. (2000). Why lagged dependent variables can suppress the explanatory power of other independent variables. *Ann Arbor, 1001*(2000), 48106-41248.

Adams, P., Hurd, M. D., McFadden, D., Merrill, A., & Ribeiro, T. (2003). Healthy, wealthy, and wise? Tests for direct causal paths between health and socioeconomic status. *Journal of Econometrics, 112*(1), 3-56.

Aizawa, Toshiaki and Helble, Matthias. (April 2015). Health and Home Ownership: Findings for the Case of Japan. *ADBI Working Paper 525*. Available at SSRN: https://ssrn.com/abstract=2605794 or http://dx.doi.org/10.2139/ssrn.2605794

Babiarz, P., Widdows, R., & Yilmazer, T. (2013). Borrowing to cope with adverse health events: liquidity constraints, insurance coverage, and unsecured debt. *Health economics, 22*(10), 1177-1198.

Becker, G. S. (1967). Human capital and the personal distribution of income: An analytical approach (No. 1). *Institute of Public Administration.*

Becker, G. S. (1994). Human capital revisited. In Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education (3rd Edition) (pp. 15-28). *The university of Chicago press*.

Belli, R. F. (2004). Improving the quality of retrospective reports: Calendar interviewing methodologies. *Paper presented at the Sixth international conference on logic and methodology*, Amsterdam.

Belli, R. F., Shay, W. L., & Stafford, F. P. (2001). Event history calendars and question list surveys: A direct comparison of interviewing methods. *Public opinion quarterly, 65*(1), 45-74.

Benach, J., Benavides, F. G., Platt, S., Diez-Roux, A., & Muntaner, C. (2000). The health-damaging potential of new types of flexible employment: a challenge for public health researchers. *American Journal of Public Health, 90*(8), 1316.

Benach, J., & Muntaner, C. (2007). Precarious employment and health: developing a research agenda. *Journal of Epidemiology & Community Health*, 61(4), 276-277.

Benach, J., Vives, A., Amable, M., Vanroelen, C., Tarafa, G., & Muntaner, C. (2014). Precarious employment: understanding an emerging social determinant of health. *Annual review of public health*, 35.

Chamberlain, G. (1979). Analysis of covariance with qualitative data: *National Bureau of Economic Research Cambridge, Mass., USA.*

Charlson, M., Szatrowski, T. P., Peterson, J., & Gold, J. (1994). Validation of a combined comorbidity index. *Journal of clinical epidemiology, 47*(11), 1245-1251.

Contoyannis, P., Jones, A. M., & Rice, N. (2004). The dynamics of health in the British Household Panel Survey. *Journal of Applied Econometrics, 19*(4), 473-503.

Crossley, T. F., & Kennedy, S. (2002). The reliability of self-assessed health status. *Journal of Health economics, 21*(4), 643-658.

Cuesta, M. B., & Budría, S. (2015). The effects of over-indebtedness on individual health: *IZA Discussion Paper.*

Deaton, A. (1999). Inequalities in income and inequalities in health: *National bureau of economic research.*

Deaton, A. (2003). Health, inequality, and economic development. *Journal of economic literature, 41*(1), 113-158.

DeVaney, S. A., & Lytton, R. H. (1995). Household insolvency: A review of household debt repayment, delinquency, and bankruptcy. *Financial Services Review, 4*(2), 137-156.

DuGoff, E. H., Canudas-Romo, V., Buttorff, C., Leff, B., & Anderson, G. F. (2014). Multiple chronic conditions and life expectancy: a life table analysis. *Medical care, 52*(8), 688-694.

Fletcher, J. M., Sindelar, J. L., & Yamaguchi, S. (2011). Cumulative effects of job characteristics on health. *Health economics, 20*(5), 553-570.

Ford, E. S., Croft, J. B., Posner, S. F., Goodman, R. A., & Giles, W. H. (2013). Co-Occurrence.

Fuchs, V. R. (1982). Introduction to" Economic Aspects of Health" *Economic Aspects of Health* (pp. 1-12): University of Chicago Press.

Gallo, W. T., Teng, H.-M., Falba, T. A., Kasl, S. V., Krumholz, H. M., & Bradley, E. H. (2006). The impact of late career job loss on myocardial infarction and stroke: a 10 year follow up using the health and retirement survey. *Occupational and environmental medicine, 63*(10), 683-687.

Gathergood, J. (2012). Debt and depression: causal links and social norm effects. *The Economic Journal, 122*(563), 1094-1114.

Grossman, M. (1972). On the concept of health capital and the demand for health. *Journal of Political economy, 80*(2), 223-255.

Halliday, T. J. (2007). Business cycles, migration and health. *Social Science & Medicine, 64*(7), 1420-1424.

Halliday, T. J. (2014). Unemployment and Mortality: Evidence from the PSID. *Social Science & Medicine, 113*, 15-22.

Heckman, J. J. (1981). The Incidental Parameters Problem and the Problem of Initial Conditions in Estimating a Discrete Choice Time-Discrete Data Stochastic Process. *Structural analysis of discrete data with econometric application*.

Hung, H.-C., Joshipura, K. J., Jiang, R., Hu, F. B., Hunter, D., Smith-Warner, S. A., . . . Willett, W. C. (2004). Fruit and vegetable intake and risk of major chronic disease. *Journal of the National Cancer Institute, 96*(21), 1577-1584.

Jacobson, L. S., LaLonde, R. J., & Sullivan, D. G. (1993). Earnings losses of displaced workers. *The American economic review*, 685-709.

Jürges, H. (2008). Self-assessed health, reference levels and mortality. *Applied Economics, 40*(5), 569-582.

Lau, C., & Leung, L. (2011). Effect of mortgage debt on health. *Department of Economics, CUNY Graduate Center, NY*.

Lindahl, M. (2005). Estimating the effect of income on health and mortality using lottery prizes as an exogenous source of variation in income. *Journal of Human Resources, 40*(1), 144-168.

Lyons, A. C., & Yilmazer, T. (2005). Health and financial strain: Evidence from the survey of consumer finances. *Southern Economic Journal*, 873-890.

McGonagle, K. A., & Schoeni, R. F. (2006). *The panel study of income dynamics: Overview and summary of scientific contributions after nearly 40 years. Paper presented at the conference Longitudinal Social and Health Surveys in an International Perspective*, Montreal.

Meer, J., Miller, D. L., & Rosen, H. S. (2003). Exploring the health–wealth nexus. *Journal of Health economics, 22*(5), 713-730.

Mundlak, Y. (1978). On the pooling of time series and cross section data. *Econometrica: journal of the Econometric Society*, 69-85.

Muurinen, J.-M. (1982). Demand for health: a generalised Grossman model. *Journal of Health economics, 1*(1), 5-28.

Newhouse, J. P., & Friedlander, L. J. (1980). The relationship between medical resources and measures of health: some additional evidence. *Journal of Human Resources*, 200-218.

O'Neill, B., Prawitz, A. D., Sorhaindo, B., Kim, J., & Garman, E. T. (2006). Changes in health, negative financial events, and financial distress/financial well-being for debt management program clients.

Shaw, R. J., Benzeval, M., & Popham, F. (2014). To what extent do financial strain and labour force status explain social class inequalities in self-rated health? Analysis of 20 countries in the European Social Survey. *PloS one, 9*(10), e110362.

Smith, J. P. (1999). Healthy bodies and thick wallets: the dual relation between health and economic status. *The journal of economic perspectives: a journal of the American Economic Association, 13*(2), 144.

Smith, J. P. (2004a). The Impact of SES on Health Over the Life-Course. *RAND, unpublished manuscript*.

Smith, J. P. (2004b). Unraveling the SES: health connection. *Population and development review, 30*, 108-132.

Stavins, J. (2000). Credit card borrowing, delinquency, and personal bankruptcy. *New England Economic Review*, 15.

Sullivan, D., & Von Wachter, T. (2009). Job displacement and mortality: An analysis using administrative data. *The Quarterly Journal of Economics, 124*(3), 1265-1306.

Terza JV, Basu A, Rathouz PJ. (2008). Two-Stage Residual Inclusion Estimation: Addressing Endogeneity in Health Econometric Modeling. *Journal of health economics*. 27(3):531-543.

Verbeek, M., & Nijman, T. (1992). Testing for selectivity bias in panel data models. *International Economic Review*, 681-703.

Wagstaff, A., Van Doorslaer, E., & Paci, P. (1989). Equity in the finance and delivery of health care: some tentative cross-country comparisons. *Oxford Review of Economic Policy, 5*(1), 89-112.

Wilkinson, R. G., & Marmot, M. (2003). Social determinants of health: the solid facts: *World Health Organization.*

Wooldridge, J. M. 2002. Econometric Analysis of Cross Section and Panel Data. Cambridge, MA: *MIT Press.*

Zeldes, S. P. (1989). Consumption and liquidity constraints: an empirical investigation. *Journal of Political economy, 97*(2), 305-346.

8. References Chapter 3

Balbás, A., et al. (2015). Optimal reinsurance under risk and uncertainty. *Insurance: Mathematics and Economics* **60**: 61-74.

Bernard, C. and W. Tian (2009). Optimal reinsurance arrangements under tail risk measures. *Journal of risk and insurance* **76**(3): 709-725.

Charlson, M., et al. (2014). The Charlson comorbidity index can be used prospectively to identify patients who will incur high future costs. *PloS one* **9**(12): e112479.

Geruso, M. and T. G. McGuire (2016). Tradeoffs in the design of health plan payment systems: Fit, power and balance. *Journal of health economics* **47**: 1-19.

Hilson, D. C., Micahel; Anderson, Michelle; Bingham, Al (2017). Individual Health Insurance Market Stabilization Analyses, Washington Office of the Insurance Comissioner.

Layton, T. J., et al. (2015). Assessing incentives for adverse selection in health plan payment systems. *National Bureau of Economic Research*.

Layton, T. J., et al. (2016). Risk corridors and reinsurance in health insurance Marketplaces: insurance for insurers. *American journal of health economics*.

Milliman (2017). Milliman Individual Health Insurance Market Profile. *State of Alaska*.

Ostrom, E., et al. (1994). Rules, games, and common-pool resources. *University of Michigan Press*.

Roberts, M. D. F., Claudia; Barin, Ozlem; Osterfoss, Margaret; Ecwardson, Nicholas; He, Xuanhao; Cacari Stone, Lisa (2017). Cost Sharing Trends In Medicaid and non-Medicaid Expansion States for Benchmark Silver Plans. *Robert Wood Johnson Foundation: Center for Health Policy*.

Snyder, L. (2014). Putting Medicaid in the Larger Budget Context: An In-Depth Look at Four States in FY 2014 and 2015.

Thiessen, M. (2017). Premera cuts rates further in 2018. *Alaska Journal of Commerce*. Online, Morris Communications Company, LLC.

Tomczyk, T. M., Ryan; Kaczmarek, Peter (2016). Alaska 1332 Waiver Application: Actuarial Analyses and Certification.

Van Barneveld, E. M., et al. (2001). "Risk sharing as a supplement to imperfect capitation: a tradeoff between selection and efficiency." *Journal of health economics* **20**(2): 147-168.

Zhang, Y. (2013). Reinsurance Arrangements Minimizing the Total Required Capital, *Casualty Society E-Forum*, Spring.

Zhu, J. M., et al. (2013). The power of reinsurance in health insurance exchanges to improve the fit of the payment system and reduce incentives for adverse selection. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing* **50**(4): 255-274.

9. References Chapter 4

Adams, P., Hurd, M. D., McFadden, D., Merrill, A., & Ribeiro, T. (2003). Healthy, wealthy, and wise? Tests for direct causal paths between health and socioeconomic status. *Journal of Econometrics, 112*(1), 3-56.

Alvarado, S. E. (2016). Neighborhood disadvantage and obesity across childhood and adolescence: evidence from the NLSY children and young adults cohort (1986–2010). *Social science research*, *57*, 80-98.

Bates, J. M., & Granger, C. W. (1969). The combination of forecasts. *Journal of the Operational Research Society*, *20*(4), 451-468.

Bianchi, S. M. (2000). Maternal employment and time with children: Dramatic change or surprising continuity?. *Demography*, *37*(4), 401-414.

Bohara, A., McNown, R., & Batts, J. T. (1987). A re-evaluation of the combination and adjustment of forecasts. *Applied Economics*, *19*(4), 437-445.

Clemen, R. T. (1989). Combining forecasts: A review and annotated bibliography. *International journal of forecasting*, *5*(4), 559-583.

Deaton, A. (1999). Inequalities in income and inequalities in health: *National bureau of economic research.*

Deaton, A. (2003). Health, inequality, and economic development. *Journal of economic literature, 41*(1), 113-158.

Delen, D. (2010). A comparative analysis of machine learning techniques for student retention management. *Decision Support Systems*, *49*(4), 498-506.

Desai, S., Chase-Lansdale, P. L., & Michael, R. T. (1989). Mother or Market? Effects of Maternal Employment on the Intellectual Ability of 4-Year-Old Children. *Demography*, *26*(4), 545-561. DOI: 10.2307/2061257

Fan, X., Fang, H., & Markussen, S. (2017). Parental Employment, Absence and Children's Educational Gender Gap.

Fletcher, J. M., Sindelar, J. L., & Yamaguchi, S. (2011). Cumulative effects of job characteristics on health. *Health economics, 20*(5), 553-570.

Fingerman, K. L., Cheng, Y. P., Wesselmann, E. D., Zarit, S., Furstenberg, F., & Birditt, K. S. (2012). Helicopter parents and landing pad kids: Intense parental support of grown children. *Journal of Marriage and Family*, *74*(4), 880-896.

Greene, W. H. (2012). Econometric analysis, 71e. *Stern School of Business, New York University*.

Halliday, T. J. (2007). Business cycles, migration and health. *Social Science & Medicine, 64*(7), 1420-1424.

Herbst, C. M. (2017). Are Parental Welfare Work Requirements Good for Disadvantaged Children? Evidence From Age-of-Youngest-Child Exemptions. *Journal of Policy Analysis and Management*, *36*(2), 327-357.

Jacobson, L. S., LaLonde, R. J., & Sullivan, D. G. (1993). Earnings losses of displaced workers. *The American economic review*, 685-709.

Jolliffe, I.T. (1986) Principal Component Analysis, New York: Springer-Verlag.

Kirkpatrick Johnson, M. (2013). Parental financial assistance and young adults' relationships with parents and well-being. *Journal of Marriage and Family*, *75*(3), 713-733.

Krieger, N. (2001). Theories for social epidemiology in the 21st century: an ecosocial perspective. *International journal of epidemiology*, *30*(4), 668-677.

Lee, J. H., Sadana, R., & Commission on Social Determinants of Health. (2011). Improving equity in health by addressing social determinants.

Lindahl, M. (2005). Estimating the effect of income on health and mortality using lottery prizes as an exogenous source of variation in income. *Journal of Human Resources, 40*(1), 144-168.

Newhouse, J. P., & Friedlander, L. J. (1980). The relationship between medical resources and measures of health: some additional evidence. *Journal of Human Resources*, 200-218.

Pope, C., Ziebland, S., & Mays, N. (2000). Qualitative research in health care: analysing qualitative data. *BMJ: British Medical Journal*, *320*(7227), 114.

Reed, K., Duncan, J. M., Lucier-Greer, M., Fixelle, C., & Ferraro, A. J. (2016). Helicopter parenting and emerging adult self-efficacy: Implications for mental and physical health. *Journal of Child and Family Studies*, *25*(10), 3136-3149.

Seligman, B., Tuljapurkar, S., & Rehkopf, D. (2018). Machine learning approaches to the social determinants of health in the health and retirement study. *SSM-population health*, *4*, 95-99.

Smith, J. P. (1999). Healthy bodies and thick wallets: the dual relation between health and economic status. *The journal of economic perspectives: a journal of the American Economic Association, 13*(2), 144.

Smith, J. P. (2004a). The Impact of SES on Health Over the Life-Course. *RAND, unpublished manuscript*.

Solar, O., & Irwin, A. (2010). A conceptual framework for action on the social determinants of health.

Suitor, J. J., Gilligan, M., Pillemer, K., Fingerman, K. L., Kim, K., Silverstein, M., & Bengtson, V. L. (2017). Applying within-family differences approaches to enhance understanding of the complexity of intergenerational relations. *The Journals of Gerontology: Series B*, *73*(1), 40-53.

Swartz, T. T., Kim, M., Uno, M., Mortimer, J., & O'Brien, K. B. (2011). Safety nets and scaffolds: Parental support in the transition to adulthood. *Journal of Marriage and Family*, *73*(2), 414-429.

Sullivan, D., & Von Wachter, T. (2009). Job displacement and mortality: An analysis using administrative data. *The Quarterly Journal of Economics, 124*(3), 1265-1306.

Vandell, D. L., Belsky, J., Burchinal, M., Vandergrift, N., & NICHD Early Child Care Research Network, L. (2010). Do Effects of Early Child Care Extend to Age 15 Years? Results From the NICHD Study of Early Child Care and Youth Development. *Child Development*, *81*(3), 737–756. http://doi.org/10.1111/j.1467-8624.2010.01431.x

Wagstaff, A., Van Doorslaer, E., & Paci, P. (1989). Equity in the finance and delivery of health care: some tentative cross-country comparisons. *Oxford Review of Economic Policy, 5*(1), 89-112.

West, A., Lewis, J., Roberts, J., & Noden, P. (2017). Young Adult Graduates Living in the Parental Home: Expectations, Negotiations, and Parental Financial Support. *Journal of Family Issues*, *38*(17), 2449-2473.

Wilkinson, R. G., & Marmot, M. (2003). Social determinants of health: the solid facts: *World Health Organization.*

Zeldes, S. P. (1989). Consumption and liquidity constraints: an empirical investigation. *Journal of Political economy, 97*(2), 305-346.

10. References Chapter 5

Baker, S. R., & Yannelis, C. (2017). Income changes and consumption: Evidence from the 2013 federal government shutdown. Review of Economic Dynamics, 23, 99-124.

Benach, J., Vives, A., Amable, M., Vanroelen, C., Tarafa, G., & Muntaner, C. (2014). Precarious employment: understanding an emerging social determinant of health. *Annual review of public health*, *35*.

Berger, L. M., Cancian, M., & Magnuson, K. (2018). Anti-poverty Policy Innovations: New Proposals for Addressing Poverty in the United States. *RSF*.

Borch, K., & Mossin, J. (1968). Risk and uncertainty. Springer.

Dobbie, W., Goldsmith-Pinkham, P., & Yang, C. S. (2017). Consumer bankruptcy and financial health. *Review of Economics and Statistics*, *99*(5), 853-869.

Gelman, M., Kariv, S., Shapiro, M. D., Silverman, D., & Tadelis, S. (2015). How individuals smooth spending: Evidence from the 2013 government shutdown using account data (No. w21025). National Bureau of Economic Research.

Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: a review of twenty-seven community studies. Journal of health and social behavior, 21-37.

Kalleberg, A. L. (2009). Precarious work, insecure workers: Employment relations in transition. American sociological review, 74(1), 1-22.

Kalleberg, A. L., & Vallas, S. P. (Eds.). (2017). Probing precarious work: Theory, research, and politics. In *Precarious Work* (pp. 1-30). Emerald Publishing Limited.

Kidder, T., & Raworth, K. (2004). 'Good jobs' and hidden costs: Women workers documenting the price of precarious employment. *Gender & Development*, *12*(2), 12-21.

Mortimer, J. T., Kim, M., Staff, J., & Vuolo, M. (2016). Unemployment, parental help, and self-efficacy during the transition to adulthood. *Work and occupations*, *43*(4), 434-465.

Mossey, J. M., & Shapiro, E. (1982). Self-rated health: a predictor of mortality among the elderly. American journal of public health, 72(8), 800-808.

Muurinen, J.-M. (1982). Demand for health: a generalised Grossman model. *Journal of Health economics, 1*(1), 5-28.

Schoon, I. (2014). Parental worklessness and the experience of NEET among their offspring. Evidence from the Longitudinal Study of Young People in England (LSYPE). *Longitudinal and Life Course Studies*, *5*(2), 129-150.

Wilshusen, S. (2011). Meeting the demand for debt relief.

Wolff, E. N. (2016). Household Wealth Trends in the United States, 1962 to 2013: What Happened over the Great Recession?. *RSF*.

Woo, H., & Zajacova, A. (2017). Predictive strength of self-rated health for mortality risk among older adults in the United States: does it differ by race and ethnicity?. *Research on aging*, *39*(7), 879-905.

Supplementary Materials

11. Supplementary Material Chapter 2

11.1.   Appendix 1: Full Results Tables

11.1.1. Table A1: Variable Addition Bias Test - Random Effects Ordered Probit Model, modified CRE, and Strict CRE estimations: M, F, and Combined

VARIABLES	Model 5m MODCRE Outcome= SAH Unbalanced	Model 5f MODCRE Outcome= SAH Unbalanced	Model 5m/f MODCRE Outcome= SAH Unbalanced	Model 6m STRICTCRE Outcome= SAH Unbalanced	Model 6f STRICTCRE Outcome= SAH Unbalanced	Model 6m/f STRICTCRE Outcome= SAH Unbalanced
LHSD1	-2.329***	-2.167***	-2.206***	-1.887***	-1.508***	-1.629***
	(0.291)	(0.227)	(0.180)	(0.236)	(0.184)	(0.145)
LHSD2	-1.487***	-1.595***	-1.558***	-1.100***	-1.142***	-1.133***
	(0.148)	(0.123)	(0.0948)	(0.102)	(0.0891)	(0.0668)
LHSD3	-1.092***	-1.100***	-1.097***	-0.825***	-0.792***	-0.809***
	(0.0948)	(0.0820)	(0.0621)	(0.0627)	(0.0600)	(0.0435)
LHSD4	-0.677***	-0.554***	-0.609***	-0.508***	-0.394***	-0.447***
	(0.0641)	(0.0562)	(0.0422)	(0.0487)	(0.0446)	(0.0329)
ALL	-0.0878	-0.0255	-0.0557	-0.122**	-0.0574	-0.0895**
	(0.0553)	(0.0474)	(0.0361)	(0.0597)	(0.0526)	(0.0396)
TOTALOBS	0.0774***	0.0700***	0.0728***	0.0632***	0.0664***	0.0658***
	(0.0164)	(0.0122)	(0.00973)	(0.0148)	(0.0111)	(0.00885)
1.FSTRESS	-0.158***	-0.0989**	-0.124***	-0.129**	-0.0416	-0.0786**
	(0.0538)	(0.0454)	(0.0348)	(0.0514)	(0.0477)	(0.0351)
n_cor_jobswitching	0.00144	-0.00454	-0.00110	0.0192	0.0193	0.0191
	(0.0230)	(0.0189)	(0.0146)	(0.0224)	(0.0185)	(0.0142)
past_jobswitching_average	-0.0250	-0.0670**	-0.0466*			
	(0.0431)	(0.0316)	(0.0255)			
past_FS_average	0.119	-0.106*	-0.0284			
	(0.0807)	(0.0639)	(0.0501)			
mm_DEF_FSTRESS_Z2				0.122	-0.189**	-0.0740
				(0.117)	(0.0890)	(0.0702)
mm_n_cor_jobswitching				-0.0848	-0.0927**	-0.0848**
				(0.0546)	(0.0414)	(0.0330)

Table A1: Continued

	Model 5m	Model 5f	Model 5m/f	Model 6m	Model 6f	Model 6m/f
AGE	-0.416***	0.274**	-0.0332	-0.254**	0.00494	-0.103
	(0.156)	(0.139)	(0.104)	(0.113)	(0.101)	(0.0752)
AGE2	0.0791**	-0.0724**	-0.00455	0.0424*	-0.0112	0.0114
	(0.0338)	(0.0306)	(0.0227)	(0.0253)	(0.0227)	(0.0168)
AGE3	-0.0548**	0.0527**	0.00436	-0.0289	0.00882	-0.00711
	(0.0238)	(0.0220)	(0.0162)	(0.0182)	(0.0166)	(0.0123)
NON_WHITE1	-0.0748	-0.161***	-0.124***	-0.115**	-0.168***	-0.142***
	(0.0548)	(0.0434)	(0.0342)	(0.0551)	(0.0453)	(0.0351)
YSCHOO	0.0264	0.00186	0.0125	-0.00304	0.00482	0.000727
	(0.0324)	(0.0222)	(0.0189)	(0.0280)	(0.0216)	(0.0170)
MALE			0.0475*			0.0724**
			(0.0282)			(0.0287)
HINS	-0.0689	0.0405	-0.000822	-0.0418	0.0801	0.0307
	(0.101)	(0.0828)	(0.0642)	(0.0894)	(0.0726)	(0.0565)
STABLEMAR	-0.0184	-0.155**	-0.101*	-0.0970	-0.107*	-0.107**
	(0.0843)	(0.0745)	(0.0556)	(0.0743)	(0.0624)	(0.0476)
NUMFAMCH	-0.00956	-0.000244	-0.00148	-0.00169	0.00700	0.00179
	(0.0310)	(0.0258)	(0.0198)	(0.0254)	(0.0216)	(0.0163)
d_II_COR_HSTATUS1	-1.193***	-2.085***	-1.794***	-1.392***	-2.421***	-2.096***
	(0.364)	(0.243)	(0.221)	(0.379)	(0.209)	(0.197)
d_II_COR_HSTATUS2	-1.767***	-1.773***	-1.780***	-1.946***	-2.041***	-2.003***
	(0.155)	(0.129)	(0.0986)	(0.149)	(0.118)	(0.0914)
d_II_COR_HSTATUS3	-1.190***	-1.230***	-1.221***	-1.291***	-1.421***	-1.371***
	(0.0850)	(0.0779)	(0.0575)	(0.0764)	(0.0703)	(0.0516)
d_II_COR_HSTATUS4	-0.765***	-0.695***	-0.726***	-0.832***	-0.800***	-0.813***
	(0.0595)	(0.0556)	(0.0406)	(0.0570)	(0.0538)	(0.0391)
TIME2				-0.213	-0.0832	-0.131
				(0.155)	(0.115)	(0.0920)
TIME3	-0.127	-0.119	-0.121	-0.162	-0.00691	-0.0672
	(0.143)	(0.112)	(0.0876)	(0.130)	(0.0980)	(0.0778)
TIME4	-0.201*	-0.191**	-0.196***	-0.193*	-0.113	-0.144**
	(0.120)	(0.0927)	(0.0731)	(0.110)	(0.0822)	(0.0657)
TIME5	-0.0927	-0.0908	-0.0913	-0.118	-0.0257	-0.0620
	(0.0936)	(0.0729)	(0.0573)	(0.0854)	(0.0657)	(0.0519)
TIME6	-0.123*	-0.135**	-0.129***	-0.119*	-0.0957*	-0.105**
	(0.0722)	(0.0571)	(0.0445)	(0.0664)	(0.0520)	(0.0408)
TIME7	-0.110**	-0.0351	-0.0659*	-0.110**	-0.00902	-0.0508
	(0.0548)	(0.0445)	(0.0346)	(0.0519)	(0.0420)	(0.0326)
mm_AGE	0.107	-0.398*	-0.144	0.0839	-0.350*	-0.160

Table A1: Continued

	Model 5m	Model 5f	Model 5m/f	Model 6m	Model 6f	Model 6m/f
	(0.281)	(0.232)	(0.179)	(0.241)	(0.188)	(0.148)
mm_AGE2	-0.0227	0.0963*	0.0367	-0.0160	0.0814*	0.0384
	(0.0626)	(0.0519)	(0.0400)	(0.0536)	(0.0421)	(0.0330)
mm_AGE3	0.0214	-0.0682*	-0.0234	0.0166	-0.0558*	-0.0236
	(0.0457)	(0.0382)	(0.0294)	(0.0393)	(0.0310)	(0.0243)
mm_YSCHOO	0.0544	0.0575**	0.0543***	0.0892***	0.0585**	0.0718***
	(0.0350)	(0.0244)	(0.0205)	(0.0306)	(0.0240)	(0.0188)
mm_HINS	-0.0943	0.0356	-0.0171	-0.0124	0.0424	0.0107
	(0.181)	(0.150)	(0.115)	(0.165)	(0.141)	(0.107)
mm_STABLEMAR	0.264**	0.0843	0.129*	0.312***	0.0292	0.131**
	(0.110)	(0.0881)	(0.0677)	(0.100)	(0.0771)	(0.0603)
mm_NUMFAMCH	0.0167	0.0108	0.0164	0.0238	0.00476	0.0196
	(0.0405)	(0.0333)	(0.0256)	(0.0360)	(0.0297)	(0.0228)
cut 1	-9.085***	-6.171**	-7.064***	-6.899**	-9.525***	-8.305***
	(3.369)	(2.654)	(2.089)	(2.937)	(2.208)	(1.766)
cut 2	-7.686**	-4.666*	-5.595***	-5.461*	-7.972***	-6.792***
	(3.363)	(2.655)	(2.089)	(2.935)	(2.207)	(1.766)
cut 3	-5.931*	-2.899	-3.836*	-3.704	-6.162***	-5.005***
	(3.362)	(2.654)	(2.088)	(2.934)	(2.205)	(1.765)
cut 4	-4.184	-1.138	-2.083	-1.946	-4.376**	-3.233*
	(3.360)	(2.653)	(2.087)	(2.933)	(2.204)	(1.764)
Sigma2_u	0.396***	0.343***	0.371***	0.530***	0.500***	0.518***
	(0.0648)	(0.0524)	(0.0412)	(0.0501)	(0.0421)	(0.0325)
Observations	7,362	9,659	17,021	9,349	12,368	21,717
Number of uniqueid	1,801	2,502	4,303	2,037	2,858	4,895

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

11.1.2. Table A2: Full specification results Random Effects Ordered Probit Specifications

Outcome = SAHS	T2_MODEL 1 NO-IPW xtoprobit unbalanced	T2_Model 2 m/f NOIPW- xtoprobit unbalanced	T2_Model 3 m/f NOIPW FULL xtoprobit unbalanced	T2_Model 4 m/f IPW-NO CRE all corrections unbalanced	T2_Model 5 m/f IPW-MODCRE xtoprobit unbalanced	T2_Model 6 m/f IPW FULL CRE xtoprobit unbalanced
FSTRESS	-0.132***	-0.124***	-0.0781**	-0.131***	-0.124***	-0.0770**
	(0.0347)	(0.0348)	(0.0351)	(0.0350)	(0.0352)	(0.0355)
PAST_FSTRESS_AVERAGE	-0.0552	-0.0358		-0.0505	-0.0330	
	(0.0491)	(0.0504)		(0.0493)	(0.0506)	
MEAN_FSTRESS			-0.0832			-0.0995
			(0.0705)			(0.0728)
JOBSWITCHING	-0.00390	-0.00415	0.0192	-0.00135	-0.00156	0.0216
	(0.0145)	(0.0146)	(0.0142)	(0.0147)	(0.0148)	(0.0143)
PAST_JOBSWITCHING_AVERAGE	-0.0551**	-0.0532**		-0.0611**	-0.0590**	
	(0.0254)	(0.0257)		(0.0256)	(0.0258)	
MEAN_JOBSWITCHING			-0.101***			-0.105***
			(0.0331)			(0.0347)
MALE	0.0501*	0.0528*	0.0773***	0.0514*	0.0543*	0.0791***
	(0.0281)	(0.0284)	(0.0288)	(0.0282)	(0.0285)	(0.0297)
AGE	-0.107	-0.0332	-0.104	-0.118	-0.0340	-0.105
	(0.0824)	(0.104)	(0.0751)	(0.0831)	(0.104)	(0.0757)
AGE2	0.0206	-0.00502	0.0104	0.0227	-0.00475	0.0102
	(0.0182)	(0.0227)	(0.0168)	(0.0183)	(0.0228)	(0.0169)
AGE3	-0.0141	0.00466	-0.00642	-0.0153	0.00460	-0.00621
	(0.0130)	(0.0161)	(0.0122)	(0.0131)	(0.0162)	(0.0123)
NON_WHITE	-0.151***	-0.140***	-0.157***	-0.146***	-0.134***	-0.148***
	(0.0339)	(0.0344)	(0.0353)	(0.0340)	(0.0345)	(0.0362)
YSCHOOL	0.0612***	0.0123	0.00116	0.0596***	0.0116	-0.000527
	(0.00671)	(0.0189)	(0.0170)	(0.00670)	(0.0186)	(0.0170)
HINSURANCE	0.000766	-0.00144	0.0303	-0.00761	-0.00330	0.0312
	(0.0529)	(0.0642)	(0.0565)	(0.0532)	(0.0648)	(0.0570)
STABLEMARRIAGE	0.00111	-0.103*	-0.107**	0.00155	-0.107*	-0.116**
	(0.0323)	(0.0556)	(0.0475)	(0.0322)	(0.0554)	(0.0473)
NUMFAMILYCHILDREN	0.0103	-0.000979	0.00190	0.00980	-0.00128	0.000565
	(0.0121)	(0.0198)	(0.0163)	(0.0122)	(0.0197)	(0.0163)
MEAN_AGE		-0.0398	-0.0399		-0.0589	-0.00138
		(0.179)	(0.147)		(0.179)	(0.154)
MEAN_AGE2		0.0209	0.0198		0.0246	0.0111
		(0.0400)	(0.0330)		(0.0401)	(0.0343)
MEAN_AGE3		-0.0165	-0.0149		-0.0190	-0.00844
		(0.0294)	(0.0243)		(0.0295)	(0.0253)
MEAN_YSCHOOL		0.0560***	0.0726***		0.0550***	0.0726***
		(0.0205)	(0.0188)		(0.0203)	(0.0188)
MEAN_HINSURANCE		-0.0127	0.0156		-0.0340	-0.000219
		(0.116)	(0.108)		(0.118)	(0.116)
MEAN_STABLEMARRIAGE		0.157**	0.157***		0.163**	0.172***
		(0.0678)	(0.0605)		(0.0677)	(0.0608)
MEAN_NUMFAMILYCHILDREN		0.0174	0.0223		0.0167	0.0238

Table A2: Continued.

	T2_MODEL 1	T2_Model 2 m/f	T2_Model 3 m/f	T2_Model 4 m/f	T2_Model 5 m/f	T2_Model 6 m/f
		(0.0257)	(0.0229)		(0.0256)	(0.0233)
LHSD1	-2.245***	-2.217***	-1.634***	-2.232***	-2.203***	-1.580***
	(0.180)	(0.181)	(0.146)	(0.184)	(0.184)	(0.149)
LHSD2	-1.586***	-1.564***	-1.134***	-1.584***	-1.561***	-1.101***
	(0.0959)	(0.0957)	(0.0669)	(0.0990)	(0.0988)	(0.0689)
LHSD3	-1.113***	-1.099***	-0.808***	-1.114***	-1.099***	-0.788***
	(0.0627)	(0.0625)	(0.0435)	(0.0636)	(0.0634)	(0.0441)
LHSD4	-0.619***	-0.610***	-0.446***	-0.615***	-0.606***	-0.430***
	(0.0424)	(0.0424)	(0.0329)	(0.0429)	(0.0429)	(0.0332)
INITIAL SAH=1	-1.851***	-1.855***	-2.165***	-1.834***	-1.836***	-2.123***
	(0.225)	(0.223)	(0.200)	(0.209)	(0.207)	(0.194)
INITIAL SAH=2	-1.811***	-1.812***	-2.044***	-1.777***	-1.781***	-1.998***
	(0.101)	(0.100)	(0.0922)	(0.102)	(0.101)	(0.0944)
INITIAL SAH=3	-1.237***	-1.242***	-1.396***	-1.202***	-1.209***	-1.362***
	(0.0589)	(0.0584)	(0.0521)	(0.0591)	(0.0588)	(0.0522)
INITIAL SAH=4	-0.732***	-0.735***	-0.825***	-0.710***	-0.713***	-0.802***
	(0.0411)	(0.0410)	(0.0394)	(0.0412)	(0.0412)	(0.0396)
TIME 2	-	-	-0.194**	-	-	-0.208**
			(0.0923)			(0.0969)
TIME3	0.221***	-0.143	-0.113	0.222***	-0.128	-0.120
	(0.0346)	(0.0885)	(0.0782)	(0.0350)	(0.0893)	(0.0823)
TIME4	0.0882***	-0.207***	-0.176***	0.0868***	-0.196***	-0.184***
	(0.0329)	(0.0739)	(0.0661)	(0.0332)	(0.0744)	(0.0698)
TIME5	0.126***	-0.0962*	-0.0819	0.125***	-0.0869	-0.0875
	(0.0313)	(0.0578)	(0.0522)	(0.0318)	(0.0584)	(0.0548)
TIME6	0.0120	-0.131***	-0.117***	0.0145	-0.121***	-0.117***
	(0.0297)	(0.0448)	(0.0409)	(0.0301)	(0.0453)	(0.0428)
TIME7	0.00777	-0.0648*	-0.0549*	0.0108	-0.0579	-0.0551
	(0.0306)	(0.0346)	(0.0327)	(0.0314)	(0.0354)	(0.0341)
CUTPOINT 1	-6.122***	-5.465***	-6.428***	-6.305***	-5.779***	-5.891***
	(1.218)	(2.083)	(1.747)	(1.230)	(2.097)	(1.856)
CUTPOINT 2	-4.662***	-3.999*	-4.917***	-4.847***	-4.316**	-4.381**
	(1.216)	(2.082)	(1.747)	(1.228)	(2.096)	(1.856)
CUTPOINT 3	-2.908**	-2.241	-3.130*	-3.105**	-2.569	-2.610
	(1.215)	(2.082)	(1.746)	(1.226)	(2.095)	(1.855)
CUTPOINT 4	-1.161	-0.488	-1.357	-1.379	-0.838	-0.854
	(1.214)	(2.081)	(1.745)	(1.225)	(2.095)	(1.854)
SIGMA2_U	0.372***	0.379***	0.529***	0.360***	0.367***	0.533***
	(0.0421)	(0.0422)	(0.0329)	(0.0423)	(0.0424)	(0.0344)
N	17,021	17,021	21,717	17,021	17,021	21,717
CLUSTERS	4,303	4,303	4,895	4,303	4,303	4,895
LOG LIKELIHOOD	-16783.75	-16763.91	-21385.73	-21206.46	-21181.86	-27367.76
AIC	33629.5	33603.81	42849.47	42474.92	42439.73	54813.52

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

11.1.3. Table A3: Complete Random Effects Ordered Probit Specifications - Male and Female dependent

	T5a_MODEL4m IPW SAH-FSTRESS all corrections unbalanced	T5a_MODEL4f IPW SAH- all corrections unbalanced	T5a_Model IPW-Outcome xtoprobit unbalanced	T5a_Model IPW-Outcome xtoprobit unbalanced	T5a_Model IPW FULL Outcome xtoprobit unbalanced	T5a_Model IPW FULL Outcome xtoprobit unbalanced
FSTRESS	-0.164***	-0.109**	**-0.155*****	**-0.102****	-0.124**	-0.0419
	(0.0539)	(0.0459)	**(0.0546)**	**(0.0459)**	(0.0526)	(0.0479)
PAST_FSTRESS_AVERAGE	0.0763	-0.119*	0.106	-0.106		
	(0.0789)	(0.0632)	(0.0808)	(0.0648)		
MEAN_FSTRESS					0.0808	-0.208**
					(0.128)	(0.0896)
JOBSWITCHING	0.000360	-0.00512	0.000133	-0.00495	0.0211	0.0223
	(0.0231)	(0.0191)	(0.0233)	(0.0191)	(0.0223)	(0.0188)
PAST_JOBSWITCHING_AVERAGE	-0.0393	-0.0818**	**-0.0325**	**-0.0825****		
	(0.0421)	(0.0321)	**(0.0428)**	**(0.0323)**		
MEAN_JOBSWITCHING					-0.105*	-0.115***
					(0.0607)	(0.0415)
MALE						
AGE	-0.372***	0.0595	**-0.392****	**0.252***	-0.237**	-0.0107
	(0.127)	(0.110)	**(0.156)**	**(0.140)**	(0.115)	(0.101)
AGE2	0.0771***	-0.0155	**0.0719****	**-0.0668****	0.0359	-0.00811
	(0.0278)	(0.0243)	**(0.0339)**	**(0.0308)**	(0.0256)	(0.0226)
AGE3	-0.0532***	0.0115	**-0.0499****	**0.0489****	-0.0243	0.00671
	(0.0197)	(0.0175)	**(0.0239)**	**(0.0221)**	(0.0185)	(0.0166)
NON_WHITE	-0.0927*	-0.183***	**-0.0783**	**-0.175*****	-0.123**	-0.173***
	(0.0547)	(0.0433)	**(0.0554)**	**(0.0439)**	(0.0579)	(0.0461)
YSCHOOL	0.0741***	0.0512***	0.0259	0.000762	-0.00556	0.00434
	(0.0105)	(0.00864)	(0.0314)	(0.0223)	(0.0278)	(0.0217)
HINSURANCE	-0.0927	0.0550	-0.0789	0.0440	-0.0483	0.0858
	(0.0856)	(0.0674)	(0.103)	(0.0832)	(0.0912)	(0.0724)
STABLEMARRIAGE	0.131**	-0.0676*	**-0.0325**	**-0.153****	-0.111	-0.110*
	(0.0566)	(0.0394)	**(0.0843)**	**(0.0743)**	(0.0738)	(0.0621)
NUMFAMILYCHILDREN	0.00220	0.0103	-0.0118	0.00266	-0.00495	0.00816
	(0.0197)	(0.0158)	(0.0310)	(0.0257)	(0.0255)	(0.0216)
MEAN_AGE			0.241	-0.340	0.305	-0.231
			(0.281)	(0.232)	(0.260)	(0.188)
MEAN_AGE2			-0.0437	0.0891*	-0.0564	0.0621
			(0.0627)	(0.0521)	(0.0577)	(0.0423)
MEAN_AGE3			0.0322	-0.0675*	0.0418	-0.0467
			(0.0459)	(0.0384)	(0.0423)	(0.0313)
MEAN_YSCHOOL			0.0549	0.0579**	0.0937***	0.0570**
			(0.0342)	(0.0244)	(0.0305)	(0.0240)
MEAN_HINSURANCE			-0.0771	0.00521	-0.0187	0.0321
			(0.183)	(0.154)	(0.183)	(0.145)
MEAN_STABLEMARRIAGE			0.290***	0.113	0.360***	0.0620
			(0.110)	(0.0882)	(0.102)	(0.0771)
MEAN_NUMFAMILYCHILDREN			0.0159	0.0107	0.0251	0.00893

Table A3: Continued

	T5a_MODEL4m	T5a_MODEL4f	T5a_Model	T5a_Model	T5a_Model	T5a_Model
			(0.0406)	(0.0333)	(0.0369)	(0.0301)
LHSD1	-2.413***	-2.155***	-2.386***	-2.132***	-1.862***	-1.458***
	(0.296)	(0.230)	(0.304)	(0.230)	(0.237)	(0.188)
LHSD2	-1.557***	-1.590***	-1.517***	-1.577***	-1.050***	-1.127***
	(0.156)	(0.128)	(0.156)	(0.127)	(0.108)	(0.0901)
LHSD3	-1.126***	-1.102***	-1.105***	-1.093***	-0.790***	-0.782***
	(0.0979)	(0.0832)	(0.0979)	(0.0831)	(0.0647)	(0.0600)
LHSD4	-0.687***	-0.557***	-0.673***	-0.551***	-0.479***	-0.387***
	(0.0653)	(0.0567)	(0.0655)	(0.0567)	(0.0499)	(0.0444)
INITIAL SAH=1	-1.225***	-2.139***	-1.232***	-2.133***	-1.405***	-2.448***
	(0.336)	(0.239)	(0.331)	(0.238)	(0.368)	(0.216)
INITIAL SAH=2	-1.725***	-1.799***	-1.734***	-1.797***	-1.892***	-2.060***
	(0.163)	(0.132)	(0.161)	(0.131)	(0.164)	(0.117)
INITIAL SAH=3	-1.148***	-1.227***	-1.162***	-1.229***	-1.276***	-1.416***
	(0.0875)	(0.0798)	(0.0879)	(0.0791)	(0.0786)	(0.0704)
INITIAL SAH=4	-0.741***	-0.682***	-0.753***	-0.680***	-0.827***	-0.785***
	(0.0602)	(0.0565)	(0.0605)	(0.0563)	(0.0580)	(0.0540)
TIME 2	-	-	-	-	-0.373**	-0.0954
					(0.166)	(0.116)
TIME3	0.200***	0.233***	-0.217	-0.0747	-0.283**	-0.00881
	(0.0535)	(0.0463)	(0.145)	(0.114)	(0.140)	(0.0996)
TIME4	0.0695	0.0999**	-0.270**	-0.148	-0.290**	-0.111
	(0.0515)	(0.0435)	(0.122)	(0.0938)	(0.120)	(0.0833)
TIME5	0.115**	0.129***	-0.140	-0.0554	-0.188**	-0.0174
	(0.0490)	(0.0418)	(0.0950)	(0.0741)	(0.0924)	(0.0667)
TIME6	0.0193	0.00816	-0.147**	-0.106*	-0.159**	-0.0866
	(0.0461)	(0.0400)	(0.0729)	(0.0581)	(0.0708)	(0.0530)
TIME7	-0.0269	0.0358	-0.112**	-0.0215	-0.128**	-0.00261
	(0.0498)	(0.0405)	(0.0569)	(0.0452)	(0.0558)	(0.0428)
CUTPOINT 1	-9.910***	-3.796**	-6.728**	-5.600**	-3.328	-7.890***
	(1.908)	(1.610)	(3.358)	(2.674)	(3.199)	(2.215)
CUTPOINT 2	-8.532***	-2.295	-5.340	-4.094	-1.905	-6.334***
	(1.904)	(1.607)	(3.353)	(2.674)	(3.198)	(2.213)
CUTPOINT 3	-6.804***	-0.541	-3.604	-2.336	-0.167	-4.536**
	(1.900)	(1.606)	(3.351)	(2.672)	(3.197)	(2.212)
CUTPOINT 4	-5.096***	1.202	-1.890	-0.589	1.570	-2.763
	(1.897)	(1.606)	(3.350)	(2.672)	(3.196)	(2.210)
SIGMA2_U	0.368***	0.346***	0.379***	0.350***	0.558***	0.506***
	(0.0654)	(0.0544)	(0.0660)	(0.0543)	(0.0556)	(0.0427)
N	7,362	9,659	7,362	9,659	9,349	12,368
CLUSTERS	1,801	2,502	1,801	2,502	2,037	2,858
LOG LIKELIHOOD	-8991.395	-12178.79	-8976.221	-12163.77	-11570.78	-15751.45
AIC	18042.79	24417.57	18026.44	24401.53	23217.56	31578.91

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

11.2. Appendix 2

11.2.1. **Theoretical Motivation and Development**

We assume that individuals are rational utility maximizing agents facing a

dynamic optimization problem. Suppose that the lifetime utility U_i of an individual i

may be characterized as

$$U_i = \sum_{t=0}^{T} \frac{1}{(1+\theta_{it})^t} u_{it}(H_{it}, L_{it}, X_{it}; D_i, D_{it}) \tag{1}$$

In equation (1), the utility function u_{it} for individual i at time t depends on the

independent variables health (H), Leisure (L), and a bundle of non-health related

consumption (X). Utility is discounted by an individual, and potentially time variant,

time preference θ_{it}. In this model, D_i, D_{it} are observable individual characteristics which

are thought to effect all choices within the utility function and differentiated as time

invariant and time-variant. As in Grossman (1972), an individual's Health H_{it} is

presumed to evolve over time according to

$$\Delta H_{it} = I_{it} - \delta(q_{it}; \varepsilon_i) H_{it-1}, \tag{2}$$

where I_{it} represents investment in health goods and services (both formal and informal)

and $\delta(q_{it}; \varepsilon_i) H_{it-1}$ represents consumption of existing health stock. Consistent with

(Muurinen, 1982) individual observable characteristics are allowed to effect the rate at

which health stock is consumed referenced q_{it} while ε_i denotes individual time invariant

unobservable genetic, community, and psychological factors effecting the rate of
depreciation of existing health.

The general health production is thus formed as

$$H_{it} = h_{it}(\mathrm{H}_{it-1},\mathrm{I}_{it},\mathrm{q}_{it};\varepsilon_{it},\mathrm{D}_i,\mathrm{D}_{it}).$$

(3)

Individuals are assumed to face a lifetime earnings budget constraint

$$V_i = \sum_{t=0}^{T}\frac{1}{(1+\theta_{it})^t}\left[r_t A_{it} + w_{it}(T - T_{it}^L - T_{it}^H - T_{it}^S) - P_t^x X_{it} - P_t^I I_{it}\right],$$

(4)

where A_{it} is wealth and w_{it} reflects the individual time variant wage rate. Income is the
product of wage rate and the net of total time T after deducting time dedicated to leisure
T_{it}^L, health activities T_{it}^H, or sick time T_{it}^S which is assumed to be a function of health.

Prices for consumption goods X_{it} and health consumption I_{it} are denoted P_t^x and P_t^I
respectively. Future periods are discounted by r_t the prevailing interest rate.

The underlying problem is therefore the maximization of (1) subject to the
lifetime budget constraint (3) and the health production function (2)
The conditional demand curve for health inputs is found to be

$$I_{it}^* = f(\mathrm{H}_{it-1},\mathrm{P}_t^x,\mathrm{P}_t^I,\mathrm{w}_{it},\mathrm{A}_{it},\mathrm{r}_t,\theta_{it};\varepsilon_i,\mathrm{D}_i,\mathrm{D}_{it}).$$

(5)

Substituting (4) into (2) the optimal health production function is derived.

$$H_{it}^* = f(\mathrm{H}_{it-1}, \mathrm{P}_t^x, \mathrm{P}_t^I, \mathrm{w}_{it}, \mathrm{A}_{it}, \mathrm{r}_t, \theta_{it}, \mathrm{q}_{it}; \varepsilon_i, \mathrm{D}_i, \mathrm{D}_{it}) \ . \tag{6}$$

11.2.2. **The Estimation Model**

This research is focused on the identification of the effects of economic and financial strain on health production. In this research, economic strain is defined as Job Switching Volatility J_{it}^S. We hypothesize that changes in J_{it}^S effect health by varying the rate at which health stock is consumed. In this context, the consumption of health stock is the explicit cost of inefficient conversion of human capital into income. Financial strain F_{it}^S is taken up shortly. However, q_{it}, the rate of health stock consumption, is assumed to be a function of both J_{it}^S and F_{it}^S :

$$q_{it} = f(\mathrm{J}_{it}^S, \mathrm{F}_{it}^S) \ . \tag{7}$$

We introduce these variables of interest directly into the health production function by substitution of (7) into (6).

Following (Zeldes, 1989) financial stress F_{it}^S is defined as a function of income and wealth where wealth is comprised of cash, cash equivalents, and housing equity. In our research, we use income Y_{it} in place of wage rate $\mathrm{w}_{it} * (T - T_{it}^L - T_{it}^H - T_{it}^S)$. Inclusion of F_{it}^S in the optimal health production function therefore requires exclusion of w_{it} and A_{it}. J_{it}^S substitutes directly into H_{it}^*.

Because data is unavailable for P_t^x and P_t^I and θ_{it}, our empirical specification

makes another simplifying assumption:

$$A_{it} - A_{it-1} = Y_{it} - P_t^x X_{it} - P_t^I I_{it} , \tag{8}$$

which states that the change in individual wealth is equal to current income less

purchases. Savings can therefore be defined as

$$A_{it} - A_{it-1} = Y_{it} - P_t^x X_{it} - P_t^I I_{it} = \left(1 - \frac{1}{1+\theta}\right) Y_{it} . \tag{9}$$

Or more generally,

$$\partial A = f(Y_{it}, P_t^X X_{it}, P_t^I I_{it}, \theta_i) .$$

(Zeldes, 1989) exploits this relationship defining financial strain $A_{it}/Y_{it} < (1/6)$. As

such, in the empirical specification for our model, all price, income, and time preference

is captured by the financial strain variable.

As a further simplifying assumption, we assume that all individuals face the same

investment rate of return r_i. The resulting empirically testable health production function

is:

$$H_{it}^* = f(H_{it-1}, F_{it}^S, J_{it}^S; \varepsilon_i, D_i, D_{it}) . \tag{10}$$

Direct hypotheses emerging from the empirically testable health production function are defined:

H_0: Economic strain is not costless and is observable in the relationship between job switching volatility and health. Our theory posits a negative relationship.

H_1: Financial Strain reduces the optimal quantity of health demanded.

The empirical model for the conditional demand for health function arises naturally from (9):

$$H_{it}^{*} = \beta_1 H_{it-1} + \beta_2 F_{it}^{S} + \beta_3 J_{it}^{S} + \sum_{j=1}^{K} \vartheta_j D_{ji} + \sum_{l=1}^{M} \gamma_l D_{lit} + \varepsilon_i + u_{it} \tag{11}$$

Where H_{it}^{*} and H_{it-1} are measured conventionally as a categorical Self-Assessed Health measure. The vectors of demographic variables D are broken into groups of time-invariant and time-variant variables, respectively, denoted by the subscripts t and it and indexed by j and l. The standard unobservable individual effect is denoted $\varepsilon_i \sim N(\mu, \sigma_r^2)$ while the residual is treated conventionally: $u_{it} \sim N(0, \sigma_u^2)$.

11.2.3. **Econometric Method**

Following in spirt the methodological considerations of (Contoyannis et al., 2004), we use dynamic panel ordered probit and Negative Binomial Count Model specifications on both balanced and unbalanced panels in this research. We test two health related outcomes, the SAH and CC. Our models are reduced form models and do not consider individual consumption choices beyond the propensity to spend within or in-

excess of earnings. The reduced-form specification for the latent variable models we

estimate takes the general form

$$y^*_{it} = \vartheta y_{i,t-1} + x'_{it}\beta + z'_{it}\delta + \eta_i + \varepsilon_{it} \ (i = 1,2,3,...N; t = 2,3,4,...T)$$

(12)

Where y^*_{it} is a latent expression of an individual's underlying health condition

observable only through the ordinal scale of *SAH* or *CC* an index whose value is

conditional on having received health services. Formally, y^*_{it} as SAH may be thought of

as falling into bins of unknown dimension. Bins are numerically defined on an ordinal

scale $s_{it} = (1,2...,5)$. Formally

$$y_{it} = s \ \ if \ \ u_{s-1} < y^*_{it} \leq u_s \ \ \forall \ s \in (1,2,...,5)$$

(13)

with the conventional treatment of $u_1 = -\infty, u_s \leq u_{s+1}, u_5 = \infty$ and y^*_{it} may be interpreted

as a first order Markov process. In equation 12 η_i represents the individual specific

time-invariant unobservable random-effect assumed to be uncorrelated with regressors

while $\varepsilon_{it} \sim N(0,\sigma^2)$. z'_{it} represents the set of potentially endogenous and time invariant

regressors, and x'_{it} represents the set of time variant strictly exogenous variables.

11.2.3.1.   Dynamic Panel Random Effects Ordered Probit Specification

Regression results Table 3 are derived out of the Pooled Ordered Probit Dynamic Panel specification where the probability of observing a category of SAH reported at time y_{it} conditional on the regressors x'_{it}, z'_{it} and individual effect η_i, is:

$$P_{itj} = P(y_{it} = j) = \Phi(\mu_j - x'_{it} \beta - z'_{it} \delta - \eta_i) - \Phi(\mu_{j-1} - x'_{it-1} \beta - z'_{it-1} \delta - \eta_i) \qquad (14)$$

Where $\Phi(.)$ represents the standard normal distribution function. All models allow for the individual effect to be correlated with the regressors ala (Chamberlain, 1979; Mundlak, 1978; Wooldridge, 2002) and correct for the initial conditions problem (Heckman, 1981). The parameterization of the individual effect take the form

$$\eta_i = \eta_0 + \bar{x}'_i \eta_2 + H_0 \lambda + T' \gamma + e_i \qquad (15)$$

in which $\bar{x}'_i$ is a vector of means of time varying strictly exogenous variables and $e_i \sim N(0, \sigma_e^2)$, H_0 is the initial observation represented as a vector of dummy variables capturing potential SAHS states with "Very Good Health" as the base category. T is a vector of time dummies. Substituting (3) into (1) we derive the random effects specification for models presented. The effect on health of time variant regressors is the sum of the parts of the respective coefficients on η_2 and β.

The assumption that the density of the random effect is $N \sim (\mu, \sigma_\eta^2)$ allows the individual effect to be integrated out yielding the operationalized log-likelihood function

$$\ln L = \sum_{i=1}^{n} \left\{ \ln \int_{-\infty}^{+\infty} \prod_{t=1}^{T} P_{itj} \left[\frac{1}{\sqrt{2\pi\sigma_{\eta}^2}} e^{\left(\frac{-\eta^2}{2\sigma_{\eta}^2}\right)} \right] d\eta \right\} \tag{16}$$

which can be estimated by Gauss-Hermite quadrature.

Dynamic panel SAHS specifications in main paper tables 4 and 5 include a lagged dependent variable as an additional regressor thereby relating the estimation to a base-period. In this sense, the initial observation of the base-period becomes a predictor of the next observation. This estimation feature is known as the initial conditions problem.

11.2.4. **Endogeneity and Instrumental Variables**

Income and wealth have a long history of endogeneity concerns and have been treated both endogenously and exogenously in historical research. In our research, our analytical focus on *FSTRESS* and *JOBSWITCHING* as the mechanisms of translation between income and health explicitly controls for the underlying transfer mechanism. As a test of this hypothesis, we use an independent IV estimation technique Two-Stage Residual Inclusion 2SRI which uses the residuals from the first stage as added variables in the second stage with the original the untreated endogenous variable and is an appropriate model choice for non-linear IV (Terza, Basu, Rathoouz, 2008). A failure of the included regressors to achieve significance confirms that endogeneity is not a modeling concern. The method is a two-stage method which requires the first stage to meet the conditions of standard linear IV estimation. We develop our IV model using the instrument *OWNRENT*. *OWNRENT is* a dichotomous variable with zero(0) denoting

"family owns home," and one(1) denoting "family rents their home." We posit that *OWNRENT* is exogenous to the determination of SAHS, presenting the contextual relationship as in fig. 1 below.

Figure 1: Exogeneity of Home Ownership on *SAHS* and chronic disease *CC* index.

The flow chart (fig. 1) represents our perception of the relationship between home ownership and *SAHS*. A priori, one might suspect that home ownership goes with superior historical earnings and financial behaviors including the ability to save, while renters may be thought to be less stable earners, have lower credit ratings, and otherwise have demonstrated poor financial management.[47] We might also think that home ownership itself should benefit individual health. Yet, this is the claim taken up by (Aizawa & Helble, 2015). In their research, they cannot defend causality between home ownership and SAHS. They do find that home owner's exhibit characteristics that tend to make them more likely to use preventative care and health services but are cautious to point out that their Grossman framework fails to produce a plausible link between homeownership and health service usage. Jürges, 2008 tests the relationship between

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[47] This suspicion is buttressed by the typical business practice of using home ownership as a proxy for fiscal responsibility; home ownership is a common question on loan as well as auto insurance applications to evaluate stability and responsibility. Under these criteria, home ownership acts as a proxy for stability and responsibility which is intuitively appealing.

home ownership and SAHS failing to find evidence of causality. Alternatively, renters

are inherently more mobile and less invested in a home. As a result, there is no reason to

suspect that they are engaged with home maintenance and the toxins associated, nor are

they incentivized to stay in a home that proves to be unhealthy by mold, toxic fumes,

poor water quality etc. As such arguments for and against correlation of ownership with

health are suspect to high degrees of heterogeneity and variation.

With this evidence in mind, we estimate the first stage equation:

$$FSTRESS_{it} = \alpha_i + x_{it}^{'}\beta + \delta_1 OWNRENT_{it} + u_{it} \tag{13}$$

Where $x_{it}^{'}$ is the full vector of second stage regressors, and u_{it} is assumed to be strictly

exogenous, normally distributed with mean zero, and uncorrelated across individuals or

over-time. Results in Table A2:1 demonstrate *OWNRENT* is strongly and economically

significant (8% with CI<.001).

Both F-test of excluded instruments as well as Sanderson-Windmeijer

specification tests strongly reject under identification or weak instruments with an F

statistic of 64.43 and associated p-value < .001. This finding is supported with Lagrange

multiplier tests, and the Cragg-Donald Wald statistic > 139 with Stock-Yogo critical

values for maximum bias of <2.5%. The Hansen J statistic identification test confirms

that the equation is exactly identified. We use Anderson-Ruban Wald tests to test the

joint significance of endogenous regressors and fail to reject that the orthogonality

conditions are valid a conventional confidence intervals.

In our model, we use both the first stage residual and the square of the residual. If these variables are insignificant, then one may conclude that the model is not endogenous. Results in Table A2:2 confirm the absence of endogeneity.

Our results suggest that in the *FSTRESS/*SAHS relationship, endogeneity is not an issue under the conditionality of the Dynamic Panel Random Effects Ordered Probit model with Mundlak, Chamberlain, and Wooldridge corrections for initial conditions and correlation between the random component and the regressors.

11.2.4.1.   Table A2:1 IV First Stage Estimates

FSTRESS	Coef.	Robust Std. Err.	t
OWNRENT	-0.080***	0.010	-8.03
LHSD1	-0.005	0.037	-0.14
LHSD2	0.014	0.015	0.96
LHSD3	0.012	0.008	1.47
LHSD4	-0.007	0.006	-1.07
JOBSWITCHING	0.017***	0.004	4.27
AGE	-0.036	0.032	-1.13
AGE2	0.008	0.007	1.11
AGE3	-0.005	0.005	-1.01
NON_WHITE	0.111***	0.009	12.65
YSCHOO	0.002	0.006	0.32
MALE	-0.006	0.006	-1.11
HINS	-0.087***	0.023	-3.81
STABLEMAR	0.007	0.017	0.39
NUMFAMCH	-0.007	0.006	-1.24
d_II_COR_HSTATUS1	0.104**	0.046	2.27
d_II_COR_HSTATUS2	0.026	0.018	1.42
d_II_COR_HSTATUS3	-0.003	0.009	-0.4
d_II_COR_HSTATUS4	-0.012*	0.007	-1.88
TIME2	(omitted)		
TIME3	0.009	0.021	0.44
TIME4	0.007	0.018	0.39
TIME5	-0.018	0.014	-1.32
TIME6	-0.019*	0.011	-1.71
TIME7	0.022**	0.009	2.44
mm_AGE	0.028	0.046	0.6
mm_AGE2	-0.005	0.010	-0.52
mm_AGE3	0.003	0.007	0.39
mm_YSCHOO	-0.019***	0.006	-3.31
mm_HINS	-0.139***	0.032	-4.28
mm_STABLEMAR	-0.061***	0.019	-3.2
mm_NUMFAMCH	0.030***	0.007	4.36
past_JOBSWITCHING_average	0.011*	0.006	1.83
past_FSTRESS_average	0.386***	0.015	25.85
_cons	0.669	0.476	1.41
N		16615	
Clusters		4267	

11.2.4.2.   Table A2,2: Two-Stage Residual Inclusion

VARIABLES	T2_Model 6 xtoprobit-probit(cluster) fs SAH-FSTRESS all corrections full specification allobs unbalanced robust xb	T2_Model 6 xtoprobit-probit(cluster) fs SAH-FSTRESS all corrections full specification allobs unbalanced robust xb	T2_Model 6 xtoprobit-probit(cluster) fs SAH-FSTRESS all corrections full specification allobs unbalanced robust xb	T2_Model 6 xtoprobit-probit(cluster) fs SAH-FSTRESS all corrections full specification allobs unbalanced robust xb
LHSD1	-1.624***	-1.629***	-2.260***	-2.258***
	(0.162)	(0.162)	(0.196)	(0.195)
LHSD2	-1.123***	-1.123***	-1.587***	-1.586***
	(0.0731)	(0.0731)	(0.103)	(0.103)
LHSD3	-0.811***	-0.808***	-1.118***	-1.118***
	(0.0464)	(0.0464)	(0.0653)	(0.0653)
LHSD4	-0.439***	-0.438***	-0.617***	-0.617***
	(0.0346)	(0.0346)	(0.0440)	(0.0440)
1.DEF_FSTRESS_Z2	0.512*	0.196	-0.224	-0.188
	(0.272)	(0.203)	(0.228)	(0.229)
n_cor_jobswitching	0.0186	0.0221	0.00429	0.00399
	(0.0152)	(0.0151)	(0.0162)	(0.0162)
gen_residual	-0.338**	-0.161	0.0497	0.0526
	(0.154)	(0.114)	(0.144)	(0.144)
sq_gen_residual	0.0126	0.0117	0.000785	-0.0167
	(0.0181)	(0.0173)	(0.0282)	(0.0257)
AGE	-0.107	-0.103	-0.0594	-0.0572
	(0.0790)	(0.0791)	(0.108)	(0.108)
AGE2	0.0120	0.0112	0.00196	0.00151
	(0.0176)	(0.0176)	(0.0236)	(0.0235)
AGE3	-0.00803	-0.00739	-0.000542	-0.000232
	(0.0128)	(0.0128)	(0.0167)	(0.0167)
NON_WHITE1	-0.151***	-0.150***	-0.124***	-0.136***
	(0.0375)	(0.0374)	(0.0445)	(0.0444)
YSCHOO	-0.00651	-0.00536	0.00528	0.00520
	(0.0180)	(0.0180)	(0.0197)	(0.0196)
MALE	0.0865***	0.0868***	0.0625**	0.0608**
	(0.0305)	(0.0304)	(0.0291)	(0.0290)
HINS	0.0761	0.0433	-0.0407	-0.0387
	(0.0669)	(0.0646)	(0.0725)	(0.0725)
STABLEMAR	-0.107**	-0.115**	-0.106*	-0.106*
	(0.0491)	(0.0491)	(0.0573)	(0.0573)
NUMFAMCH	-0.00851	-0.00900	-0.0117	-0.0117
	(0.0167)	(0.0167)	(0.0204)	(0.0204)
d_II_COR_HSTATUS1	-2.036***	-2.049***	-1.859***	-1.856***
	(0.193)	(0.191)	(0.197)	(0.198)
d_II_COR_HSTATUS2	-1.981***	-1.981***	-1.745***	-1.749***
	(0.0959)	(0.0959)	(0.104)	(0.104)
d_II_COR_HSTATUS3	-1.335***	-1.335***	-1.180***	-1.184***
	(0.0537)	(0.0537)	(0.0602)	(0.0604)
d_II_COR_HSTATUS4	-0.787***	-0.788***	-0.701***	-0.700***
	(0.0406)	(0.0406)	(0.0422)	(0.0423)
TIME2	-0.166	-0.159		
	(0.101)	(0.101)		
TIME3	-0.0914	-0.0876	-0.107	-0.105
	(0.0860)	(0.0861)	(0.0918)	(0.0919)

11.2.4.3. Table A2,2: Continued

	T2_Model 6	T2_Model 6	T2_Model 6	T2_Model 6
TIME4	-0.168**	-0.163**	-0.184**	-0.183**
	(0.0735)	(0.0736)	(0.0768)	(0.0768)
TIME5	-0.0557	-0.0576	-0.0778	-0.0759
	(0.0574)	(0.0574)	(0.0605)	(0.0605)
TIME6	-0.0989**	-0.102**	-0.113**	-0.112**
	(0.0450)	(0.0449)	(0.0475)	(0.0475)
TIME7	-0.0577	-0.0490	-0.0528	-0.0518
	(0.0361)	(0.0359)	(0.0369)	(0.0368)
mm_AGE	-0.0409	-0.0383	-0.0894	-0.0894
	(0.158)	(0.158)	(0.184)	(0.184)
mm_AGE2	0.0185	0.0180	0.0301	0.0301
	(0.0352)	(0.0353)	(0.0411)	(0.0411)
mm_AGE3	-0.0133	-0.0130	-0.0226	-0.0226
	(0.0259)	(0.0260)	(0.0302)	(0.0302)
mm_YSCHOO	0.0785***	0.0771***	0.0554**	0.0575***
	(0.0197)	(0.0198)	(0.0219)	(0.0218)
mm_HINS	-0.0450	-0.00601	-0.0226	-0.00879
	(0.121)	(0.120)	(0.129)	(0.129)
mm_STABLEMAR	0.164***	0.173***	0.137*	0.144**
	(0.0633)	(0.0633)	(0.0706)	(0.0705)
mm_NUMFAMCH	0.0246	0.0249	0.0300	0.0274
	(0.0238)	(0.0238)	(0.0272)	(0.0272)
mm_DEF_FSTRESS_Z2	-0.683**	-0.349		
	(0.282)	(0.215)		
mm_n_cor_jobswitching	-0.0935**	-0.0979***		
	(0.0364)	(0.0363)		
past_jobswitching_average			-0.0573**	-0.0595**
			(0.0265)	(0.0265)
past_FS_average			0.0163	0.00177
			(0.105)	(0.104)
mm_gen_residual	0.317		0.0835	
	(0.193)		(0.0699)	
mm_sq_gen_residual	0.0487		-0.0763*	
	(0.0612)		(0.0457)	
CUT 1	-6.491***	-6.388***	-6.767***	-6.669***
	(1.888)	(1.894)	(2.175)	(2.173)
CUT 2	-4.961***	-4.856**	-5.272**	-5.174**
	(1.886)	(1.892)	(2.174)	(2.173)
CUT 3	-3.192*	-3.088	-3.527	-3.429
	(1.885)	(1.891)	(2.172)	(2.171)
CUT 4	-1.435	-1.331	-1.800	-1.702
	(1.884)	(1.890)	(2.171)	(2.170)
SIGMA2_U	0.508***	0.510***	0.346***	0.347***
	(0.0347)	(0.0347)	(0.0426)	(0.0427)
Observations	21,137	21,137	16,615	16,615
Number of uniqueid	4,840	4,840	4,267	4,267
Log Likelihood	-28584.93	-28588.94	-21923.45	-21923
AIC	57255.87	57259.88	43930.91	43934

Endogeneity Tests – Preferred Specification

F test of excluded instruments:
F(1, 4266) = 64.43
Prob > F   = 0.0000

Reject the null that the Beta on excluded instrument is zero.

Sanderson-Windmeijer multivariate specification tests
F(1, 4266) = 64.43
Prob > F   = 0.0000

Weak-instrument-robust inference
Tests of joint significance of endogenous regressors B1   in   main equation
Ho: B1=0 and orthogonality conditions are valid
Anderson-Rubin Wald test   F(1,4266)=   3.83   P-val=0.0504
Anderson-Rubin Wald test   Chi-sq(1)=   3.84   P-val=0.0501
Stock-Wright LM S statistic   Chi-sq(1)=   3.91   P-val=0.0480

Cragg-Donald Wald F statistic (Weak Instrument Test)   139.64
Kleibergen-Paap Wald rk F statistic   64.43

Stock-Yogo weak ID F test critical values for single endogenous   regressor:
10% maximal IV size   16.38
15% maximal IV size   8.96
20% maximal IV size   6.66
25% maximal IV size   5.53
Source: Stock-Yogo (2005).
NB: Critical values are for i.i.d. errors

So while the Anderson-Ruben Wald test is a marginal fail, we can conclude that in the worst case, endogenity induced bias is less than 2.5%

Hansen J statistic (overidentification test of all instruments):
0.000
(equation exactly identified)

Weak instrument robust tests and confidence sets for linear IV
H0: beta[COR_HSTATUS:DEF_FSTRESS_Z2] = 0

Test	Statistic		p-value	Conf. level	Conf.	Set
AR chi2(1)	=	3.82	0.0505	95%	[-.883911,	.011301]
Wald chi2(1)	=	3.66	0.0558	95%	[-.853369,	.010514]

Both the AR and Wald tests confirm that at the 5% confidence interval, we fail to reject the null of no correlation between health status and financial strain.

12. Supplementary Material Chapter 3

12.1. Appendix 1: List of Waiver Definitions

1301(a)(1)(C)(ii). Definition of a "qualified health plan" as one that agrees to offer at least one silver level plan and one gold level plan through an Exchange, solely with respect to the requirement that a QHP offer a silver and a gold level plan through the SHOP.

1302(d), and made available through the SHOP.

1304(b)(4)(D)(i) and (ii). Continuation of participation in SHOP for growing small employers.

1301(a)(2). Solely with respect to the requirement that CO-OPs and multi-state plans be recognized as qualified health plans in the small group market.

1311 (b)(1)(B). The establishment of a Small Business Health Options Program (SHOP) exchange.

1311(d)(2)(B)(i) - prohibition non-QHP.

1312(c)(1) requires a health insurance issuer to consider "all enrollees in all health plans….offered by such issuer in the individual market…to be members of a single risk pool."

26 U.S.C. § 36B (26 I.R.C. § 36B) to allow Iowa to reallocate the described federal funding into the development of per-member per-month premium credits to lower the monthly premiums for all Iowans who would purchase the standard plan.

42 U.S.C.§18022(d) to require carriers to only offer a single, standard.

plan, similar to that of the current silver tier.

42 U.S.C. §18071 to eliminate the use of cost sharing reductions.

42 USC § 18071(c)(3)(a), which requires that "[a]n issuer of a qualified health plan making reductions under this subsection shall notify the Secretary of such reductions and the Secretary shall make periodic and timely payments to the issuer equal to the value of reductions."

1311(b)(1)(B) Requires establishment of an American Health Benefit Exchange, including a Small Business Health Options Program (SHOP) that is designed to assist qualified employers in facilitating the enrollment of their employees in QHPs and details responsibilities of the exchange.

1311(c)(3) Rating system based on quality and price of plan.

1311(c)(4) Enrollee satisfaction system.

1311(c)(5) Internet portals may be used to direct qualified individuals and qualified employers to QHPs.

1311(d)(1) Specifies which entities are eligible to carry out responsibilities of the Exchange.

1311(d)(1) Specifies which entities are eligible to carry out responsibilities of the Exchange.

1311(d)(4)(A) Requirement that Exchange shall implement procedures for certification of plans.

1311(d)(4)(B) Requirement that Exchange shall provide for the operation of a toll-free telephone hotline.

1311(d)(4)(C) Requirement that Exchange shall maintain an Internet website.

1311(d)(4)(D) Requirement that Exchange shall assign a quality rating to each QHP.

1311(d)(4)(E) Requirement that Exchange shall utilize a standardized format for presentation of plans.

1311(d)(4)(G) Requirement that Exchange shall post to the website a calculator to determine premium tax credits and cost sharing reductions.

1311(k) Exchange may not establish rules that conflict with or prevent the application of regulations promulgated by the Secretary of Human Services.

1312(a)(2) Provisions for employee choice among QHPs through an exchange, including requirement that employer may specify metal level and employee may choose a plan within metal level.

1312(f)(2)(A) Definition of qualified employer.

45 CFR 155.330(d)(2)(iii), 155.705(c).Coordination with individual market.

45 CFR 155.720(i), Reporting for tax administration.

1321(c)(1). Solely with respect to federal establishment of a SHOP in Hawai'i if the State elects not to establish a SHOP.

12.2. Appendix 2: Example of Attachment Point Reinsurance Program

This analysis compares our model to the reinsurance program analysis performed by (Hilson 2017) with respect to Washington State's interest in developing a state based reinsurance program as part of their 1332 waiver request. We begin by defining the appropriate attachment point model.

Using information culled from (Hilson, Cohen, Anderson, and Bingham, 2017), we populate our model with an attachment point $L = \$66,000$ and detachment point $T = \$1,000,000$. Populations of interest are defined $N_A = 297,000$ and $N_B = 290,000$.[48] With respect to premiums, the goal of the program is to reduce premiums by 10% in the year the plan is introduced. To reconcile the Hisson analytical method with our own, we define $\bar{r}_B = \$6,767$[49] which sets the desired premium $\bar{r}_A = \$6090$.[50] In the Hilson et. al. (2017) report, they assume that all the reinsurance funds are passed through to the consumer; no aggregate change to market profitability $\Omega = 0$. They also define expected costs for the individual market population of $5,247[51]. The reinsurance program is

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[48] The authors use the formula $\Box Pop = e^{(elasticity\,of\,demand\,*\ln(1+\%\,change\,premium)*(population\,not\,subsidized))} - 1$ defined in CEA brief https://obamawhitehouse.archives.gov/sites/default/files/page/files/201701_individual_health_insurance_market_cea_issue_brief.pdf to evaluate the population change and rely on the brief's price elasticity of demand of .4.

[49] Hilson uses PMPM formulation, our approach operates in terms of yearly averages. To construct our yearly average value we multiply the Hilson generated PMPM pre-state premium times the adjustment factor to bring the premium to the current analysis period (their work is based on 2016 data) $371*(1.52) =563.92*12=$6767.

[50] In this formulation, the pre-state is the same year as the post-state and reflects the 2019 year outcomes of "without" the program $\bar{r}_B$, and "with" the program $\bar{r}_A$.

[51] Hilson uses PMPM formulation, our approach operates in terms of yearly averages. To construct our yearly average value we multiply the Hilson generated PMPM pre-state premium times the adjustment factor to bring the premium to the current analysis period (their work is based on 2016 data) 1.278*342.18*12=$5,247

assumed to be funded by a source exogenous to the individual market which implies $[\varphi, \eta] = 0$ and there is a carrier cost-sharing requirement $w = .5$. For the report, the authors assume no change in morbidity across the two periods consistent with

$$\sum_{q=1}^{Q} P_{Aq} E(c_{Aq}) = \sum_{q=1}^{Q} P_{Bq} E(c_{Bq}) .^{52}$$

The Hilson et. al. (2017) report uses EDGE server data to perform their analysis and, neither the probabilities nor proportions of the population that are expected to qualify for the program are stated, nor do the authors provide detail about the average cost of patients that eventually become covered by the reinsurance program. Our analysis must therefore make assumptions about the disposition of the underlying distribution of patient costs across the population.

We assume that $P_I(E(\overline{c}_i) > T) = 0$ and to inform our estimation of $E(c_i)$ we draw on (Charlson, Wells et al. 2014). Their work identifies high cost patients using an index of chronic conditions, the Charlson Index. Consistent with Hilson et. al. (2017), we inflate patient costs by an annual trend of 8.5% from 2010 − 2019 to establish equivalency in the analysis. We further disaggregate the population by Charlson Index scores, and calculate the average weighted cost and standard deviation of cost of patients with a cost greater than L (see Table A2:1).

The weighted average used in simulation for cost and deviation is averaged across years and then across Charlson Index scores. We establish this method of weighted

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[52] The authors do define an expectation of a 1.6% improvement in the pool's morbidity under the expectation that lives added by reduced rates are healthier lives, however they do not incorporate it into the analysis, suggesting it as a "Phase II" consideration.

averages recognizing that within each Charlson score group, there is a population with costs greater than L, and that across Charlson Index score groups, the average patient cost (APC) and the variation around that cost is relatively stable albeit increasing with disease load as would be expected. See Figure (A2:1 and A2:2). With the model predicated on these assumptions and methods, we formalize the reinsurance model

$$H_A = N_A P_I (L < E(c) \leq T)(1-w)(E(c_I) - L)$$

and the formal pre/post state simulation model takes the form

$$\Pi_A = N_A \bar{r}_A - N_A \sum_{q=1}^{Q} P_{Aq} E(c_{Aq}) + N_A P_I (L < E(c_i) \leq T)(1-w)(E(c_I) - L) - \delta_A N_A \bar{r}_A \geq N_B \bar{r}_B - N_B \sum_{q=1}^{Q} P_{Bq} E(c_{Bq}) - \delta_B N_B \bar{r}_B + \Omega = \Pi_B$$

The estimation equation is defined

$$P_I (L < E(c_i) \leq T) \geq \frac{(N_B \bar{r}_B - N_A \bar{r}_A)(1-\delta) - (N_B - N_A)\sum_{q=1}^{Q} P_q E(c_q) + \Omega}{N_A (1-w)(E(c) - L)}$$

Our estimation equation suggests that the implied proportion of the population required to set pre- and post-Policy market profit states equal is a function of the sum of the MLR weighted net difference in revenues across the transition less the change in associated patient costs plus any intended market profitability changes divided by the total potential reinsurance share of patient costs.

Simulating E(c) across 5000 repetitions using the mean- $\mu = \$141,357.27$ of the population cost greater than L and standard deviation $\sigma_{E(c)} = \$6,748.91$, our model identifies the required value for $E(P_I (L < E(c_i) \leq T)) = .0151$ with confidence bands upper $= .0178$ and lower bound $= .0124$ to inforce $\Omega = 0$. Within the Charlson analytical dataset, we find a $E(P_I (L < E(c_i) \leq T)) = .023$ representing the proportion of the

population with costs exceeding L. The significant divergence between the proportion of

the population implicitly assumed in (Hilson 2017) analyses, and that of the Charlson

analytical dataset is a cause for concern. The Hilson et. al. (2017) analysis implies that

the reinsurance population is both smaller and less expensive than that represented in the

Charlson dataset.[53] This concern is heightened recognizing that, even under the implicit

(Hilson 2017) reinsurance population proportion expectations above, the (Hilson 2017)

analysis implies an average cost per patient between $80,852 and $42,500 an impossibly

low expected patient cost given the $66,000 attachment point. Table A2 uses the

Charlson analytical dataset costs to project the solvency of the reinsurance fund assuming

the calculated population proportions are valid. We include the Charlson Dataset

Population Proportion at mean patient cost as a comparison. The implied deficit between

$48m and $187m is substantial. If, as in the Charlson Dataset, the true population

proportion exceeds 2%, the losses continue to escalate.

We feel that the Hilson et. al. (2017) analysis is optimistic. Our model suggests

that the application of a $66,000 attachment point reinsurance model in Washington State

will produce at least one unanticipated outcome; excessive program liability for the State.

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[53] We find this implication suspect under the common understanding that the insured in large private self-funded plans (Charlson dataset) are universally assumed to be in considerably better health than those in the individual market.

12.2.1. **Appendix 2: Figures and Tables**

12.2.1.1. Table A2:1 - Charlson Index Group Average Cost and Standard Errors

	Total Patient Cost 2010 Data			Total Patient Cost 2009 Data			Averages		
	Obs	Mean	Std. Err.	Obs	Mean	Std. Err.	Obs	Mean	Std. Err.
0	499	143534.7	5063.257	209	117957	5085.472	354	130745.9	5074.365
1	444	121755.8	3476.418	268	119235.3	4559.117	356	120495.6	4017.768
2	419	140120.5	5800.74	357	128616.2	5121.896	388	134368.4	5461.318
3	317	145680.1	5640.494	348	130838.6	4992.169	332	138259.4	5316.332
4	224	133746.2	8294.358	265	135198.2	6143.55	244	134472.2	7218.954
5	154	153508.4	10210.08	206	140167.6	7246.703	180	146838	8728.392
6	143	148801.1	11152.97	170	139921.7	9665.376	156.5	144361.4	10409.17
7	90	156646.6	12703.88	114	125020.7	7900.575	102	140833.7	10302.23
8	86	165211.5	13498.25	113	153206.9	9407.162	99.5	159209.2	11452.71
9	222	182524.6	8116.273	322	198931.4	10282.03	272	190728	9199.152
Weighted Average of Across years, and Down Charlson Index Score								141357.27	6748.91

12.2.1.2.   Table A2:1 Reinsurance Pool Sufficiency Analysis: WA Reinsurance Program Wakely Attachment and Detachment Points

(Hilson 2017) Population Comparison	297,000		Charlson DataSet
	Derived From Simulation Model		Population Proportion
	High	Low	At mean Patient Cost
Implicit Proportion of Population that will fall under Reinsurance	1.78%	1.24%	2.30%
Individuals transferred to reinsurance program	5275	3682.8	6831
Average Reinsurance Program Patient Cost	$146,199	$133,647	139923
Total Reinsurance pool Liability*	$385,579,395	$246,097,586	$477,907,007
Wakely Estimated Reinsurance Pool Fund	$197,700,700		
Expected Reinsurance Fund Deficit	$187,878,695	$48,396,886	$280,206,307
Reinsurance fund shortfall at simulation mean of $E(P(L<E(c)<T)=.0148$	$118,137,790		
* calculated as (1-w)(Total Expense)			
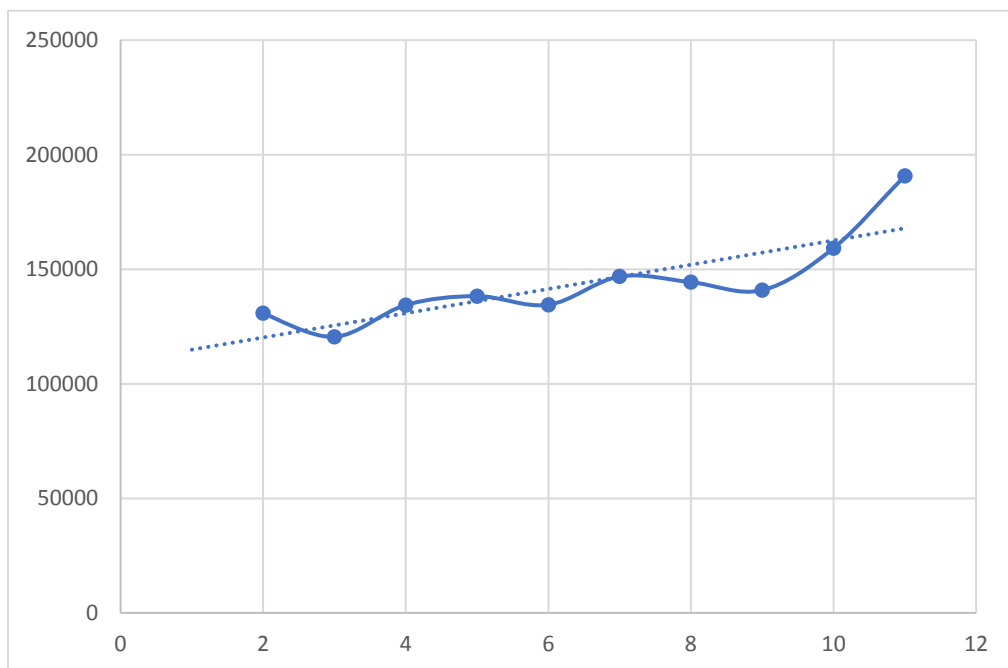
12.2.1.3. Figure A2:2 - APC>L By Charlson Comorbidity Index Score
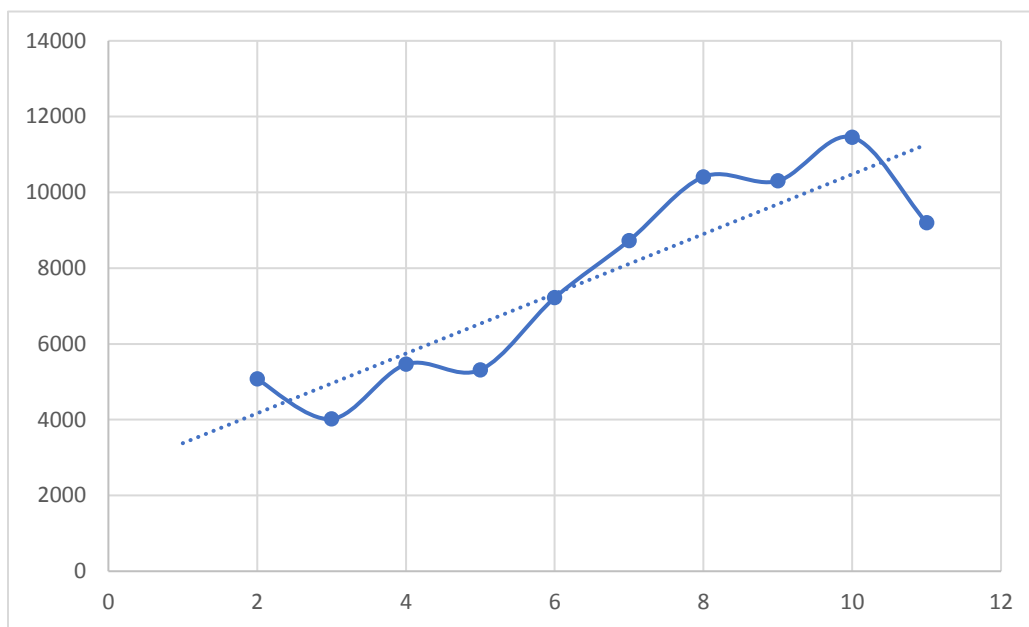
12.2.1.4.   Figure A2:3 - Std. Err. By Charlson Comorbidity Index Score APC>L

12.3. Appendix 3: Mathematical Calculations

12.3.1. Alaska's Medicaid Expansion:

$$\{N_B = N_A; P_A = P_B; q_B = q_A; A_B = A_A; B_B = B_A; \eta_A = \eta_B; \delta_A = \delta_B; H_X = 0; \varphi_X = 0; \eta_X = 0\}$$

which allows the pre and post profit functions from (1) and (2) across the participation

constraint to be expressed.

$$\Pi_A = N\overline{r}_A - N\sum_{q=1}^{Q} P_q E(c_{Aq}) - \delta N\overline{r}_A \geq N\overline{r}_B - N\sum_{q=1}^{Q} P_q E(c_{Bq}) - \delta N\overline{r}_B + \Omega = \Pi_B \tag{5}$$

$$N\overline{r}_A(1-\delta) \geq N\overline{r}_B(1-\delta) + N\sum_{q=1}^{Q} P_q E(c_{Aq}) - N\sum_{q=1}^{Q} P_q E(c_{Bq}) + \Omega$$

Solving 5 for the post policy change premium $\overline{r}_A$

$$\overline{r}_A \geq \overline{r}_B + \frac{\sum_{q=1}^{Q} P_q E(c_{Aq}) - \sum_{q=1}^{Q} P_q E(c_{Bq})}{(1-\delta)} + \frac{\Omega}{N(1-\delta)} \tag{6}$$

12.3.2. Alaska Conditions Based Reinsurance Program:

$$\overline{r}_A(N_A(1-\delta) - N_A^S) + \left[P(c < f)\left((1-w)\sum_{n=1}^{N_A^S} E(c_n) - N_A^S\overline{r}_A \right) + (1 - P(c < f))\left((1-w)\sum_{n=1}^{N_A^S} E(c_n) - N_A^S\overline{r}_A - \sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S\overline{r}_A) \right) \right] \geq N_B\overline{r}(1_B - \delta) + N_A\sum_{q=1}^{Q} P_{Aq} E(c_{Aq}) - N_B\sum_{q=1}^{Q} P_{Bq} E(c_{Bq}) + \Omega$$

Simplify within the brackets

$$\left[(1-w)P(c < f)\sum_{n=1}^{N_A^S} E(c_n) - P(c < f)N_A^S\overline{r}_A + (1-w)\sum_{n=1}^{N_A^S} E(c_n) - P(c < f)(1-w)\sum_{n=1}^{N_A^S} E(c_n) - N_A^S\overline{r}_A + P(c < f)N_A^S\overline{r}_A - \sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S\overline{r}_A) + P(c < f)\sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S\overline{r}_A) \right]$$

$$\left[(1-w)\sum_{n=1}^{N_A^S} E(c_n) - N_A^S\overline{r}_A - \sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S\overline{r}_A) + P(c < f)\sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S\overline{r}_A) \right]$$

$$(1-w)\sum_{n=1}^{N_A^S} E(c_n) - N_A^S\overline{r}_A - \sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S\overline{r}_A) + P(c < f)\sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S\overline{r}_A)$$

Plug the bracketed part back in and solve for $\overline{r}_A$

$$\overline{r}_A(N_A(1-\delta) - N_A^S) + (1-w)\sum_{n=1}^{N_A^S} E(c_n) - N_A^S\overline{r}_A - \sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S\overline{r}_A) + P(c < f)\sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S\overline{r}_A) \geq N_B\overline{r}(1_B - \delta) + N_A\sum_{q=1}^{Q} P_{Aq} E(c_{Aq}) - N_B\sum_{q=1}^{Q} P_{Bq} E(c_{Bq}) + \Omega$$

Final Solution for $\overline{r}_A$ (Equation 8 in main paper)

$$\bar{r}_A \geq \frac{N_B \bar{r}(1_B - \delta) + \left[N_A \sum_{q=1}^{Q} P_{Aq} E(c_{Aq}) - N_B \sum_{q=1}^{Q} P_{Bq} E(c_{Bq}) \right] - (P(c < f) - 1) \sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S \bar{r}_A) - (1 - w) \sum_{n=1}^{N_A^S} E(c_n) + \Omega}{(N_A(1-\delta) - 2N_A^S)}$$

12.3.3. **Derivative Calculation for Policy Scenario Analysis (Table 5):**

All $\bar{r}_A$ derivatives calculated from Equation (8)

$$\frac{\partial \bar{r}_A}{\partial w} = \frac{\sum_{n=1}^{N_A^S} E(c_n)}{(N_A(1-\delta) - 2N_A^S)} > 0 \ \forall \ N_A^S < \frac{N_A(1-\delta)}{2}$$

$$\frac{\partial \bar{r}_A}{\partial E(c_A)} = \frac{N_A}{(N_A(1-\delta) - 2N_A^S)} > 0 \ \forall \ N_A^S < \frac{N_A(1-\delta)}{2}$$

$$\frac{\partial \bar{r}_A}{\partial N_A} \geq \frac{\left[\sum_{q=1}^{Q} P_{Aq} E(c_{Aq}) \right](N_A(1-\delta) - 2N_A^S) + (\delta - 1)\left[N_B \bar{r}_B(1-\delta) + \left[N_A \sum_{q=1}^{Q} P_{Aq} E(c_{Aq}) - N_B \sum_{q=1}^{Q} P_{Bq} E(c_{Bq}) \right] - (P(c < f) - 1)\sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S \bar{r}_A) - (1-w)\sum_{n=1}^{N_A^S} E(c_n) + \Omega \right]}{\left[N_A(1-\delta) - 2N_A^S \right]^2}$$

$$\frac{\partial \bar{r}_A}{\partial N_A} \geq \frac{-\left[\sum_{q=1}^{Q} P_{Aq} E(c_{Aq}) \right] 2N_A^S + (\delta - 1)\left[N_B \bar{r}_B(1-\delta) - N_B \sum_{q=1}^{Q} P_{Bq} E(c_{Bq}) - (1-w)\sum_{n=1}^{N_A^S} E(c_n) + \Omega - (P(c < f) - 1)\sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S \bar{r}_A) \right]}{\left[N_A(1-\delta) - 2N_A^S \right]^2}$$

$$\frac{\partial \bar{r}_A}{\partial N_A} = \frac{-\left[(1.0926 * 8439.24) \right] * 2 * (1300) - .85 * \left[24064 * 9389(.85) - 24064(8439.24) - (.85)78135359 + .7(10000000) \right]}{\left[N_A(1-\delta) - 2N_A^S \right]^2} > 0$$

Using Equation 8, we recast the equation to solve explicitly for Ω.

$$\Omega \leq \bar{r}_A(N_A(1-\delta) - 2N_A^S) - N_B \bar{r}(1_B - \delta) - \left[N_A \sum_{q=1}^{Q} P_{Aq} E(c_{Aq}) - N_B \sum_{q=1}^{Q} P_{Bq} E(c_{Bq}) \right] + (P(c < f) - 1)\left[\sum_{n=1}^{N_A^S} E(c_n) > (f + N_A^S \bar{r}_A) \right] + (1-w)\sum_{n=1}^{N_A^S} E(c_n)$$

We then take the derivative with respect to our three inputs of interest.

$$\frac{\partial \Omega}{\partial w} = -\sum_{n=1}^{N_A^S} E(c_n) < 0$$

$$\frac{\partial \Omega}{\partial E(C_A)} = -N_A < 0$$

$$\frac{\partial \Omega}{\partial N_A} = \left[\bar{r}_A(1-\delta) - \sum_{q=1}^{Q} P_{Aq} E(c_{Aq}) \right] \geq 0 \ \forall \ \bar{r}_A(1-\delta) > \sum_{q=1}^{Q} P_{Aq} E(c_{Aq})$$

13. Appendix 1: Supplementary Material Chapter 3

13.1. **Table a1: Retrospective variables used in principle component analysis**

Variable Name	Description	N	Mean	Stdev
Fam_ParMarried	Whether parents are a married couple?*	34,430	0.9454255	0.2271511
Fam_ParRelationSatisfac	How satisfied parents were with relationship?***	35,938	3.107379	0.9783905
Fam_MomParentEffort	How much parenting effort by mom?***	41,382	3.698516	0.6302027
Fam_CumulativeDiv	Summ of total parental divorces?****	35,831	0.1809327	0.5392238
Sta_MovedInChildhood	Whether Moved in Childhood?*	42,121	0.6469694	0.4779178
Sta_DadWork05	How much dad worked ages 0-5?	37,018	5.600384	1.123051
Sta_DadWork612	How much dad worked ages 6-12?	37,539	5.601987	1.080665
Sta_DadWork1316	How much dad worked ages 13-16?	36,987	5.55114	1.165855
Sta_DadUnemp05	How often dad was unemployed and actively looking for work 0-5?***	36,608	3.87388	0.4402355
Sta_DadUnmep612	How often dad was unemployed and actively looking for work 6-12?***	37,246	3.844708	0.4863499
Sta_DadUnmep1316	How often dad was unemployed and actively looking for work 13-16?***	36,717	3.833973	0.5163178
Sta_MomWork05	How much mom worked ages 0-5?***	40,993	3.330032	2.209409
Sta_MomWork612	How much mom worked ages 6-12?***	41,127	3.864614	2.069902
Sta_MomWork1316	How much mom worked ages 13-16?***	40,986	4.229883	2.026457
Sta_MomUnemp05	How often mom was unemployed and actively looking for work 0-5?***	40,580	3.774889	0.649848
Sta_MomUnmep612	How often mom was unemployed and actively looking for work 6-12?***	40,743	3.747024	0.6374571
Sta_MomUnmep1316	How often mom was unemployed and actively looking for work 13-16?***	40,576	3.772871	0.6218208
Sta_SameNeigborhood616	Whether lived in same neighborhood ages 0-16?*	41,106	0.7352455	0.4412078
Sta_CommWithMom	Rate communication with mom?***	41,644	3.683292	1.166102
Sta_MomUnderstood	Mom understood problems and worries?***	41,482	3.104407	0.9342918
Sta_ConfideMom	How much child could confide in mom about problems?***	41,361	2.902783	1.025805
Sta_TensionMom	How much tension in relationship with mom?***	41,357	1.948715	1.001356
Sta_RelationWMom	Rate relationship with mom?	41,512	3.859631	1.122403
Sta_CloseMom	Wheter emotionally close to mother?***	41,503	3.308797	0.8190079
Sta_StrictMom	How strict was mom?***	41,207	3.109423	0.8119205
Sta_AffectionMom	How much affection mom gave?***	41,501	3.482085	0.7726333
Sta_CommWithDad	Rate communication with dad from poor to excellent?***	38,243	3.356745	1.226696
Sta_DadUnderstood	dad understood problems and worries?***	38,129	2.644837	0.9918677
Sta_ConfideDad	How much child could confide in dad about problems?***	38,005	2.460834	1.042222
Sta_TensionDad	How much tension in relationship with dad?***	38,025	1.962814	1.030661
Sta_RelationWDad	Rate relationship with dad?***	38,023	3.512216	1.203681
Sta_CloseDad	Wheter emotionally close to dad?***	38,155	2.968602	0.9415811
Sta_StrictDad	How strict was dad?***	37,904	3.117296	0.8871724
Sta_AffectionDad	How much affection dad gave?***	38,198	3.113488	0.9129024
Sta_RelMentorWork	Between age 17 and 30 did you have a relative provide positive mentoring that helped you succeed (work)?*	41,241	0.4983148	0.5000032
Sta_RelMentorMarriage	Between age 17 and 30 did you have a relative provide positive mentoring that helped you succeed (marriage)?*	39,943	0.4538467	0.4978716
Sta_NonRelMentorWork	Between age 17 and 30 did you have a non-relative provide positive mentoring that helped you succeed (work)?*	41,119	0.5652618	0.4957286
Sta_NonRelMentorMarriage	Between age 17 and 30 did you have a non-relative provide positive mentoring that helped you succeed (marriage)?*	39,834	0.4747201	0.4993668
Soc_NeighborHelp612	In longest neighborhood during ages 6-12, were neighbors willing to help each other out?***	41,981	3.663967	0.60855
Soc_NeighborCloseKnit612	In longest neighborhood 6-12, was neighborhood "close-knit"?***	41,958	3.393513	0.7661119
Soc_NeighborHelp1316	In longest neighborhood during ages 13-16, were neighbors willing to help each other out?***	11,727	3.326597	0.7902665
Soc_NeighborCloseKnit1316	In longest neighborhood 13-16, was neighborhood "close-knit"?***	11,728	3.071965	0.8889601
Soc_Lonely612	How often were you lonley for friends age 6-12?***	42,075	1.819869	0.8934513

13.2. **Table a1: Continued**

Variable Name	Description	N	Mean	Stdev
Soc_ComfWithFriends612	How often did youhave a group of friends that you felt comfortable spending time with 6-12?***	41,790	3.530845	0.7928305
Soc_HadBestFriend612	Between ages 6-12 did you have a best friend?*	41,228	0.8656496	0.3410326
Soc_Lonely1316	How often were you lonley for friends age 13-16?***	41,630	1.81362	0.8992709
Soc_ComfWithFriends1316	How often did youhave a group of friends that you felt comfortable spending time with 13-16?***	41,275	3.498631	0.8149918
Soc_HadBestFriend1316	Between ages 13-16 did you have a best friend?*	41,757	0.871303	0.3348683
Soc_HadBFGF1316	Did you have a romantic partner that you dated for a while, like a boyfriend or girlfriend ages 13-16?*	41,898	0.4733639	0.499296
Soc_BFGFRelPositive	For the most important romantic relationship how would you characterize the relationship?**	19,689	1.563259	0.6280335
Soc_BullyAtSchool612	How often did you pick on or bully kids (in school) 6-12?***	42,048	1.262914	0.5655056
Soc_BullyOutSchool612	How often did you pick on or bully kids (out of school) 6-12?***	42,044	1.200195	0.5015486
Soc_BullyAtSchool1316	How often did you pick on or bully kids (in school) 13-16?***	41,381	1.21406	0.517781
Soc_BullyOutSchool1316	How often did you pick on or bully kids (out of school) 13-16?***	41,350	1.173325	0.4718176
Sec_NhoodSafeNight612	In longest neighborhood 6-12, was neighborhood safe at night to be out alone?***	42,131	3.653153	0.6624177
Sec_NhoodSafeDay612	In longest neighborhood 6-12, was neighborhood safe during day to be out alone?***	42,083	3.842407	0.4384247
Sec_NhoodSafeNightKid612	In longest neighborhood 6-12, was neighborhood safe for kids to be out at night alone?***	41,970	3.636169	0.6723503
Sec_NhoodSafeNight1316	In longest neighborhood 13-16, was neighborhood safe at night to be out alone?***	11,759	3.489497	0.7142544
Sec_NhoodSafeDay1316	In longest neighborhood13-16, was neighborhood safe during day to be out alone?***	11,725	3.707889	0.5660502
Sec_HhoodSafeNightKid1316	In longest neighborhood 13-16, was neighborhood safe for kids to be out at night alone?***	11,693	3.463611	0.7423787
Sec_BulliedSch612	How often were you picked on or bullied by kids at school 6-12?***	42,230	1.840587	0.9053954
Sec_BulliedNhood612	How often were you picked on or bullied by kids in neighborhood 6-12?***	42,003	1.583768	0.7803661
Sec_SafeAtSchool612	How often did you feel worried about your physical safety at school 6-12?***	42,101	1.374267	0.7062947
Sec_BulliedSch1316	How often were you picked on or bullied by kids at school 13-16?***	41,435	1.676674	0.8579604
Sec_BulliedNhood1316	How often were you picked on or bullied by kids in neighborhood 13-16?***	41,330	1.450278	0.7165534
Sec_SafeAtSchool1316	How often did you feel worried about your physical safety at school 13-16?***	41,236	1.36878	0.6953041
Health_SAHS	Self reported health status ages 0-16	42,246	4.331582	0.8663459
Health_MonthMissSch	Did you miss a month or more of school due to a health problem?*	42,060	0.0758203	0.2647135
Health_Measles	Before age 17, measles?*	41,751	0.4124692	0.4922846
Health_Mumps	Before age 17, mumps?*	41,712	0.3411728	0.474109
Health_Chickenpox	Before age 17, Chicken Pox?*	41,997	0.8324404	0.3734792
Health_Vision	Before age 17, difficulty seeing even with glasses?*	42,242	0.1316699	0.3381355
Health_Hearing	Before age 17, diffidulty hearing?*	42,182	0.0288986	0.1675235
Health_ParSmoked	Did one or more of the people who raised you during childhood smoke?	42,008	0.8356027	0.7660126
Health_Asthma	Before age 17, did you have Asthma?*	42,220	0.0838228	0.2771252
Health_Diabetes	Before age 17, did you have Diabetes?*	41,766	0.0033281	0.057594
Health_RespDisease	Before age 17, did you have Respratory Disease?*	42,083	0.1738469	0.3789823
Health_SpeechImpair	Before age 17, did you have a Speech Imparment?*	42,022	0.0565894	0.2310591
Health_Allergy	Before age 17, did you have an allergic condition?*	42,022	0.1527295	0.3597309
Health_HeartTrouble	Before age 17, did you have heart trouble?*	42,068	0.0148807	0.1210768
Health_EarProbs	Before age 17, did you have chronic ear problems or infections?*	42,108	0.0887242	0.2843487
Health_Epilepsy	Before age 17, did you have epilepsy?*	42,109	0.0122539	0.1100184
Health_Headache	Before age 17, did you have severe headaches or migraines?*	42,091	0.0913735	0.2881429
Health_StomProb	Before age 17, did you have stomach problems?*	42,076	0.0621494	0.2414296
Health_HighBloodPres	Before age 17, did you have high blood pressure?*	42,017	0.0066402	0.0812172
Health_HeightInTOT13	Total height in inches age 13 converted from both inch and foot measures as well as meter responses****	40,092	62.09674	5.51702

Table a1: Continued

Variable Name	Description	N	Mean	Stdev
Health_WeightPndsTOT13	Total weight in pounds age 13 converted from both inch and foot measures as well as meter responses****	40,099	114.6776	29.01093
Fstrain_05	Was there ever a time that your family struggled to "make ends meet" age 0-5?*	41,134	0.3306267	0.4704446
Fstrain_612	Was there ever a time that your family struggled to "make ends meet" age 6-12?*	41,419	0.3620078	0.4805869
Fstrain_1316	Was there ever a time that your family struggled to "make ends meet" age 13-16?*	41,445	0.3360116	0.4723486
Fstrain_welfare05	Was there ever a time that your family was on welfare for 3 or mor months age 0-5?*	41,564	0.1190694	0.323874
Fstrain_welfare612	Was there ever a time that your family was on welfare for 3 or mor months age 6-12?*	41,696	0.1498465	0.3569252
Fstrain_welfare1316	Was there ever a time that your family was on welfare for 3 or mor months age 13-16?*	41,669	0.1281528	0.3342639
Fstrain_FamFinComp	Compared to average family what was your families financial condition?	41,838	3.139706	0.9078068
Nhood_Clean612	In longest neighborhood 6-12, was the neighborhood clean and attractive?***	41,978	3.531326	0.6857759
Nhood_carehomes612	In longest neighborhood 6-12, did people take care of their homes and property?***	42,042	3.567242	0.642641
Nhood_Clean1316	In longest neighborhood 13-16, was the neighborhood clean and attractive?***	11,676	3.465913	0.7150528
Nhood_carehomes1316	In longest neighborhood 13-16, did people take care of their homes and property?***	11,747	3.474589	0.7111985
Edu_NumSchAttend	Count of the number of schools attended before age 17?****	41,636	3.315136	1.729408
Edu_TimesRepeatGrade	Count of time repeating grades before age 17?****	42,301	0.1519349	0.571889
Edu_HappyAtSchool612	Between ages 6-12, how often did you feel happy at school?***	42,007	3.449139	0.7710154
Edu_HappyAtSchool1316	Between ages 13-16, how often did you feel happy at school?***	41,320	3.36469	0.8213947

* dichotomous 0,1 where 1 is the affirmative condition

** negative=0, neurtral=1, or positve=2

***categorical variables where highest category (4,5,6 depending on variable in question) represents the positive outcome, as in very-happy, never-bullied, very-satisfied, a-lot-better-off, excellent.

**** discrete/continious counts or measures

13.3.   Table a2: Logit Validation Models

FSTRAIN	Model 1	Model 2	Model 3
VAR	Expanded Sample	Collapsed Sample	Hi/Lo Quartiles Sample
pc1	0.0218	0.0243	0.0363
	(0.0219)	(0.0560)	(0.1000)
pc2	-0.0310	-0.0287	-0.0231
	(0.0206)	(0.0525)	(0.0927)
pc3	-0.128***	-0.113	-0.0265
	(0.0319)	(0.0827)	(0.145)
pc4	-0.0755***	-0.0871*	-0.0758
	(0.0187)	(0.0453)	(0.0751)
pc5	-0.0977***	-0.0600	-0.137
	(0.0269)	(0.0680)	(0.109)
pc6	0.106***	0.0957*	0.0683
	(0.0200)	(0.0517)	(0.0907)
pc7	0.0471**	0.0533	-0.0232
	(0.0223)	(0.0572)	(0.0868)
pc8	0.187***	0.154**	0.166
	(0.0301)	(0.0776)	(0.133)
pc9	0.00877	-0.000867	-0.121
	(0.0258)	(0.0659)	(0.113)
pc10	-0.232***	-0.236***	-0.439***
	(0.0233)	(0.0594)	(0.105)
pc11	0.0677***	0.0713	0.188*
	(0.0245)	(0.0623)	(0.113)
pc12	-0.210***	-0.198***	-0.222**
	(0.0207)	(0.0528)	(0.0899)
pc13	0.0790***	0.0876	0.114
	(0.0231)	(0.0592)	(0.106)
pc14	-0.0940***	-0.103*	-0.296***
	(0.0228)	(0.0586)	(0.105)
pc15	0.0523**	0.0644	0.0951
	(0.0241)	(0.0660)	(0.113)
pc16	-0.0689***	-0.0170	0.102
	(0.0236)	(0.0589)	(0.0970)
pc17	0.0230	0.0186	0.0637
	(0.0257)	(0.0665)	(0.116)
pc18	0.0183	0.00106	-0.0414
	(0.0261)	(0.0678)	(0.118)
pc19	-0.0981***	-0.110**	-0.279***
	(0.0209)	(0.0539)	(0.0804)
pc20	0.0546**	0.0386	0.0266
	(0.0254)	(0.0646)	(0.113)
AGE	0.0801	0.222	0.253
	(0.0502)	(0.136)	(0.237)
MALE	-0.147***	-0.102	-0.114
	(0.0401)	(0.103)	(0.181)
Constant	-1.142***	-1.422***	-2.780***
	(0.0377)	(0.0963)	(0.171)
Observations	16,505	2,803	2,395

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

14. Programs

```
*----------------------------------------------------------------------------------------------------------
                    14.1.1.          Program Chapter 2
*                   Authored by Glen McDermott
*                   University of New Mexico Department of Econ.
*                   Permanent Phone: 207-902-0354
*                   Permanent email: GlenMcDermott1969@gmail.com
*----------------------------------------------------------------------------------------------------------
quietly {
        clear
        clear matrix
        clear mata
        set more off
        capture log close
        set matsize 10000
        set maxvar 10000
}
*--------------------------------------------------set log file-------------------------------------------------
        display "Enter parameter date: " _request(date)
        display $date
   log using C:\stata\DRAFT_chapter1finaloutput_$date.smcl ,replace
*---------------------------------------------- working directory----------------------------------------------
        cd "C:\stata\"
        use .\Dis_Longform_411aaaaadg_bmi_5_20_17.dta
        drop if AGE<25
        drop if AGE>64
        drop if RETIRE==1
        xtset uniqueid time
        tsfill, full
gen n_cor_jobswitching=.
replace n_cor_jobswitching=0 if cor_jobswitching==0
replace n_cor_jobswitching = cor_jobswitching
gen id=uniqueid


*--------------------------------- calculate Initial financial stress measures---------------------------------
*------------------------ deflate, replace "0" values with small positive value (.01) -----------------------
*--------------------------------- take logs of relevant financial measures ---------------------------------
{
        quietly {
        //first deflate all relevent variables
                global deflatable "FAMINC CASHALL NWEALTH NWEALTH_EQ"
        foreach x in $deflatable {
                gen t_`x' = `x'*(deflator2009/100)
        }
//replace zero values in cash and netwealth with small but positive
//values to make sure log can be calculated
        foreach x in $deflatable {
                replace t_`x'=.01 if t_`x'==0
        }
```

```
//special replacements:
        replace t_CASHALL=.01 if t_CASHALL<0
        // to be sure the natural log has a positive value and recognize
        //every individual has at least some income, I allow income wealth to remain negative
        //but cash cannot be negative

        //generate logs of relevant measures
        foreach x in $deflatable {
                gen LNDEF_`x'=ln(t_`x')
        }
}
}
drop if time<5
{
gen ipwdep=0 if year==.
replace ipwdep=1 if ipwdep==.
global variablestvcomplete "AGE YSCHOO LNDEF_FAMINC LNDEF_CASHALL
LNDEF_NWEALTH_EQ NUMFAMCH STABLEMAR COR_HSTATUS BMI"
foreach x in $variablestvcomplete {
        by uniqueid: egen IPWm_`x'=mean(`x')
        }
logit ipwdep IPWm_*
predict PRobserved, pr
gen ipw=1/PRobserved
}
drop if year==.
//xtdescribe
{

gen rural=1 if BEALS==9 | BEALS==8 | BEALS==6
replace rural=0 if BEALS >=1 & BEALS <6
replace rural=0 if BEALS==7
}
*---------------------------------- begin financial strain measure development -------------------------------
global zeldesfstressmeasures "DEF_FSTRESS_Z1 DEF_FSTRESS_Z2"
global glensfstressmeasures "DEF_FSTRESS_G1 DEF_FSTRESS_G2 DEF_FSTRESS_G3
DEF_FSTRESS_G4 DEF_FSTRESS_G5"
{
gen DEF_FSTRESS_Z1=0
gen t_LNWEALTHRAT_Z1=LNDEF_NWEALTH_EQ/((LNDEF_FAMINC+l.LNDEF_FAMINC)/2)
replace DEF_FSTRESS_Z1=1 if t_LNWEALTHRAT_Z1 <1/6 | LNDEF_CASHALL <
(1/6)*l.LNDEF_FAMINC
replace DEF_FSTRESS_Z1=. if t_NWEALTH_EQ==.
gen DEF_FSTRESS_Z2 = 0
gen t_LNWEALTHRAT_Z2=LNDEF_NWEALTH/((LNDEF_FAMINC+l.LNDEF_FAMINC)/2)
replace DEF_FSTRESS_Z2=1 if t_LNWEALTHRAT_Z2 <1/6 | LNDEF_CASHALL <
(1/6)*l.LNDEF_FAMINC
replace DEF_FSTRESS_Z2=. if t_LNWEALTHRAT_Z2==.
gen cont_FSTRESS=.
replace cont_FSTRESS=(((LNDEF_NWEALTH-LNDEF_CASHALL)/ ///
((LNDEF_FAMINC+l.LNDEF_FAMINC)/2))+(LNDEF_CASHALL/LNDEF_FAMINC))/2
bysort uniqueid: egen indstdvcontFS = sd(cont_FSTRESS)
bysort uniqueid: egen indmeancontFS = mean(cont_FSTRESS)
```

```
gen coefVolcontFS = indstdvcontFS/indmeancontFS
          }
---------------GENERATE VARIABLES THAT ARE REQUIRED FOR ANALYSIS-------------------
------------------------------- DEFINE GLOBAL VARIABLES ----------------------------------------
quietly {
global x "AGE AGE2 AGE3 YSCHOO HINS STABLEMAR NUMFAMCH n_cor_jobswitching
DEF_FSTRESS_Z2"
global y "AGE AGE2 AGE3 YSCHOO HINS STABLEMAR NUMFAMCH"
global ixz "AGE YSCHOO "
global variablesHSTATUS "DEF_FSTRESS_Z2 n_cor_jobswitching AGE AGE2 AGE3 YSCHOO MALE
NON_WHITE1 d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3
d_II_COR_HSTATUS4"
global exog "DEF_FSTRESS_Z2"
global ttime "7 8 9 10 11 12"
bysort uniqueid time: egen m_cor_pseudoch = mean(n_COR_PSEUDOCH)
corr m_cor_pseudoch PASTFS
}
gen nyearemp=12-yearemp
// makes increasing value a negative rather than a positive
{
xtset uniqueid time
tab time, generate(TIME)
}
{
sort uniqueid time

foreach var in $x {
bysort uniqueid: egen mean_`var'=mean(`var')
}
gen initob = 0
bysort uniqueid (year): replace initob = 1 if _n == 1
gen I_COR_HSTATUS = COR_HSTATUS if initob==1
by uniqueid:egen ii_COR_HSTATUS = mean(I_COR_HSTATUS)
foreach var in $ixz{
gen II_`var'=`var' if initob==1
}
sort time
reg I_COR_HSTATUS  II_* NON_WHITE1 MALE PASTFS
predict p_I_COR_HSTATUS, xb
bysort uniqueid: egen pp_I_COR_HSTATUS=mean(p_I_COR_HSTATUS)
drop p_I_COR_HSTATUS
rename pp_I_COR_HSTATUS p_I_COR_HSTATUS
sort uniqueid time
gen l_COR_HSTATUS=l.COR_HSTATUS
tab ii_COR_HSTATUS, gen(d_II_COR_HSTATUS)

foreach var in $exog {
bysort uniqueid: egen mean2_`var'=mean(`var')
}
}
tab COR_HSTATUS, gen(HSTATUSd)
replace AGE3=AGE3/10
gen L_HSTATUS1 = l.HSTATUSd1
```

```
gen L_HSTATUS2 = l.HSTATUSd2
gen L_HSTATUS3 = l.HSTATUSd3
gen L_HSTATUS4 = l.HSTATUSd4
gen L_HSTATUS5 = l.HSTATUSd5
gen LHSD1=l.HSTATUSd1
gen LHSD2=l.HSTATUSd2
gen LHSD3=l.HSTATUSd3
gen LHSD4=l.HSTATUSd4
gen LHSD5=l.HSTATUSd5
gen l_HSTATUS=l.HSTATUS
sort uniqueid time

replace OWNRENT=0 if OWNRENT==5
*------------------------------------------- Past average job switching-----------------------------------------
gen temp_jsL1 =.
gen temp_jsL2 =.
gen temp_jsL3 =.
gen temp_jsL4 =.
gen temp_jsL5 =.
gen temp_jsL6 =.
gen temp_jsL7 =.

foreach n of num 1/7 {
bysort uniqueid: replace temp_jsL`n'=l`n'.n_cor_jobswitching
}
egen past_jobswitching_average= ///
rmean(temp_jsL1 temp_jsL2 temp_jsL3 temp_jsL4 temp_jsL5 temp_jsL6 temp_jsL7)

gen temp_fL1 =.
gen temp_fL2 =.
gen temp_fL3 =.
gen temp_fL4 =.
gen temp_fL5 =.
gen temp_fL6 =.
gen temp_fL7 =.

foreach n of num 1/7 {
bysort uniqueid: replace temp_fL`n'=l`n'.DEF_FSTRESS_Z2
}
egen past_FS_average= ///
rmean(temp_fL1 temp_fL2 temp_fL3 temp_fL4 temp_fL5 temp_fL6 temp_fL7)
drop temp_f*
---------------------------------------- Collect the estimation sample----------------------------------------
foreach var in $x {
bysort uniqueid: egen mm_`var'=mean(`var')
}
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH
d_II_COR_HSTATUS1 ///
d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7 mm_* [pweight=ipw], vce(robust)
gen estimation_sample=e(sample)
summ if estimation_sample==0
```

```
drop mm_*
drop if estimation_sample==0


*-------------------SUMMARY STATISTICS FOR PAPER (CHAPTER 1) Table 2.7.1------------------
summ COR_HSTATUS n_cor_jobswitching DEF_FSTRESS_Z1 NWEALTH FAMINC CASHALL ////
YSCHOO AGE MALE NON_WHITE1 LNDEF_FAMINC OWNRENT HINS STABLEMAR
NUMFAMCH
*-------------------------------What factors are affecting attrition in the sample -------------------------------
*-----------------------2.7.2.  Table 2: Attrition Tests, Pooled Probit Specification, IPW clusters------------
preserve
tsfill, full
replace ipwdep=0 if ipwdep==.

foreach x in $variablesHSTATUS {
        by uniqueid: egen IPW_HS_m_`x'=mean(`x')
        }
probit ipwdep IPW_HS_m_* if time==6
outreg2 using c:\stata\Attrition_1_SRHS_$date.xls, ///
replace ct(PROBIT RESPONSE, probit, SRHS, InitCond, vce(cluster uniqueid))

foreach t in $ttime {
probit ipwdep IPW_HS_m_* if time==`t'
outreg2 using c:\stata\Attrition_1_SRHS_$date.xls, ///
append ct(PROBIT RESPONSE, probit, SRHS, InitCond, vce(cluster uniqueid))
}
restore
----------------------------------------------Variable addition testing--------------------------------------------
-----------------------2.7.3.   Table 3: Variable Addition Bias Test - Random Effects ------------------
-----------------Ordered Probit Model with IPW, modified CRE, and Strict CRE estimations --------
---------------------------------------------for M, F, and Combined---------------------------------------------
// test for bias driven by attition
drop if time<5
drop if year==.
by uniqueid: gen TOTALOBS=_N
gen ALL=1 if TOTALOBS==6
replace ALL=0 if ALL==.
// variable addition tests
preserve
foreach var in $y {
bysort uniqueid: egen mm_`var'=mean(`var')
}
sort uniqueid time
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 DEF_FSTRESS_Z2 n_cor_jobswitching ///
 AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH
d_II_COR_HSTATUS1  d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5  TIME6 TIME7 mm_* past_* ALL TOTALOBS /*[pweight=ipw]*/ ///
if MALE==1, vce(robust)
estat ic
outreg2 using c:\stata\variableadditiontest_SRHS_$date.xls, ///
replace ct(Model 5m, MODCRE, Outcome=SAH, Unbalanced)
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 DEF_FSTRESS_Z2 n_cor_jobswitching ///
 AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
```

```
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7 mm_* past_* ALL TOTALOBS /*[pweight=ipw]*/ ///
if MALE==0, vce(robust)
estat ic
outreg2 using c:\stata\variableadditiontest_SRHS_$date.xls, ///
append ct(Model 5f, MODCRE, Outcome=SAH, Unbalanced)
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 DEF_FSTRESS_Z2 n_cor_jobswitching ///
 AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7 mm_* past_* ALL TOTALOBS /*[pweight=ipw]*/ ///
, vce(robust)
estat ic
outreg2 using c:\stata\variableadditiontest_SRHS_$date.xls, ///
append ct(Model 5m/f, MODCRE, Outcome=SAH, Unbalanced)
restore
preserve
foreach var in $x {
bysort uniqueid: egen mm_`var'=mean(`var')
}
sort uniqueid time
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7 mm_* /*past_**/ ALL TOTALOBS /*[pweight=ipw]*/ ///
if MALE==1, vce(robust)
estat ic
outreg2 using c:\stata\variableadditiontest_SRHS_$date.xls, ///
append ct(Model 6m, STRICTCRE, Outcome=SAH, Unbalanced)
sort uniqueid time
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
 AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7 mm_* /*past_**/ ALL TOTALOBS /*[pweight=ipw]*/ ///
if MALE==0, vce(robust)
estat ic
outreg2 using c:\stata\variableadditiontest_SRHS_$date.xls, ///
append ct(Model 6f, STRICTCRE, Outcome=SAH, Unbalanced)
sort uniqueid time
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
 AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7 mm_* /*past_**/ ALL TOTALOBS /*[pweight=ipw]*/ ///
, vce(robust)
estat ic
outreg2 using c:\stata\variableadditiontest_SRHS_$date.xls, ///
append ct(Model 6m/f, STRICTCRE, Outcome=SAH, Unbalanced)
restore

*------------------------------ 2.7.4 Table 4: Random Effect Ordered Probit Results -----------------------------
preserve
foreach var in $y {
bysort uniqueid: egen mm_`var'=mean(`var')
}
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
```

```
AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7 past_* /*mm_* [pweight=ipw]*/, vce(robust)
outreg2 using c:\stata\output\TABLE4_boharaIV_$date.xls, ///
append ct(T4_Model 1 m/f, NO-IPW, Outcome SAH, xtoprobit, unbalanced)
estat ic
restore
preserve
foreach var in $y {
bysort uniqueid: egen mm_`var'=mean(`var')
}
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7  past_* mm_* /*[pweight=ipw]*/, ///
vce(robust)
outreg2 using c:\stata\output\TABLE4_boharaIV_$date.xls, ///
append ct(T4_Model 2 m/f, NOIPW-MODCRE, Outcome SAH, xtoprobit, unbalanced)
estat ic
restore


preserve
foreach var in $x {
bysort uniqueid: egen mm_`var'=mean(`var')
}
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7  /*past_**/ mm_* /*[pweight=ipw]*/, vce(robust)
outreg2 using c:\stata\output\TABLE4_boharaIV_$date.xls, ///
append ct(T4_Model 3 m/f, NOIPW FULLCRE, Outcome SAH, xtoprobit, unbalanced)
estat ic
restore

*-----------------------------------------------Now add ipw-------------------------------------------------------
preserve
foreach var in $y {
bysort uniqueid: egen mm_`var'=mean(`var')
}
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7 past_* /*mm_* */ [pweight=ipw], vce(robust)
outreg2 using c:\stata\output\TABLE4_boharaIV_$date.xls, ///
append ct(T4_Mode4 1 m/f, IPW, Outcome SAH, xtoprobit, unbalanced)
estat ic
restore

preserve
foreach var in $y {
bysort uniqueid: egen mm_`var'=mean(`var')
}
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
```

```
 AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7  past_* mm_* [pweight=ipw], vce(robust)
outreg2 using c:\stata\output\TABLE4_boharaIV_$date.xls, ///
append ct(T4_Model 5 m/f,IPW-MODCRE, Outcome SAH, xtoprobit, unbalanced)
estat ic
restore


preserve
foreach var in $x {
bysort uniqueid: egen mm_`var'=mean(`var')
}
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
 AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1  d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7  /*past_**/ mm_* [pweight=ipw], vce(robust)
outreg2 using c:\stata\output\TABLE4_boharaIV_$date.xls, ///
append ct(T4_Model 6 m/f, IPW-FULLCRE, Outcome SAH, xtoprobit, unbalanced)
estat ic
restore


*----------------------Table 2.7.5: Table 5 Random Effect Ordered Probit Results - Sep M and F-------------
preserve
drop if MALE==0                   ///////////// Sets Male

foreach var in $y {
//bysort uniqueid: egen mm_`var'=mean(`var')
}
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
 AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7 past_* /*mm_* */ [pweight=ipw], vce(robust)
outreg2 using c:\stata\output\TABLE5_boharaIV_$date.xls, ///
replace ct(T5_Mode4m, IPW, Outcome SAH, xtoprobit, unbalanced)
estat ic
restore
preserve
drop if MALE==1              ///////////// Sets Female

foreach var in $y {
bysort uniqueid: egen mm_`var'=mean(`var')
}
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7 past_* /*mm_* */ [pweight=ipw], vce(robust)
outreg2 using c:\stata\output\TABLE5_boharaIV_$date.xls, ///
append ct(T5_Mode4f, IPW, Outcome SAH, xtoprobit, unbalanced)
estat ic
restore
preserve
drop if MALE==0              ///////////// Sets Male
```

```
foreach var in $y {
bysort uniqueid: egen mm_`var'=mean(`var')
}
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
 AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7  past_* mm_* [pweight=ipw], vce(robust)
outreg2 using c:\stata\output\TABLE5_boharaIV_$date.xls, ///
append ct(T5_Model5m,IPW-MODCRE, Outcome SAH, xtoprobit, unbalanced)
estat ic
restore
preserve
drop if MALE==1             ///////////// Sets Female

foreach var in $y {
bysort uniqueid: egen mm_`var'=mean(`var')
}
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
 AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7  past_* mm_* [pweight=ipw], vce(robust)
outreg2 using c:\stata\output\TABLE5_boharaIV_$date.xls, ///
append ct(T5_Model5f,IPW-MODCRE, Outcome SAH, xtoprobit, unbalanced)
estat ic
restore
preserve
drop if MALE==0             ///////////// Sets Male

foreach var in $x {
bysort uniqueid: egen mm_`var'=mean(`var')
}
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
 AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7  /*past_**/ mm_* [pweight=ipw], vce(robust)
outreg2 using c:\stata\output\TABLE5_boharaIV_$date.xls, ///
append ct(T5_Model6m, IPW-FULLCRE, Outcome SAH, xtoprobit, unbalanced)
estat ic
restore

preserve
drop if MALE==1             ///////////// Sets Female

foreach var in $x {
bysort uniqueid: egen mm_`var'=mean(`var')
}
xtoprobit COR_HSTATUS LHSD1 LHSD2 LHSD3 LHSD4 1.DEF_FSTRESS_Z2 n_cor_jobswitching ///
 AGE AGE2 AGE3 NON_WHITE1 YSCHOO MALE HINS STABLEMAR NUMFAMCH ///
d_II_COR_HSTATUS1 d_II_COR_HSTATUS2 d_II_COR_HSTATUS3 d_II_COR_HSTATUS4 ///
TIME2 TIME3 TIME4 TIME5 TIME6 TIME7  /*past_**/ mm_* [pweight=ipw], vce(robust)
outreg2 using c:\stata\output\TABLE5_boharaIV_$date.xls, ///
append ct(T5_Model6f, IPW-FULLCRE, Outcome SAH, xtoprobit, unbalanced)
estat ic
```

restore

*---
14.2.   Chapter 3: State Based Reinsurance
*   Program validation tables with
*   Appendix Washington State Actuarial Report Study.
*   Author: Glen McDermott
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*   Permanent Phone: 207.902.0354
*   Permanent Email:GlenMcDermott1969@gmail.com
*---
*-------------------------------Table 3.5.2 Table 2: Yearly Cost Trends-------------------------------------
*-----------------------Model 1 Values Culled from Wyman Actuarial Report----------------------------------

```
quietly {
set obs 23
gen cost=0
gen year=_n
replace cost= 217500000 if year==1
replace cost= 227766223 if year==2
replace cost= 270619805 if year==3
replace cost= 303872222 if year==4
replace cost= 332864563 if year==5
replace cost= 355409807 if year==6
replace cost= 387745525 if year==7
replace cost= 423525031 if year==8
replace cost= 467937286 if year==9
replace cost= 509139047 if year==10
replace cost= 552839041 if year==11
replace cost= 598472814 if year==12
gen lncost=ln(cost)
noisily:reg lncost year
outreg2 using C:\stata\AlaskaMedicaidCostChange_$number.xls, replace
}
```
*-------------------------Model 2 Values Culled from Bureau of Labor Statistics----------------------------------
```
quietly {
            clear
set obs 5000
gen year=_n
gen regioncost= .
replace regioncost= 3216 if year ==1
replace regioncost= 3795 if year ==2
replace regioncost = 3609 if year==3
replace regioncost = 4401 if year==4
replace regioncost = 4221 if year==5
replace regioncost = 4823 if year==6
global AKcostmultiplier = (.60+.37+.30)/3
gen AKregioncost=regioncost*$AKcostmultiplier
gen lnAKregioncost=ln(AKregioncost)
reg lnAKregioncost year
gen lnregioncost = ln(regioncost)
noisily: reg lnregioncost year
}
```

```
*----------------------- Table 3.5.3. Table 3: Results Alaska Medicaid Expansion----------------------------
          /// simulate the market profitability change from Chapter 2 equation 6
          /// changeinAB=(costbefore-costafter)/(1-mlr)
*---------------------------------------------- Prediction 1 Recovered*----------------------------------------------
          clear
          set obs 5000
          set seed 12345
          global PremiumB=6738
          global CostB=7724
          global AvgInflation=.0926
          global stdevAvgInflation=.0028
          global aggregatemktloss2015=30000000
          global n2016=23038
quietly {
*--------------------------define model pabar=pbbar-((costB-CostA)/(1-maxcosts))+ ----------------------
*-------------------------------aggregatemktloss2015/(n2016(1-maxcosts))-----------------------------------
                    generate randomHinflation=rnormal($AvgInflation, $stdevAvgInflation)
          gen PremiumB=$PremiumB
          gen CostB=$CostB
          gen CostA=CostB*(1+randomHinflation)
          gen maxcosts=.15
          gen ca_cb=CostA-CostB
          gen PremiumAbar= PremiumB+((ca_cb)/(1-maxcosts))+ ///
          ($aggregatemktloss2015/($n2016*(1-maxcosts)))
          histogram PremiumAbar, bin(40) normal
          save PremiumAbar, replace
          egen t_m_abar=mean(PremiumAbar)
          global meanPremiumAbar=t_m_abar[_n]
          summ CostA
          global stdevpremiumAbar=`r(sd)'
          ci means PremiumAbar
}
          display $stdevpremiumAbar
          display
          global upperbound95premiumAbar=$meanPremiumAbar+1.96*$stdevpremiumAbar
          global lowerbound95premiumAbar=$meanPremiumAbar-1.96*$stdevpremiumAbar
          summ PremiumAbar
          display $upperbound95premiumAbar
          display $lowerbound95premiumAbar
*--------------------------------------------------- Prediction 2 BLS---------------------------------------------
clear
          set obs 5000
          set seed 12345
          global PremiumB=6738
          global CostB=7724
          global AvgInflation=.0727
          global stdevAvgInflation=.0145
          global aggregatemktloss2015=30000000
          global n2016=23038
quietly {
*--------------------------define model pabar=pbbar-((costB-CostA)/(1-maxcosts))+ ----------------------
*-------------------------------aggregatemktloss2015/(n2016(1-maxcosts))-----------------------------------
```

```
        generate randomHinflation=rnormal($AvgInflation, $stdevAvgInflation)
        gen PremiumB=$PremiumB
        gen CostB=$CostB
        gen CostA=CostB*(1+randomHinflation)
        gen maxcosts=.15
        gen ca_cb=CostA-CostB
        gen PremiumAbar= PremiumB+((ca_cb)/(1-maxcosts))+ ///
        ($aggregatemktloss2015/($n2016*(1-maxcosts)))
        histogram PremiumAbar, bin(40) normal
        save PremiumAbar, replace
        egen t_m_abar=mean(PremiumAbar)
        global meanPremiumAbar=t_m_abar[_n]
        summ CostA
        global stdevpremiumAbar=`r(sd)'
        ci means PremiumAbar
}
        display $stdevpremiumAbar
        display
        global upperbound95premiumAbar=$meanPremiumAbar+1.96*$stdevpremiumAbar
        global lowerbound95premiumAbar=$meanPremiumAbar-1.96*$stdevpremiumAbar
        summ PremiumAbar
        display $upperbound95premiumAbar
        display $lowerbound95premiumAbar
*------------------------------------------------- Prediction 3 Combined-----------------------------------------
        clear
        set obs 5000
        set seed 12345
        global PremiumB=6738
        global AvgInflation=.0925
        global stdevAvgInflation=.0145
        global aggregatemktloss2015=30000000
        global n2016=23038
quietly {
*------------------------------ define model pabar=pbbar-((costB-CostA)/(1-maxcosts))+ ------------------
*------------------------------------------aggregatemktloss2015/(n2016(1-maxcosts))----------------------------
        generate randomHinflation=rnormal($AvgInflation, $stdevAvgInflation)
        gen PremiumB=$PremiumB
        gen CostB=$CostB
        gen CostA=CostB*(1+randomHinflation)
        gen maxcosts=.15
        gen ca_cb=CostA-CostB
        gen PremiumAbar= PremiumB+((ca_cb)/(1-maxcosts))+ ///
        ($aggregatemktloss2015/($n2016*(1-maxcosts)))
        histogram PremiumAbar, bin(40) normal
        save PremiumAbar, replace
        egen t_m_abar=mean(PremiumAbar)
        global meanPremiumAbar=t_m_abar[_n]
        summ CostA
        global stdevpremiumAbar=`r(sd)'
        ci means PremiumAbar
        }
        display $stdevpremiumAbar
        display
```

```
        global upperbound95premiumAbar=$meanPremiumAbar+1.96*$stdevpremiumAbar
        global lowerbound95premiumAbar=$meanPremiumAbar-1.96*$stdevpremiumAbar
        summ PremiumAbar
        display $upperbound95premiumAbar
        display $lowerbound95premiumAbar
*------------------Table 3.5.4 Table 4: Results Alaska Conditions Based Reinsurance Program------------
*---------------------------------------------- Wyman prediction model-------------------------------------------
clear
set matsize 5000
global obs1=5000
set obs $obs1
// step 1, define input values for first run
global PremiumB=9389
        global AvgInflation=.0926
        global CostB=8439.24
        global stdevAvgInflation=.0024
        //global aggregatemktloss2016=0
        global n2016=24064
        global n2017=23822
        global E_c_r=78135359
        global s_c=55000000
        global n_trp=1300
        global maxcosts=.15
        global w=0
        global RP_sd = 21903683
        global RP_sd_per=.28033
        global aggregatemktloss2016=0
        global n2016=24064
        global n2017=23822
quietly {
*----------------------------------note p_nc should be equal to CS_PR_PR----------------------------------
global p_nc=normprob(($s_c-$E_c_r)/$RP_sd)
global n_trp=1300
global maxcosts=.15
matrix randomHinflation =J($obs1,1,.)
matrix costa = J($obs1,1,.)
matrix hrpfloat = J($obs1,1,.)
matrix abarrate = J($obs1,1,.)
forvalues y=1/$obs1 {
        set seed 1000`y'
        //display "counter = " `y'
        local randomHinflation=rnormal($AvgInflation, $stdevAvgInflation)
        //display "randominflation = " `randomHinflation'
        matrix randomHinflation[`y',1]=`randomHinflation'
        local CostA=$CostB*(1+`randomHinflation')
        matrix costa[`y',1]=`CostA'
        local itterAbar=0
        local hrpfloat=rnormal($E_c_r, $RP_sd)
        if `hrpfloat'<0 {
        local hrpfloat=0
        }
        //display "hrpfloat = " `hrpfloat'
        matrix hrpfloat[`y',1]=`hrpfloat'
```

```
forvalues x=1/10 {
        //display "itterAbar = " `itterAbar'
        local sc=$s_c+($n_trp*`itterAbar')
        local pnc=1-normprob((`sc'-$E_c_r)/$RP_sd)
        //display "sc = " `sc'
        local numeratorpt1=($PremiumB*$n2016)*(1-$maxcosts)
        local numeratorpt2=($n2017*`CostA'-$n2016*$CostB)
        local numeratorpt3=($p_nc-1)*(`hrpfloat'-`sc')
        local numeratorpt4=(1-$w)*`hrpfloat'
        local numeratorpt5=$aggregatemktloss2016
        local denominator=($n2017*(1-$maxcosts)-2*$n_trp)
        local PremiumAbar=(`numeratorpt1'+`numeratorpt2'-`numeratorpt3'- ///
        `numeratorpt4'+`numeratorpt5')/`denominator'
        //display "PremiumAbar = " `PremiumAbar'
        local test=abs((`itterAbar'-`PremiumAbar')/`itterAbar')
        //display "test =" `test'
        if `test' <= .0001 {
        matrix abarrate[`y',1]=`PremiumAbar'
        //display "next"
        //display " "
        continue, break
        }
        local itterAbar=`PremiumAbar'
}
}
//matrix list abarrate
svmat double abarrate, name(wy_rbara)
svmat double hrpfloat, name(wy_hrpfloat)
svmat randomHinflation, name(wy_randomHinflation)
svmat costa, name(wy_costa)
egen wy_meanPremiumAbar=mean(wy_rbara)
summ wy_rbara
}
        global stdevpremiumAbar=r(sd)
        global stdevpremiumAbar=r(sd)
        display $stdevpremiumAbar
        gen wy_stdevpremiumAbar=$stdevpremiumAbar
        global wyupperbound95premiumAbar=wy_meanPremiumAbar+1.96*$stdevpremiumAbar
        global wylowerbound95premiumAbar=wy_meanPremiumAbar-1.96*$stdevpremiumAbar
        display $wyupperbound95premiumAbar
        display $wylowerbound95premiumAbar
        summ wy_meanPremiumAbar
histogram wy_hrpfloat1, bin(100) normal
histogram wy_rbara1, bin(100) normal
clear matrix
*-------------------------------------------------bls prediction model-------------------------------------------------
        global PremiumB=9389
        global AvgInflation=.0727
        global CostB=8439.24
        global stdevAvgInflation=.0145
        //global aggregatemktloss2016=0
        global n2016=24064
        global n2017=23822
```

```
global E_c_r=78135359
global s_c=55000000
global n_trp=1300
global maxcosts=.15
global w=0
global RP_sd = 21903683
global RP_sd_per=.28033
global aggregatemktloss2016=0
global n2016=24064
global n2017=23822
quietly {
// note p_nc should be equal to CS_PR_PR
global p_nc=1-normprob(($s_c-$E_c_r)/$RP_sd)
global n_trp=1300
global maxcosts=.15
matrix randomHinflation =J($obs1,1,.)
matrix costa = J($obs1,1,.)
matrix hrpfloat = J($obs1,1,.)
matrix abarrate = J($obs1,1,.)
forvalues y=1/$obs1 {
        set seed 1000`y'
        //display "counter = " `y'
        local randomHinflation=rnormal($AvgInflation, $stdevAvgInflation)
        //display "randominflation = " `randomHinflation'
        matrix randomHinflation[`y',1]=`randomHinflation'
        local CostA=$CostB*(1+`randomHinflation')
        matrix costa[`y',1]=`CostA'
        local itterAbar=0
        local hrpfloat=rnormal($E_c_r, $RP_sd)
        if `hrpfloat'<0 {
        local hrpfloat=0
        }
        //display "hrpfloat = " `hrpfloat'
        matrix hrpfloat[`y',1]=`hrpfloat'
        forvalues x=1/10 {
                //display "itterAbar = " `itterAbar'
                local sc=$s_c+($n_trp*`itterAbar')
                local pnc=1-normprob((`sc'-$E_c_r)/$RP_sd)
                //display "sc = " `sc'
                local numeratorpt1=($PremiumB*$n2016)*(1-$maxcosts)
                local numeratorpt2=($n2017*`CostA'-$n2016*$CostB)
                local numeratorpt3=($p_nc-1)*(`hrpfloat'-`sc')
                local numeratorpt4=(1-$w)*`hrpfloat'
                local numeratorpt5=$aggregatemktloss2016
                local denominator=($n2017*(1-$maxcosts)-2*$n_trp)
                local PremiumAbar=(`numeratorpt1'+`numeratorpt2'-`numeratorpt3'- ///
                `numeratorpt4'+`numeratorpt5')/`denominator'
                //display "PremiumAbar = " `PremiumAbar'
                local test=abs((`itterAbar'-`PremiumAbar')/`itterAbar')
                //display "test =" `test'
                if `test' <= .0001 {
                matrix abarrate[`y',1]=`PremiumAbar'
                //display "next"
```

```
                    //display " "
                    continue, break
                    }
                    local itterAbar=`PremiumAbar'
            }
    }
    //matrix list abarrate
    svmat double abarrate, name(bls_rbara)
    svmat double hrpfloat, name(bls_hrpfloat)
    svmat randomHinflation, name(bls_randomHinflation)
    svmat costa, name(bls_costa)
    egen bls_meanPremiumAbar=mean(bls_rbara)
    summ bls_rbara
    }
            global stdevpremiumAbar=r(sd)
            global stdevpremiumAbar=r(sd)
            display $stdevpremiumAbar
            gen bls_stdevpremiumAbar=$stdevpremiumAbar
            global blsupperbound95premiumAbar=bls_meanPremiumAbar+1.96*$stdevpremiumAbar
            global blslowerbound95premiumAbar=bls_meanPremiumAbar-1.96*$stdevpremiumAbar
            display $blsupperbound95premiumAbar
            display $blslowerbound95premiumAbar
            summ bls_meanPremiumAbar
    histogram bls_hrpfloat1, bin(100) normal
    histogram bls_rbara1, bin(100) normal
    clear matrix
    *---------------------------------------combined wyman and Bls prediction 3-------------------------------
            global PremiumB=9389
            global AvgInflation=.0926
            global CostB=8439.24
            global stdevAvgInflation=.0145
            //global aggregatemktloss2016=0
            global n2016=24064
            global n2017=23822
            global E_c_r=78135359
            global s_c=55000000
            global n_trp=1300
            global maxcosts=.15
            global w=0
            global RP_sd = 21903683
            global RP_sd_per=.28033
            global aggregatemktloss2016=0
            global n2016=24064
            global n2017=23822
    quietly {
    // note p_nc should be equal to CS_PR_PR
    global p_nc=1-normprob(($s_c-$E_c_r)/$RP_sd)
    global n_trp=1300
    global maxcosts=.15
    matrix randomHinflation =J($obs1,1,.)
    matrix costa = J($obs1,1,.)
    matrix hrpfloat = J($obs1,1,.)
    matrix abarrate = J($obs1,1,.)
```

```
forvalues y=1/$obs1 {
        set seed 1000`y'
        //display "counter = " `y'
        local randomHinflation=rnormal($AvgInflation, $stdevAvgInflation)
        //display "randominflation = " `randomHinflation'
        matrix randomHinflation[`y',1]=`randomHinflation'
        local CostA=$CostB*(1+`randomHinflation')
        matrix costa[`y',1]=`CostA'
        local itterAbar=0
        local hrpfloat=rnormal($E_c_r, $RP_sd)
        if `hrpfloat'<0 {
        local hrpfloat=0
        }
        //display "hrpfloat = " `hrpfloat'
        matrix hrpfloat[`y',1]=`hrpfloat'
        forvalues x=1/10 {
                //display "itterAbar = " `itterAbar'
                local sc=$s_c+($n_trp*`itterAbar')
                local pnc=1-normprob((`sc'-$E_c_r)/$RP_sd)
                //display "sc = " `sc'
                local numeratorpt1=($PremiumB*$n2016)*(1-$maxcosts)
                local numeratorpt2=($n2017*`CostA'-$n2016*$CostB)
                local numeratorpt3=($p_nc-1)*(`hrpfloat'-`sc')
                local numeratorpt4=(1-$w)*`hrpfloat'
                local numeratorpt5=$aggregatemktloss2016
                local denominator=($n2017*(1-$maxcosts)-2*$n_trp)
                local PremiumAbar=(`numeratorpt1'+`numeratorpt2'-`numeratorpt3'- ///
                `numeratorpt4'+`numeratorpt5')/`denominator'
                //display "PremiumAbar = " `PremiumAbar'
                local test=abs((`itterAbar'-`PremiumAbar')/`itterAbar')
                //display "test =" `test'
                if `test' <= .0001 {
                matrix abarrate[`y',1]=`PremiumAbar'
                //display "next"
                //display " "
                continue, break
                }
                local itterAbar=`PremiumAbar'
        }
}
//matrix list abarrate
svmat double abarrate, name(c_rbara)
svmat double hrpfloat, name(c_hrpfloat)
svmat randomHinflation, name(c_randomHinflation)
svmat costa, name(c_costa)
egen c_meanPremiumAbar=mean(c_rbara)
summ c_rbara
}
        global stdevpremiumAbar=r(sd)
        global stdevpremiumAbar=r(sd)
        display $stdevpremiumAbar
        gen c_stdevpremiumAbar=$stdevpremiumAbar
        global cupperbound95premiumAbar=c_meanPremiumAbar+1.96*$stdevpremiumAbar
```

```
            global clowerbound95premiumAbar=c_meanPremiumAbar-1.96*$stdevpremiumAbar
            display $upperbound95premiumAbar
            display $lowerbound95premiumAbar
            summ c_meanPremiumAbar
histogram c_hrpfloat1, bin(100) normal
histogram c_rbara1, bin(100) normal
clear matrix
display "wy upperbound95 = " $wyupperbound95premiumAbar
display "wy lowerboundbound95 = " $wylowerbound95premiumAbar
display "bls upperbound95 = " $blsupperbound95premiumAbar
display "bls lowerboundbound95 = " $blslowerbound95premiumAbar
display "combined upperbound95 = " $cupperbound95premiumAbar
display "combined lowerboundbound95 = "$clowerbound95premiumAbar
*------------------------ Table 3.5.6 Table 6: Results Alaska Conditions Based Reinsurance-------------------
*------------------------------------------------- Policy Scenarios --------------------------------------------------
*.................................................Simulation test 1: ………………………………………………
*.................................................State implements a 15% Coinsurance "Tax"………………………………
local t ="one"
*                                  Combined Wyman and Bls prediction 3
clear matrix
// step 1, define input values for first run
global PremiumB=9389
            global AvgInflation=.0926
            global CostB=8439.24
            global stdevAvgInflation=.0145
            //global aggregatemktloss2016=0
            global n2016=24064
            global n2017=23822
            global E_c_r=78135359
            global s_c=55000000
            global n_trp=1300
            global maxcosts=.15
            global w=.15
            global RP_sd = 21903683
            global RP_sd_per=.28033
            global aggregatemktloss2016=0
            global n2016=24064
            global n2017=23822
quietly {
// note p_nc should be equal to CS_PR_PR
global p_nc=1-normprob(($s_c-$E_c_r)/$RP_sd)
global n_trp=1300
global maxcosts=.15
matrix randomHinflation =J($obs1,1,.)
matrix costa = J($obs1,1,.)
matrix hrpfloat = J($obs1,1,.)
matrix abarrate = J($obs1,1,.)
forvalues y=1/$obs1 {
            set seed 1000`y'
            //display "counter = " `y'
            local randomHinflation=rnormal($AvgInflation, $stdevAvgInflation)
            //display "randominflation = " `randomHinflation'
            matrix randomHinflation[`y',1]=`randomHinflation'
```

```
                local CostA=$CostB*(1+`randomHinflation')
                matrix costa[`y',1]=`CostA'
                local itterAbar=0
                local hrpfloat=rnormal($E_c_r, $RP_sd)
                if `hrpfloat'<0 {
                local hrpfloat=0
                }
                //display "hrpfloat = " `hrpfloat'
                matrix hrpfloat[`y',1]=`hrpfloat'
                forvalues x=1/10 {
                        //display "itterAbar = " `itterAbar'
                        local sc=$s_c+($n_trp*`itterAbar')
                        local pnc=1-normprob((`sc'-$E_c_r)/$RP_sd)
                        //display "sc = " `sc'
                        local numeratorpt1=($PremiumB*$n2016)*(1-$maxcosts)
                        local numeratorpt2=($n2017*`CostA'-$n2016*$CostB)
                        local numeratorpt3=($p_nc-1)*(`hrpfloat'-`sc')
                        local numeratorpt4=(1-$w)*`hrpfloat'
                        local numeratorpt5=$aggregatemktloss2016
                        local denominator=($n2017*(1-$maxcosts)-2*$n_trp)
                        local PremiumAbar=(`numeratorpt1'+`numeratorpt2'-`numeratorpt3'- ///
                        `numeratorpt4'+`numeratorpt5')/`denominator'
                        //display "PremiumAbar = " `PremiumAbar'
                        local test=abs((`itterAbar'-`PremiumAbar')/`itterAbar')
                        //display "test =" `test'
                        if `test' <= .0001 {
                        matrix abarrate[`y',1]=`PremiumAbar'
                        //display "next"
                        //display " "
                        continue, break
                        }
                        local itterAbar=`PremiumAbar'
                }
}
//matrix list abarrate
svmat double abarrate, name(`t'_rbara)
svmat double hrpfloat, name(`t'_hrpfloat)
svmat randomHinflation, name(`t'`randomHinflation)
svmat costa, name(`t'_costa)
egen `t'_meanPremiumAbar=mean(`t'_rbara)
summ `t'_rbara
}
        local stdevpremiumAbar=r(sd)
        display `stdevpremiumAbar'
        //gen `t'_stdevpremiumAbar=$stdevpremiumAbar
        local upperbound95premiumAbar=`t'_meanPremiumAbar+1.96*`stdevpremiumAbar'
        local lowerbound95premiumAbar=`t'_meanPremiumAbar-1.96*`stdevpremiumAbar'
        display `upperbound95premiumAbar'
        display `lowerbound95premiumAbar'
        summ `t'_meanPremiumAbar
histogram `t'_hrpfloat1, bin(100) normal
histogram `t'_rbara1, bin(100) normal
// use welch satterthwhithe equation to evaluate degrees of
```

```
//freedom on t test of two independent samples of equal size with
//different variances
gen `t'_tstat = (`t'_meanPremiumAbar - c_meanPremiumAbar)/ ///
sqrt((c_stdevpremiumAbar^2+`stdevpremiumAbar'^2)/$obs1)

gen `t'_df=(((c_stdevpremiumAbar+`stdevpremiumAbar')/$obs1)^2)/ ///
((1/($obs1-1))*((c_stdevpremiumAbar^2+`stdevpremiumAbar'^2)/$obs1^2))
summ `t'_tstat `t'_df
display "strongly significant at <.001"
*-----------------------------------------Simulation Test 2-----------------------------------------------------------
*          With the recent pass of the Trump tax bill and the removal of the
*          individual mandate: the argument that those leaving the pool are healthy
*          -> higher costs for the remaining patients. In this case, we take the
*          approach that, all else equal, higher costs imply higher premiums -> 5%
*          increase in costs and yields a 7.5% increase in premiums.
local t ="two"
//////// combined wyman and Bls prediction 3
clear matrix
// step 1, define input values for first run
global PremiumB=9389
          global AvgInflation=.1426
          global CostB=8439.24
          global stdevAvgInflation=.0145
          //global aggregatemktloss2016=0
          global n2016=24064
          global n2017=23822
          global E_c_r=78135359
          global s_c=55000000
          global n_trp=1300
          global maxcosts=.15
          global w=0
          global RP_sd = 21903683
          global RP_sd_per=.28033
          global aggregatemktloss2016=0
quietly {
// note p_nc should be equal to CS_PR_PR
global p_nc=1-normprob(($s_c-$E_c_r)/$RP_sd)
global n_trp=1300
global maxcosts=.15
matrix randomHinflation =J($obs1,1,.)
matrix costa = J($obs1,1,.)
matrix hrpfloat = J($obs1,1,.)
matrix abarrate = J($obs1,1,.)
forvalues y=1/$obs1 {
          set seed 1000`y'
          //display "counter = " `y'
          local randomHinflation=rnormal($AvgInflation, $stdevAvgInflation)
          //display "randominflation = " `randomHinflation'
          matrix randomHinflation[`y',1]=`randomHinflation'
          local CostA=$CostB*(1+`randomHinflation')
          matrix costa[`y',1]=`CostA'
          local itterAbar=0
          local hrpfloat=rnormal($E_c_r, $RP_sd)
```

```
        if `hrpfloat'<0 {
        local hrpfloat=0
        }
        //display "hrpfloat = " `hrpfloat'
        matrix hrpfloat[`y',1]=`hrpfloat'
        forvalues x=1/10 {
                //display "itterAbar = " `itterAbar'
                local sc=$s_c+($n_trp*`itterAbar')
                local pnc=1-normprob((`sc'-$E_c_r)/$RP_sd)
                //display "sc = " `sc'
                local numeratorpt1=($PremiumB*$n2016)*(1-$maxcosts)
                local numeratorpt2=($n2017*`CostA'-$n2016*$CostB)
                local numeratorpt3=($p_nc-1)*(`hrpfloat'-`sc')
                local numeratorpt4=(1-$w)*`hrpfloat'
                local numeratorpt5=$aggregatemktloss2016
                local denominator=($n2017*(1-$maxcosts)-2*$n_trp)
                local PremiumAbar=(`numeratorpt1'+`numeratorpt2'-`numeratorpt3'- ///
                `numeratorpt4'+`numeratorpt5')/`denominator'
                //display "PremiumAbar = " `PremiumAbar'
                local test=abs((`itterAbar'-`PremiumAbar')/`itterAbar')
                //display "test =" `test'
                if `test' <= .0001 {
                matrix abarrate[`y',1]=`PremiumAbar'
                //display "next"
                //display " "
                continue, break
                }
                local itterAbar=`PremiumAbar'
        }
}
//matrix list abarrate
svmat double abarrate, name(`t'_rbara)
svmat double hrpfloat, name(`t'_hrpfloat)
svmat randomHinflation, name(`t'_randomHinflation)
svmat costa, name(`t'_costa)
egen `t'_meanPremiumAbar=mean(`t'_rbara)
summ `t'_rbara
}
        local stdevpremiumAbar=r(sd)
        display `stdevpremiumAbar'
        //gen `t'_stdevpremiumAbar=$stdevpremiumAbar
        local upperbound95premiumAbar=`t'_meanPremiumAbar+1.96*`stdevpremiumAbar'
        local lowerbound95premiumAbar=`t'_meanPremiumAbar-1.96*`stdevpremiumAbar'
        display `upperbound95premiumAbar'
        display `lowerbound95premiumAbar'
        summ `t'_meanPremiumAbar
histogram `t'_hrpfloat1, bin(100) normal
histogram `t'_rbara1, bin(100) normal
// use welch satterthwhithe equation to evaluate degrees of freedom
//on t test of two independent samples of equal size with different variances
gen `t'_tstat = (`t'_meanPremiumAbar - c_meanPremiumAbar)/ ///
sqrt((c_stdevpremiumAbar^2+`stdevpremiumAbar'^2)/$obs1)
```

```
gen `t'_df=(((c_stdevpremiumAbar+`stdevpremiumAbar')/$obs1)^2)/ ///
((1/($obs1-1))*((c_stdevpremiumAbar^2+`stdevpremiumAbar'^2)/$obs1^2))
summ one_tstat one_df `t'_tstat `t'_df
display "strongly significant at <.001"
*--------------------------------------------------Simulation Test 3--------------------------------------------------
*                                  change both population and expected cost
local t ="three"
///////// combined wyman and Bls prediction 3
clear matrix
// step 1, define input values for first run
global PremiumB=9389
        global AvgInflation=.1426
        global CostB=8439.24
        global stdevAvgInflation=.0145
        //global aggregatemktloss2016=0
        global n2016=24064
        global n2017=23822*.95
        global E_c_r=78135359
        global s_c=55000000
        global n_trp=1300
        global maxcosts=.15
        global w=0
        global RP_sd = 21903683
        global RP_sd_per=.28033
        global aggregatemktloss2016=0
quietly {
// note p_nc should be equal to CS_PR_PR
global p_nc=1-normprob(($s_c-$E_c_r)/$RP_sd)
global n_trp=1300
global maxcosts=.15
matrix randomHinflation =J($obs1,1,.)
matrix costa = J($obs1,1,.)
matrix hrpfloat = J($obs1,1,.)
matrix abarrate = J($obs1,1,.)
forvalues y=1/$obs1 {
        set seed 1000`y'
        //display "counter = " `y'
        local randomHinflation=rnormal($AvgInflation, $stdevAvgInflation)
        //display "randominflation = " `randomHinflation'
        matrix randomHinflation[`y',1]=`randomHinflation'
        local CostA=$CostB*(1+`randomHinflation')
        matrix costa[`y',1]=`CostA'
        local itterAbar=0
        local hrpfloat=rnormal($E_c_r, $RP_sd)
        if `hrpfloat'<0 {
        local hrpfloat=0
        }
        //display "hrpfloat = " `hrpfloat'
        matrix hrpfloat[`y',1]=`hrpfloat'
        forvalues x=1/10 {
                //display "itterAbar = " `itterAbar'
                local sc=$s_c+($n_trp*`itterAbar')
                local pnc=1-normprob((`sc'-$E_c_r)/$RP_sd)
```

```
                    //display "sc = " `sc'
                    local numeratorpt1=($PremiumB*$n2016)*(1-$maxcosts)
                    local numeratorpt2=($n2017*`CostA'-$n2016*$CostB)
                    local numeratorpt3=($p_nc-1)*(`hrpfloat'-`sc')
                    local numeratorpt4=(1-$w)*`hrpfloat'
                    local numeratorpt5=$aggregatemktloss2016
                    local denominator=($n2017*(1-$maxcosts)-2*$n_trp)
                    local PremiumAbar=(`numeratorpt1'+`numeratorpt2'-`numeratorpt3'- ///
                    `numeratorpt4'+`numeratorpt5')/`denominator'
                    //display "PremiumAbar = " `PremiumAbar'
                    local test=abs((`itterAbar'-`PremiumAbar')/`itterAbar')
                    //display "test =" `test'
                    if `test' <= .0001 {
                    matrix abarrate[`y',1]=`PremiumAbar'
                    //display "next"
                    //display " "
                    continue, break
                    }
                    local itterAbar=`PremiumAbar'
            }
    }
    //matrix list abarrate
    svmat double abarrate, name(`t'_rbara)
    svmat double hrpfloat, name(`t'_hrpfloat)
    svmat randomHinflation, name(`t'_randomHinflation)
    svmat costa, name(`t'_costa)
    egen `t'_meanPremiumAbar=mean(`t'_rbara)
    summ `t'_rbara
    }
            local stdevpremiumAbar=r(sd)
            display `stdevpremiumAbar'
            //gen `t'_stdevpremiumAbar=$stdevpremiumAbar
            local upperbound95premiumAbar=`t'_meanPremiumAbar+1.96*`stdevpremiumAbar'
            local lowerbound95premiumAbar=`t'_meanPremiumAbar-1.96*`stdevpremiumAbar'
            display `upperbound95premiumAbar'
            display `lowerbound95premiumAbar'
            summ `t'_meanPremiumAbar
    histogram `t'_hrpfloat1, bin(100) normal
    histogram `t'_rbara1, bin(100) normal
    // use welch satterthwhithe equation to evaluate degrees of freedom on t
    // test of two independent samples of equal size with different variances
    gen `t'_tstat = (`t'_meanPremiumAbar - c_meanPremiumAbar)/ ///
    sqrt((c_stdevpremiumAbar^2+`stdevpremiumAbar'^2)/$obs1)
    gen `t'_df=(((c_stdevpremiumAbar+`stdevpremiumAbar')/$obs1)^2)/ ///
    ((1/($obs1-1))*((c_stdevpremiumAbar^2+`stdevpremiumAbar'^2)/$obs1^2))
    summ one_tstat one_df `t'_tstat `t'_df
    display "strongly significant at <.001"
    display "combined upperbound95 = " $cupperbound95premiumAbar
    display "combined lowerboundbound95 = "$clowerbound95premiumAbar


    * ------------------------- 12.2.1.2 Table A2: REinsurance Pool Sufficiency Analysis---------------------
    *       simulate the market profitability change from Chapter 2 equation 6
    *       changeinAB=(costbefore-costafter)/(1-mlr)
```

```
        clear
        set obs 5000
        set seed 12345
        global L=66000
        global T=1000000
        global Na=297000
        global Nb=290000
        global rb=6767
        global ra=6090
        global omega=0
        global sumec=5247
        global w=.5
        global ec=141357.27
        global stdevmu=6748.91
        global stdevNa=.01051*$Na
        global delta=.15
*------------------------ define model p=(($Nb*$rb-$Na*$ra)*(1-$delta)- ----------------------------------
*----------------------($Nb-$Na)*$sumec+$omega)/($Na*(1-$w)*($ec-$L))-------------------------------
        generate r_ec=rnormal($ec, $stdevmu)
        generate r_Na=rnormal($Na, $stdevNa)
        //gen Psick= ((($Nb*$rb-r_Na*$ra)*(1-$delta))-(($Nb-r_Na)* ///
        ($sumec))+$omega)/(r_Na*(1-$w)*(r_ec-$L))
        gen Psick= ((($Nb*$rb-$Na*$ra)*(1-$delta))- ///
        (($Nb-$Na)*($sumec))+$omega)/($Na*(1-$w)*(r_ec-$L))
        histogram r_Na, bin(400) normal
        summ r_Na
        histogram Psick, bin(400) normal
        save Psick, replace

        egen meanPsick=mean(Psick)
        summ Psick
        global stdevPsick=`r(sd)'
        global upperbound95_Psick=meanPsick+(1.96*$stdevPsick)
        global lowerbound95_Psick=meanPsick-(1.96*$stdevPsick)
        summ Psick
        display $upperbound95_Psick
        display $lowerbound95_Psick
```

*---

14.3.   Chapter 4 Programs
```
*               Chapter 4 Base Program Began 12/2017
*               PCA Generation, and Analysis Dataset Construction
*               Includes flattening and explicitly developing a frequency weighted dataset
*               Written by:  Glen McDermott
*                Department of Economics, University of New Mexico
*                Permanent Phone: 207-902-0354
*                Permanent email:GlenMcDermott1969@gmail.com
```
*---

```
quietly {
        clear
        clear matrix
        clear mata
        set more off
        capture log close
```

```
        set matsize 10000
        set maxvar 10000
}
*----------------------------------------------------set log file----------------------------------------------------
display "Enter parameter date: " _request(date)
display $date
log using C:\stata\Chapter3\DRAFT_chapter3finaloutput_$date.smcl ,replace
*------------------------------------------------working directory------------------------------------------------
        cd "C:\stata\Chapter3"
        use .\Dis_Chapter3.dta
        // note that this is the unbalanced panel
        drop if AGE<25
        drop if AGE>64
        drop if RETIRE==1
        xtset uniqueid time
        tsfill, full
gen n_cor_jobswitching=.
replace n_cor_jobswitching=0 if cor_jobswitching==0
replace n_cor_jobswitching = cor_jobswitching
gen id=uniqueid
*---------------- calculate Initial financial stress measures-
*---------------- deflate, replace "0" values with small positive value (.01)-
*----------------- take logs of relevent financial measures -
{
        quietly {
        //first deflate all relevent variables
                global deflatable "FAMINC CASHALL NWEALTH NWEALTH_EQ"
        foreach x in $deflatable {
                gen t_`x' = `x'*(deflator2009/100)
        }
//replace zero values in cash and netwealth with small
//but positive values to make sure log can be calculated
        foreach x in $deflatable {
                replace t_`x'=.01 if t_`x'==0
        }
//special replacements:
        replace t_CASHALL=.01 if t_CASHALL<0
//I allow income an wealth to remain negative but cash cannot be negative

        //generate logs of relevent measures
        foreach x in $deflatable {
                gen LNDEF_`x'=ln(t_`x')
        }
}
}
{
gen ipwdep=0 if year==.
replace ipwdep=1 if ipwdep==.

global variablestvcomplete "AGE YSCHOO LNDEF_FAMINC LNDEF_CASHALL
LNDEF_NWEALTH_EQ NUMFAMCH STABLEMAR COR_HSTATUS BMI"
foreach x in $variablestvcomplete {
        by uniqueid: egen IPWm_`x'=mean(`x')
```

```
        }
logit ipwdep IPWm_*
predict PRobserved, pr
gen ipw=1/PRobserved
}
drop if time<5
drop if year==.
xtdescribe
{
gen rural=1 if BEALS==9 | BEALS==8 | BEALS==6
replace rural=0 if BEALS >=1 & BEALS <6
replace rural=0 if BEALS==7
}
*------------------------------------ begin financial strain measure developmment ---------------------------
global zeldesfstressmeasures "DEF_FSTRESS_Z1 DEF_FSTRESS_Z2"
global glensfstressmeasures "DEF_FSTRESS_G1 DEF_FSTRESS_G2 DEF_FSTRESS_G3
DEF_FSTRESS_G4 DEF_FSTRESS_G5"
{
        gen DEF_FSTRESS_Z1=0
        gen
t_LNWEALTHRAT_Z1=LNDEF_NWEALTH_EQ/((LNDEF_FAMINC+l.LNDEF_FAMINC)/2)
        replace DEF_FSTRESS_Z1=1 if t_LNWEALTHRAT_Z1 <1/6 | LNDEF_CASHALL <
(1/6)*l.LNDEF_FAMINC
        replace DEF_FSTRESS_Z1=. if t_NWEALTH_EQ==.

        gen DEF_FSTRESS_Z2 = 0
        gen t_LNWEALTHRAT_Z2=LNDEF_NWEALTH/((LNDEF_FAMINC+l.LNDEF_FAMINC)/2)
        replace DEF_FSTRESS_Z2=1 if t_LNWEALTHRAT_Z2 <1/6 | LNDEF_CASHALL <
(1/6)*l.LNDEF_FAMINC
        replace DEF_FSTRESS_Z2=. if t_LNWEALTHRAT_Z2==.
        gen cont_FSTRESS=.
        replace cont_FSTRESS=(((LNDEF_NWEALTH-
LNDEF_CASHALL)/((LNDEF_FAMINC+l.LNDEF_FAMINC)/2))+(LNDEF_CASHALL/LNDEF_FAM
INC))/2
        bysort uniqueid: egen indstdvcontFS = sd(cont_FSTRESS)
        bysort uniqueid: egen indmeancontFS = mean(cont_FSTRESS)
        gen coefVolcontFS = indstdvcontFS/indmeancontFS
*--------------------- GENERATE VARIABLES THAT ARE REQUIRED FOR ANALYSIS-----------------
*----------------------------------------DEFINE GLOBAL VARIABLES---------------------------------------------
quietly {
global x "AGE YSCHOO n_cor_jobswitching HINS STABLEMAR NUMFAMCH"
global ixz "AGE YSCHOO "
global exog "DEF_FSTRESS_Z2"
global xlist Fam_* Sta_* Soc_* Sec_* Health_* Fstrain_* Nhood_* Edu_*
global id uniqueid
bysort uniqueid time: egen m_cor_pseudoch = mean(n_COR_PSEUDOCH)
corr m_cor_pseudoch PASTFS
}
gen nyearemp=12-yearemp            // makes increasing value a negative rather than a positive
quietly {
xtset uniqueid time
gen l4maFSTRESS = l4.DEF_FSTRESS_Z2
gen l3maFSTRESS = l3.DEF_FSTRESS_Z2
```

```
gen l2maFSTRESS = l2.DEF_FSTRESS_Z2
gen l1maFSTRESS = l1.DEF_FSTRESS_Z2
egen ma_DEF_FSTRESS_Z2 = rowmean( l4maFSTRESS l3maFSTRESS l2maFSTRESS l1maFSTRESS
DEF_FSTRESS_Z2)
xtset uniqueid time
gen l4maJS = l4.n_cor_jobswitching
gen l3maJS = l3.n_cor_jobswitching
gen l2maJS = l2.n_cor_jobswitching
gen l1maJS = l1.n_cor_jobswitching
egen ma_JS = rowmean( l4maJS l3maJS l2maJS l1maJS n_cor_jobswitching)
}
{
gen compoundstress=.
replace compoundstress=DEF_FSTRESS_Z2+n_cor_jobswitching
reg DEF_FSTRESS_Z2 AGE
predict noafstress, r
reg COR_HSTATUS AGE
predict noahstatus, r
reg n_COR_PSEUDOCH AGE
predict noapseudoch, r
corr noafstress noahstatus noapseudoch COR_COHORT
xtset uniqueid time
tab time, generate(TIME)
}
{
sort uniqueid time
foreach var in $x {
bysort uniqueid: egen mean_`var'=mean(`var')
}
gen initob = 0
bysort uniqueid (year): replace initob = 1 if _n == 1
gen I_COR_HSTATUS = COR_HSTATUS if initob==1
by uniqueid:egen ii_COR_HSTATUS = mean(I_COR_HSTATUS)
foreach var in $ixz{
gen II_`var'=`var' if initob==1
}
sort time
reg I_COR_HSTATUS  II_* NON_WHITE1 MALE PASTFS
predict p_I_COR_HSTATUS, xb
bysort uniqueid: egen pp_I_COR_HSTATUS=mean(p_I_COR_HSTATUS)
drop p_I_COR_HSTATUS
rename pp_I_COR_HSTATUS p_I_COR_HSTATUS
sort uniqueid time
gen l_COR_HSTATUS=l.COR_HSTATUS
tab ii_COR_HSTATUS, gen(d_II_COR_HSTATUS)
foreach var in $exog {
bysort uniqueid: egen mean2_`var'=mean(`var')
}
}
tab COR_HSTATUS, gen(HSTATUSd)
replace AGE3=AGE3/10
gen L_HSTATUS1 = l.HSTATUSd1
gen L_HSTATUS2 = l.HSTATUSd2
```

```
gen L_HSTATUS3 = l.HSTATUSd3
gen L_HSTATUS4 = l.HSTATUSd4
gen L_HSTATUS5 = l.HSTATUSd5
gen LHSD1=l.HSTATUSd1
gen LHSD2=l.HSTATUSd2
gen LHSD3=l.HSTATUSd3
gen LHSD4=l.HSTATUSd4
gen LHSD5=l.HSTATUSd5
gen l_HSTATUS=l.HSTATUS
sort uniqueid time
forvalues x = 1/100 {
        gen bsr`x'= ipw
        }
replace OWNRENT=0 if OWNRENT==5
* Sch=School, Nhood=Neighborhood, Health=health, Sta=Stability,
* Soc=Social, Sec=Security Fstrain
forvalues x=1/10 {
gen t_divcounter`x'=0
replace t_divcounter`x'=1 if Sta_AgeParDivorce`x'!=.
}
gen Fam_CumulativeDiv=0
replace Fam_CumulativeDiv=t_divcounter1+t_divcounter2+t_divcounter3+ ///
t_divcounter4+t_divcounter5+t_divcounter6+t_divcounter7+t_divcounter8+ ///
t_divcounter9+t_divcounter10
replace Fam_CumulativeDiv=. if Sta_ParDivorce==.
drop Sta_AgeParDivorce* Sta_ParDivorce
//rename Health_SAHS C_SAHS
drop Fam_WomanW* Fam_MomRel* Fam_ManWho* Fam_DadRel* Sta_AgeMove* ///
Edu_AgeSch* Health_HeightMtype Health_HeightFt Health_HeightIn ///
Health_WeightMtype Health_WeightPounds Health_WeightKG Edu_RepeatGrade ///
Edu_GradeFirstRpt Edu_GradeLastRpt AGE2 AGE3 AGE4 Health_HeightMtr
bysort uniqueid: egen m_Age=mean(AGE)
keep $xlist n_cor_jobswitching DEF_FSTRESS_Z1 DEF_FSTRESS_Z2 uniqueid time ///
AGE* NON_WHITE1 MALE INDWT2013 YSCHOO LNDEF_FAMINC //C_SAHS
summ $xlist
//drop list to have full dataset, implies dropping neighborhood safety measures,
// not asked of those who never moved... so reduces study to only those who have moved.
// dropping these to look at individuals who have always stayed put
// no way to incorporate them in the main analysis, can look at the subgroup
// separately.
drop Sec_NhoodSafeNight1316 Sec_NhoodSafeDay1316 Sec_HhoodSafeNightKid1316 ///
 Soc_NeighborHelp1316 Soc_NeighborCloseKnit1316 Nhood_Clean1316 ///
 Nhood_carehomes1316
 // ALSO DROPPING KIDS WHO CLAIM NO ROMANTIC RELATIONSHIP BETWEEN 13 AND 16
 // AGAIN WILL HAVE TO COVER IN SUB-ANALYSIS
drop Soc_BFGFRelPositive
drop if Health_Diabetes==. //drops 1 observation that is missing health answers
by uniqueid: gen count=_N
summ count
*-------------------------------------------------Collapse Dataset -------------------------------------------------
collapse (mean)  AGE LNDEF_FAMINC (sum) n_cor_jobswitching DEF_FSTRESS_Z1 ///
DEF_FSTRESS_Z2 (max) $xlist count MALE INDWT2013 YSCHOO  NON_WHITE1, ///
by(uniqueid)
```

```
local vmeans "n_cor_jobswitching DEF_FSTRESS_Z1 DEF_FSTRESS_Z2 LNDEF_FAMINC"
foreach x in `vmeans' {
gen norm_`x'=`x'/count
egen m_`x'=mean(norm_`x')
summ `x'
gen d_`x'=.
local sd=r(sd)
replace d_`x'=0 if `x'<m_`x'
replace d_`x'=1 if `x'>m_`x'
xtile qrt_`x'=`x',nq(4)
gen extr_`x'=1 if qrt_`x'==4
replace extr_`x'=0 if qrt_`x'==1
//drop qrt_`x'
}
Sum
*------------------------- Expand dataset to create explicit frequency weights---------------------------
*----------------------------Assists in creating a common dataset between-------------------------------
*-----------------------------------Matlab and Stata analysis modules --------------------------------------
expand count
summ
global ncomp 60
//Principal component analysis
//pca $xlist, mineigen(1)
pca $xlist, comp($ncomp) blanks(.3)
rotate, varimax blanks(.3)
* scatterplot of the loadings and score variables
screeplot, yline(1)
save screeplot_rotatedCompVmax, replace
loadingplot
save loadingplot_rotatedCompVmax, replace
//1scoreplot
estat loadings
predict pc1 pc2 pc3 pc4 pc5 pc6 pc7 pc8 pc9 pc10 pc11 pc12 pc13 pc14 pc15 ///
pc16 pc17 pc18 pc19 pc20 pc21 pc22 pc23 pc24 pc25 pc26 pc27 pc28 pc29 pc30 ///
pc31 pc32 pc33 pc34 pc35 pc36 pc37 pc38 pc39 pc40 pc41 pc42 pc43 pc44 pc45 ///
pc46 pc47 pc48 pc49 pc50 pc51 pc52 pc53 pc54 pc55 pc56 pc57, score
summ
 *-------------------------------- Create Slimmed Dataset for Analysis (Prog 3_3) ---------------------------
preserve
*…………………………………………………………………………………………………..
*               FOR CREATING A NEW SENSITIVITY DATASET
keep pc* *n_cor_jobswitching *DEF_FSTRESS_Z1 *DEF_FSTRESS_Z2 uniqueid ///
YSCHOO AGE NON_WHITE1 MALE *LNDEF_FAMINC
*……………………………………………………………………………………………….
gen Dschool=.
replace Dschool=1 if YSCHOO>12
replace Dschool=0 if YSCHOO<=12
foreach v of var *{
label  variable `v' "rhs"
}
label variable n_cor_jobswitching "lhs"
label  variable DEF_FSTRESS_Z1 "lhs"
label variable DEF_FSTRESS_Z2 "lhs"
```

```
label variable uniqueid "other"
//label variable time "other"
label variable NON_WHITE1 "rhs"
label variable MALE "rhs"
//label variable OWNRENT "rhs"
label variable LNDEF_FAMINC "rhs"
//label variable sample "other"
gen di_jobswitch=0
egen mm_jobswitch= mean(n_cor_jobswitching)
bysort uniqueid: egen m_jobswitch=mean(n_cor_jobswitching)
replace di_jobswitch=1 if m_jobswitch>mm_jobswitch
label variable di_jobswitch "lhs"
drop m_jobswitch
        forvalues v=1/57 {
        quietly: summ pc`v'
        local sdpc=r(sd)
        local meanpc=r(mean)
        quietly: replace pc`v'= (pc`v'-`meanpc')/`sdpc'
        quietly:summ pc`v'
        }
*-----------------------------Export Both CSV and Stata datasets ---------------------------------------
export delimited using ///
"C:\stata\Chapter3\csvpcadata57_js_mfseparate_vmax2_collapsed_expand.csv", ///
replace
/// FOR CREATING A NEW SENSITIVITY DATASET
save pcanlaytical_full57_mfseparate_vmax2_collapsed_expand, replace
/////////////////////////////////////////////////////////////////
restore
*-----------------------------------------End Program --------------------------------------------------------

*-----------------------------------------------------------------------------------------------------------------
```

14.3.1. **Chapter 4 PCA Development**

```
* Generate Summary Statistics pre-normalization Table 4.5.3: Table 1:Summary
* Statistics for Analytical Dataset Before Normalization
* Written By Glen McDermott
* University of New Mexico
* Permanent phone: 207.902.0354
* Permanent email: glenmcdermott1969@gmail.com
*-----------------------------------------------------------------------------------------------------------------
quietly {
        clear
        clear matrix
        clear mata
        set more off
        capture log close
        set matsize 10000
        set maxvar 10000
}
*--------------------------set log file----------------------------------------------------------------------
        display "Enter parameter date: " _request(date)
        display $date
```

```
    log using C:\stata\Chapter3\DRAFT_chapter3finaloutput_$date.smcl ,replace
*------------------------working directory-------------------------------------------------------------------------
        cd "C:\stata\Chapter3"
        use .\Dis_Chapter3.dta
        // note that this is the unbalanced panel
        drop if AGE<25
        drop if AGE>64
        drop if RETIRE==1
        xtset uniqueid time
        tsfill, full
gen n_cor_jobswitching=.
replace n_cor_jobswitching=0 if cor_jobswitching==0
replace n_cor_jobswitching = cor_jobswitching
gen id=uniqueid
*---------------- calculate Initial financial stress measures-----------------------------------------------------
*----------deflate, replace "0" values with small positive value (.01)----------------------------------
*----------------- take logs of relevent financial measures --------------------------------------------------
{
        quietly {
        //first deflate all relevent variables
                global deflatable "FAMINC CASHALL NWEALTH NWEALTH_EQ"
        foreach x in $deflatable {
                gen t_`x' = `x'*(deflator2009/100)
        }
//replace zero values in cash and netwealth with s
//mall but positive values to make sure log can be calculated
        foreach x in $deflatable {
                replace t_`x'=.01 if t_`x'==0
        }
//special replacements:
        replace t_CASHALL=.01 if t_CASHALL<0
        // to be sure the natural log has a positive value and
        //recogonize every individual has
        //I allow income an wealth to remain negative but cash cannot be negative
        //generate logs of relevent measures
        foreach x in $deflatable {
                gen LNDEF_`x'=ln(t_`x')
        }
}
}
{
gen ipwdep=0 if year==.
replace ipwdep=1 if ipwdep==.
global variablestvcomplete "AGE YSCHOO LNDEF_FAMINC LNDEF_CASHALL
LNDEF_NWEALTH_EQ NUMFAMCH STABLEMAR COR_HSTATUS BMI"
foreach x in $variablestvcomplete {
        by uniqueid: egen IPWm_`x'=mean(`x')
        }
logit ipwdep IPWm_*
predict PRobserved, pr
gen ipw=1/PRobserved
}
drop if time<5
```

```
drop if year==.
xtdescribe
{
gen rural=1 if BEALS==9 | BEALS==8 | BEALS==6
replace rural=0 if BEALS >=1 & BEALS <6
replace rural=0 if BEALS==7
}
*---------------------------- begin financial strain measure developmment ---------------------------------
{
        gen DEF_FSTRESS_Z1=0
        gen
t_LNWEALTHRAT_Z1=LNDEF_NWEALTH_EQ/((LNDEF_FAMINC+l.LNDEF_FAMINC)/2)
        replace DEF_FSTRESS_Z1=1 if t_LNWEALTHRAT_Z1 <1/6 | LNDEF_CASHALL <
(1/6)*l.LNDEF_FAMINC
        replace DEF_FSTRESS_Z1=. if t_NWEALTH_EQ==.

        gen DEF_FSTRESS_Z2 = 0
        gen t_LNWEALTHRAT_Z2=LNDEF_NWEALTH/((LNDEF_FAMINC+l.LNDEF_FAMINC)/2)
        replace DEF_FSTRESS_Z2=1 if t_LNWEALTHRAT_Z2 <1/6 | LNDEF_CASHALL <
(1/6)*l.LNDEF_FAMINC
        replace DEF_FSTRESS_Z2=. if t_LNWEALTHRAT_Z2==.
        gen cont_FSTRESS=.
        replace cont_FSTRESS=(((LNDEF_NWEALTH-
LNDEF_CASHALL)/((LNDEF_FAMINC+l.LNDEF_FAMINC)/2))+(LNDEF_CASHALL/LNDEF_FAM
INC))/2
        bysort uniqueid: egen indstdvcontFS = sd(cont_FSTRESS)
        bysort uniqueid: egen indmeancontFS = mean(cont_FSTRESS)
        gen coefVolcontFS = indstdvcontFS/indmeancontFS
*----------------------------------------- DEFINE GLOBAL VARIABLES---------------------------------------
quietly {
}
gen nyearemp=12-yearemp            // makes increasing value a negative rather than a positive

quietly {
xtset uniqueid time
gen l4maFSTRESS = l4.DEF_FSTRESS_Z2
gen l3maFSTRESS = l3.DEF_FSTRESS_Z2
gen l2maFSTRESS = l2.DEF_FSTRESS_Z2
gen l1maFSTRESS = l1.DEF_FSTRESS_Z2
egen ma_DEF_FSTRESS_Z2 = rowmean( l4maFSTRESS l3maFSTRESS l2maFSTRESS l1maFSTRESS
DEF_FSTRESS_Z2)
xtset uniqueid time
gen l4maJS = l4.n_cor_jobswitching
gen l3maJS = l3.n_cor_jobswitching
gen l2maJS = l2.n_cor_jobswitching
gen l1maJS = l1.n_cor_jobswitching
egen ma_JS = rowmean( l4maJS l3maJS l2maJS l1maJS n_cor_jobswitching)
}
{
gen compoundstress=.
replace compoundstress=DEF_FSTRESS_Z2+n_cor_jobswitching
reg DEF_FSTRESS_Z2 AGE
predict noafstress, r
```

```
reg COR_HSTATUS AGE
predict noahstatus, r
reg n_COR_PSEUDOCH AGE
predict noapseudoch, r
corr noafstress noahstatus noapseudoch COR_COHORT
xtset uniqueid time
tab time, generate(TIME)
}
{
sort uniqueid time
global x "AGE YSCHOO n_cor_jobswitching HINS STABLEMAR NUMFAMCH"
global ixz "AGE YSCHOO "
foreach var in $x {
bysort uniqueid: egen mean_`var'=mean(`var')
}
gen initob = 0
bysort uniqueid (year): replace initob = 1 if _n == 1
gen I_COR_HSTATUS = COR_HSTATUS if initob==1
by uniqueid:egen ii_COR_HSTATUS = mean(I_COR_HSTATUS)
foreach var in $ixz{
gen II_`var'=`var' if initob==1
}
sort time
reg I_COR_HSTATUS  II_* NON_WHITE1 MALE PASTFS
predict p_I_COR_HSTATUS, xb
bysort uniqueid: egen pp_I_COR_HSTATUS=mean(p_I_COR_HSTATUS)
drop p_I_COR_HSTATUS
rename pp_I_COR_HSTATUS p_I_COR_HSTATUS
sort uniqueid time
gen l_COR_HSTATUS=l.COR_HSTATUS
tab ii_COR_HSTATUS, gen(d_II_COR_HSTATUS)

global exog "DEF_FSTRESS_Z2"
foreach var in $exog {
bysort uniqueid: egen mean2_`var'=mean(`var')
}
}
tab COR_HSTATUS, gen(HSTATUSd)
replace AGE3=AGE3/10
gen L_HSTATUS1 = l.HSTATUSd1
gen L_HSTATUS2 = l.HSTATUSd2
gen L_HSTATUS3 = l.HSTATUSd3
gen L_HSTATUS4 = l.HSTATUSd4
gen L_HSTATUS5 = l.HSTATUSd5
gen LHSD1=l.HSTATUSd1
gen LHSD2=l.HSTATUSd2
gen LHSD3=l.HSTATUSd3
gen LHSD4=l.HSTATUSd4
gen LHSD5=l.HSTATUSd5
gen l_HSTATUS=l.HSTATUS
sort uniqueid time
forvalues x = 1/100 {
        gen bsr`x'= ipw
```

```
      }
replace OWNRENT=0 if OWNRENT==5


* Sch=School, Nhood=Neighborhood, Health=health, Sta=Stability,
* Soc=Social, Sec=Security Fstrain

forvalues x=1/10 {
gen t_divcounter`x'=0
replace t_divcounter`x'=1 if Sta_AgeParDivorce`x'!=.
}
gen Fam_CumulativeDiv=0
replace Fam_CumulativeDiv=t_divcounter1+t_divcounter2+t_divcounter3+ ///
t_divcounter4+t_divcounter5+t_divcounter6+t_divcounter7+t_divcounter8+ ///
t_divcounter9+t_divcounter10
replace Fam_CumulativeDiv=. if Sta_ParDivorce==.
drop Sta_AgeParDivorce* Sta_ParDivorce
global xlist Fam_* Sta_* Soc_* Sec_* Health_* Fstrain_* Nhood_* Edu_*
drop Fam_WomanW* Fam_MomRel* Fam_ManWho* Fam_DadRel* Sta_AgeMove* ///
Edu_AgeSch* Health_HeightMtype Health_HeightFt Health_HeightIn ///
Health_WeightMtype Health_WeightPounds Health_WeightKG Edu_RepeatGrade ///
Edu_GradeFirstRpt Edu_GradeLastRpt AGE2 AGE3 AGE4 Health_HeightMtr
bysort uniqueid: egen m_Age=mean(AGE)
keep $xlist n_cor_jobswitching DEF_FSTRESS_Z1 DEF_FSTRESS_Z2 uniqueid time AGE*
NON_WHITE1 MALE INDWT2013 YSCHOO LNDEF_FAMINC //C_SAHS
global id uniqueid
summ $xlist
//drop list to have full dataset, implies dropping neighborhood safety measures,
// not asked of those who never moved... so reduces study to only those who have moved.
// dropping these to look at individuals who have always stayed put
// no way to incorporate them in the main analysis, can look at the subgroup
// seperately.
drop Sec_NhoodSafeNight1316 Sec_NhoodSafeDay1316 Sec_HhoodSafeNightKid1316 ///
 Soc_NeighborHelp1316 Soc_NeighborCloseKnit1316 Nhood_Clean1316 ///
 Nhood_carehomes1316
 // ALSO DROPPING KIDS WHO CLAIM NO ROMANTIC RELATIONSHIP BETWEEN 13 AND 16
 // AGAIN WILL HAVE TO COVER IN SUB-ANALYSIS
drop Soc_BFGFRelPositive
drop if Health_Diabetes==. //drops 1 observation that is missing health answers
by uniqueid: gen count=_N
summ count

collapse (mean)  AGE LNDEF_FAMINC (sum) n_cor_jobswitching DEF_FSTRESS_Z1 ///
DEF_FSTRESS_Z2 (max) $xlist count MALE INDWT2013 YSCHOO  NON_WHITE1, ///
by(uniqueid)
local vmeans "n_cor_jobswitching DEF_FSTRESS_Z1 DEF_FSTRESS_Z2 LNDEF_FAMINC"
foreach x in `vmeans' {
gen norm_`x'=`x'/count
egen m_`x'=mean(norm_`x')
summ `x'
gen d_`x'=.
local sd=r(sd)
replace d_`x'=0 if `x'<m_`x'
replace d_`x'=1 if `x'>m_`x'
```

```
xtile qrt_`x'=`x',nq(4)
gen extr_`x'=1 if qrt_`x'==4
replace extr_`x'=0 if qrt_`x'==1
//drop qrt_`x'
}
summ
expand count
summ
global ncomp 60
///////// Principal component analysis
pca $xlist, comp($ncomp) blanks(.3)
rotate, varimax blanks(.3)
* scatterplot of the loadings and score variables
screeplot, yline(1)
save screeplot_rotatedCompVmax, replace
loadingplot
save loadingplot_rotatedCompVmax, replace
*-------------------------------------------------scoreplot-------------------------------------------------------
estat loadings

predict pc1 pc2 pc3 pc4 pc5 pc6 pc7 pc8 pc9 pc10 pc11 pc12 pc13 pc14 pc15 ///
pc16 pc17 pc18 pc19 pc20 pc21 pc22 pc23 pc24 pc25 pc26 pc27 pc28 pc29 pc30 ///
pc31 pc32 pc33 pc34 pc35 pc36 pc37 pc38 pc39 pc40 pc41 pc42 pc43 pc44 pc45 ///
pc46 pc47 pc48 pc49 pc50 pc51 pc52 pc53 pc54 pc55 pc56 pc57, score
summ

preserve
*-----------------------------FOR CREATING A NEW SENSITIVITY DATASET------------------------
*--------------------------------- Only Need to Run Once below this line ------------------------------------
keep pc* *n_cor_jobswitching *DEF_FSTRESS_Z1 *DEF_FSTRESS_Z2 uniqueid YSCHOO ///
AGE NON_WHITE1 MALE *LNDEF_FAMINC //C_SAHS
gen Dschool=.
replace Dschool=1 if YSCHOO>12
replace Dschool=0 if YSCHOO<=12
foreach v of var *{
label  variable `v' "rhs"
}
label variable n_cor_jobswitching "lhs"
label  variable DEF_FSTRESS_Z1 "lhs"
label variable DEF_FSTRESS_Z2 "lhs"
label variable uniqueid "other"
label variable NON_WHITE1 "rhs"
label variable MALE "rhs"
label variable LNDEF_FAMINC "rhs"
gen di_jobswitch=0
egen mm_jobswitch= mean(n_cor_jobswitching)
bysort uniqueid: egen m_jobswitch=mean(n_cor_jobswitching)
replace di_jobswitch=1 if m_jobswitch>mm_jobswitch
label variable di_jobswitch "lhs"
drop m_jobswitch
*------4.5.1: Summary Statists for Analytical Dataset Before Normalization----
summ pc1-pc20
*---------------------------------- Normalize pc variables: 0u, 1sd---------------------------------------
```

```
        forvalues v=1/57 {
        quietly: summ pc`v'
        local sdpc=r(sd)
        local meanpc=r(mean)
        quietly: replace pc`v'= (pc`v'-`meanpc')/`sdpc'
        quietly:summ pc`v'
        }
```
*----------------------export datasets for analysis-------------------------
export delimited using ///
"C:\stata\Chapter3\csvpcadata57_js_mfseparate_vmax2_collapsed_expand.csv", ///
replace
/// FOR CREATING A NEW SENSITIVITY DATASET
save pcanlaytical_full57_mfseparate_vmax2_collapsed_expand, replace
restore
*----------------------------- End --

*--

14.3.2. **Chapter 4 Stata Data Analysis**
* Glen McDermott
* Department of Economics, University of New Mexico
* Permanent Phone: 207.902.0354
* Permanent email: GlenMcDermott1969@gmail.com
*---
* Logit Robustness and Sensitivity data Appendix 4 table 13.3 Table A2
* Also generate sensitivity data for export to:
* Chapter3DissertationVault_MasterSpreadsheet.xlsx
* Generation of Matlab Dataset for CART and Decision Tree Analysis
*---
```
        clear
        clear matrix
        clear mata
        set more off
        capture log close
        set matsize 10001
        set maxvar 5000
cd "C:\stata\Chapter3"
use pcanlaytical_full57_mfseparate_vmax2_collapsed_expand // From PCA_GENERATION
log using LogitMaleSatelli3_14_18.smcl, replace
gen agegroup=.
replace agegroup=0 if AGE<40  // approximate equal proportions old and young
replace agegroup=1 if AGE<=65 & AGE>=40
summ if d_DEF_FSTRESS_Z2==1
local comps=20 // pick how many components you want to use as inputs
forvalues d=1/57 {
if `d'>`comps' {
drop pc`d'
}
}
matrix APEmargins=J(60,3,.)
logit d_DEF_FSTRESS_Z2 pc* agegroup MALE NON_WHITE1
margins, dydx(*)
logit d_DEF_FSTRESS_Z2 pc* agegroup MALE NON_WHITE1 if NON_WHITE==1
margins, dydx(*)
```

```
local i=3
matrix likelihood = J(26,1,.)
logit d_DEF_FSTRESS_Z2
matrix likelihood[1,1]=(-2)*`e(ll)'
logit d_DEF_FSTRESS_Z2 pc* agegroup MALE NON_WHITE1 if NON_WHITE==0
matrix likelihood[2,1]=(-2)*`e(ll)'
forvalues v=1/20 {
logit d_DEF_FSTRESS_Z2 pc`v'
matrix likelihood[`i',1]=(-2)*`e(ll)'
local ++i
}
matrix list likelihood
matrix sensitivity=J(20,3,.)
forvalues i=1/20 {
matrix sensitivity[`i',1]= likelihood[1,1] - likelihood[2,1]
local third =`i'+2
matrix sensitivity[`i',2]= likelihood[1,1] - likelihood[`third',1]
matrix sensitivity[`i',3]= sensitivity[`i',2] / sensitivity[`i',1]
}
/////////////////////// Matrix Results for Analysis Spreadsheet
//////////////////// name: Chapter3DissertationVault_MasterSpreadsheet.xlsx
matrix list sensitivity
/////////////////////// Export Matlab Analysis Dataset ///////////////////////
preserve
keep pc* NON_WHITE1 agegroup MALE d_*
//export delimited using "C:\stata\Chapter3\Chapter3MatlabDatasetEsample_d.csv", replace
restore
*------------------------------- Table 13.3; Table a2: Logit Validation Models-------------------------------
*…………………………………………… Model 1…………………………………………….
logit d_DEF_FSTRESS_Z2 pc* agegroup MALE NON_WHITE1 if NON_WHITE==0
outreg2 using chapter3_logitverification628.xls, replace
summ
duplicates drop
summ
logit d_DEF_FSTRESS_Z2 pc* agegroup MALE NON_WHITE1 if NON_WHITE==0
outreg2 using chapter3_logitverification628.xls, append
summ qrt_DEF_FSTRESS_Z2
drop if qrt_DEF_FSTRESS_Z2==2 | qrt_DEF_FSTRESS_Z2==3
summ qrt_DEF_FSTRESS_Z2

replace qrt_DEF_FSTRESS_Z2=0 if qrt_DEF_FSTRESS_Z2==1
replace qrt_DEF_FSTRESS_Z2=1 if qrt_DEF_FSTRESS_Z2==4
logit d_DEF_FSTRESS_Z2 pc* agegroup MALE NON_WHITE1 if NON_WHITE==0
outreg2 using chapter3_logitverification628.xls, append
```

%---

14.3.3. **Chapter 4 Matlab Analysis**

```
%  Matlab Program Chapter 3
%  Cart and Decision Tree Analysis
%  Glen McDermott
%  Department of Economics, University of New Mexico
%  Permanent Phone: 207-902-0354
```

```
%  Permanent email: GlenMcDermott@gmail.com
%-----------------------------------------------------------------------------------------------------------------
% Note, coefficients can be found by opening output Classification
% Bagged Ensemble "coefXXXX", then within, open Trained, then within open
% each 1x1 compact vector, then open "Coeffs" a 2x2 structure.  Open the
% top right cell, copy and paste Const value to spreadsheet, open "Linear"
% copy vector of linear coefficients to spreadsheet. Repeat this for each
% 1x1 compact vector (number of bootstrap repetitions).
% Then export excel spreadsheet to stata and summarize the coefficients
% for mean and standard deviation.
%---------------------------------------- Data Preparation -------------------------------------------------
data=readtable('c:\stata\chapter3\Chapter3MatlabDatasetEsample_d.csv')
RFBOTHcleandata=rmmissing(data)
RFBOTHtrainingData=RFBOTHcleandata
savedRng=1
rng(savedRng); % For reproducibility
BOTHinputTable = RFBOTHtrainingData;
RFWHITEds = data(data.NON_WHITE1~=1,:);
RFWHITEcleandata = rmmissing(RFWHITEds)
WHITEinputTable = RFWHITEcleandata;
RFNONWHITEds = data(data.NON_WHITE1~=0,:);
RFNONWHITEcleandata = rmmissing(RFNONWHITEds)
RFNONWWHITEinputTable = RFNONWHITEcleandata;
%----------------------------------------SOME COMMON VARIABLES----------------------------------------
COMMONpredictorNames = {'pc1', 'pc2', 'pc3', 'pc4', 'pc5', 'pc6', ...
    'pc7', 'pc8', 'pc9', 'pc10', 'pc11', 'pc12','pc13', 'pc14' ...
    'pc15', 'pc16', 'pc17', 'pc18', 'pc19', 'pc20', 'agegroup' ...
    'MALE', 'NON_WHITE1'};
 COMMONCategoricalPredictor = [false, false, false, false, false, ...
      false, false, false, false, false, false, false, ...
      false, false, false, false, false, false, false, ...
    false, true, true, true];
COMMONtemplate = templateTree(...
   'MaxNumSplits', 10025);
% --------------------------------COLLECT APPROPRIATE PREDICTORS------------------------------------
BOTHpredictors = BOTHinputTable(:, COMMONpredictorNames);
BOTHresponse = BOTHinputTable.d_DEF_FSTRESS_Z2;
WHITEpredictors = WHITEinputTable(:, COMMONpredictorNames);
WHITEresponse = WHITEinputTable.d_DEF_FSTRESS_Z2;
NONWHITEpredictors = RFNONWWHITEinputTable(:, COMMONpredictorNames);
NONWHITEresponse = RFNONWWHITEinputTable.d_DEF_FSTRESS_Z2;
% ----------------------------- TRAIN RF CLASSIFIER FOR BOTH M AND F------------------------------
template = templateTree(...
     'SplitCriterion', 'twoing', ...
   'MaxNumSplits', 150, ...
   'Surrogate', 'off', ...
   'ClassNames', [0; 1]);
coef=templateDiscriminant('FillCoeffs','on');
RFBOTHclassificationEnsembleRF = fitcensemble(...
   BOTHpredictors, ...
   BOTHresponse, ...
   'Learners', template, ...
   'Method', 'Bag', ...
```

```
    'NumLearningCycles', 30, ...
    'ClassNames', [0; 1]);
% --------------------------------Create the result struct with predict function-----------------------------------
RFBOTHpredictorExtractionFcn = @(t) t(:, COMMONpredictorNames);
RFBOTHensemblePredictFcn = @(x) predict(RFBOTHclassificationEnsembleRF, x);
RFBOTHtrainedClassifier.predictFcn = ...
    @(x) RFBOTHensemblePredictFcn(RFBOTHpredictorExtractionFcn(x));
% --------------------------------Add additional fields to the result struct-----------------------------------
RFBOTHtrainedClassifier.RequiredVariables = COMMONpredictorNames;
RFBOTHtrainedClassifier.ClassificationEnsemble = ...
    RFBOTHclassificationEnsembleRF;
% ----------------------------------------Perform cross-validation-----------------------------------------------
RFBOTHpartitionedModel = ...
    crossval(RFBOTHtrainedClassifier.ClassificationEnsemble, 'KFold', 10);
% ---------------------------------------Compute validation predictions---------------------------------------
[RFBOTHvalidationPredictions, RFBOTHvalidationScores] = ...
    kfoldPredict(RFBOTHpartitionedModel);
% ---------------------------------------Compute validation accuracy-----------------------------------------
aRFBOTHvalidationAccuracy_rf = 1 - ...
    kfoldLoss(RFBOTHpartitionedModel, 'LossFun', 'ClassifError');
aRFBOTHimportance_randomforest= ...
    predictorImportance(RFBOTHclassificationEnsembleRF);
% -----------------------------------------fit coeficients to models------------------------------------------
% -----------------------------------Train MALE RF CLASSIFIER----------------------------------------
RFWHITEclassificationEnsembleRF = fitcensemble(...
    WHITEpredictors, ...
    WHITEresponse, ...
    'Learners', template, ...
    'Method', 'Bag', ...
    'NumLearningCycles', 30, ...
    'ClassNames', [0; 1]);
% --------------------------------Create the result struct with predict function-----------------------------------
RFWHITEpredictorExtractionFcn = @(t) t(:, COMMONpredictorNames);
RFWHITEensemblePredictFcn = @(x) predict(RFWHITEclassificationEnsembleRF, x);
RFWHITEtrainedClassifier.predictFcn = ...
    @(x) RFWHITEensemblePredictFcn(RFWHITEpredictorExtractionFcn(x));
% --------------------------------Add additional fields to the result struct-----------------------------------
RFWHITEtrainedClassifier.RequiredVariables = COMMONpredictorNames;
RFWHITEtrainedClassifier.ClassificationEnsemble = ...
    RFWHITEclassificationEnsembleRF;
% ---------------------------------------Perform cross-validation----------------------------------------------
RFWHITEpartitionedModel = ...
    crossval(RFWHITEtrainedClassifier.ClassificationEnsemble, 'KFold', 10);
% ----------------------------------Compute validation predictions---------------------------------------
[RFWHITEvalidationPredictions, RFWHITEvalidationScores] = ...
    kfoldPredict(RFWHITEpartitionedModel);
% -------------------------------------Compute validation accuracy-------------------------------------
aRFWHITEvalidationAccuracy_rf = 1 - ...
    kfoldLoss(RFWHITEpartitionedModel, 'LossFun', 'ClassifError');
aRFWHITEimportance_randomforest=. ...
    predictorImportance(RFWHITEclassificationEnsembleRF);
% ------------------------NOW DO FEMALE ONLY RANDOM FOREST CLASSIFIER--------------
% -------------------------------------Train FEMALE RF CLASSIFIER------------------------------------
```

```
RFNONWHITEclassificationEnsembleRF = fitcensemble(...
    NONWHITEpredictors, ...
    NONWHITEresponse, ...
    'Learners', template, ...
    'Method', 'Bag', ...
    'NumLearningCycles', 30, ...
    'ClassNames', [0; 1]);
% -----------------------------Create the result struct with predict function------------------------------
RFNONWHITEpredictorExtractionFcn = @(t) t(:, COMMONpredictorNames);
RFNONWHITEensemblePredictFcn = ...
    @(x) predict(RFNONWHITEclassificationEnsembleRF, x);
RFNONWHITEtrainedClassifier.predictFcn = ...
    @(x) RFNONWHITEensemblePredictFcn(RFNONWHITEpredictorExtractionFcn(x));
% --------------------------------Add additional fields to the result struct--------------------------------
RFNONWHITEtrainedClassifier.RequiredVariables = COMMONpredictorNames;
RFNONWHITEtrainedClassifier.ClassificationEnsemble = ...
    RFNONWHITEclassificationEnsembleRF;
% ----------------------------------------Perform cross-validation------------------------------------------
RFNONWHITEpartitionedModel = ...
    crossval(RFNONWHITEtrainedClassifier.ClassificationEnsemble, 'KFold', 10);
% -------------------------------------Compute validation predictions---------------------------------------
[RFNONWHITEvalidationPredictions, RFNONWHITEvalidationScores] = ...
    kfoldPredict(RFNONWHITEpartitionedModel);
% --------------------------------------Compute validation accuracy-----------------------------------------
aRFNONWHITEvalidationAccuracy_rf = 1 - ...
    kfoldLoss(RFNONWHITEpartitionedModel, 'LossFun', 'ClassifError');
aRFNONWHITEimportance_randomforest=...
    predictorImportance(RFNONWHITEclassificationEnsembleRF);
%--------------------------------------- Extract coeficient estimates--------------------------------------
coefRFBoth = fitcensemble(...
    BOTHpredictors, ...
    BOTHresponse, ...
    'Learners', template, ...
    'Learners', coef, ...
    'Method', 'Bag', ...
    'NumLearningCycles', 30, ...
    'ClassNames', [0; 1]);
coefRFWHITE = fitcensemble(...
    WHITEpredictors, ...
    WHITEresponse, ...
    'Learners', template, ...
    'Learners', coef, ...
    'Method', 'Bag', ...
    'NumLearningCycles', 30, ...
    'ClassNames', [0; 1]);
coefRFNONWHITE = fitcensemble(...
    NONWHITEpredictors, ...
    NONWHITEresponse, ...
    'Learners', template, ...
    'Learners', coef, ...
    'Method', 'Bag', ...
    'NumLearningCycles', 30, ...
    'ClassNames', [0; 1]);
```

```
%-------------------------------------------------------------------------------------------------------------
%                          NOW INTO CLASSIFICATION TREE MODEL
%-------------------------------------------------------------------------------------------------------------
%  ------------------------------TRAIN THE DECISION TREE FOR BOTH-----------------------------------
DTBOTHclassificationTree = fitctree(...
    BOTHpredictors, ...
    BOTHresponse, ...
    'SplitCriterion', 'gdi', ...
    'MaxNumSplits', 100, ...
    'Surrogate', 'off', ...
    'ClassNames', [0; 1]);
% ----------------------------------Create the result struct with predict function----------------------------------
DTBOTHpredictorExtractionFcn = @(t) t(:, COMMONpredictorNames);
DTBOTHtreePredictFcn = @(x) predict(DTBOTHclassificationTree, x);
DTBOTHtrainedClassifier.predictFcn = ...
    @(x) DTBOTHtreePredictFcn(DTBOTHpredictorExtractionFcn(x));
% ----------------------------------Add additional fields to the result struct----------------------------------
DTBOTHtrainedClassifier.RequiredVariables = COMMONpredictorNames;
DTBOTHtrainedClassifier.ClassificationTree = DTBOTHclassificationTree;
% --------------------------------------------Perform cross-validation--------------------------------------------
DTBOTHpartitionedModel = ...
    crossval(DTBOTHtrainedClassifier.ClassificationTree, 'KFold', 10);
% ----------------------------------Compute validation predictions--------------------------------------------
[DTBOTHvalidationPredictions, DTBOTHvalidationScores] = ...
    kfoldPredict(DTBOTHpartitionedModel);
% ----------------------------------Compute validation accuracy--------------------------------------------
aDTBOTHvalidationAccuracy_ctree = 1 - ...
    kfoldLoss(DTBOTHpartitionedModel, 'LossFun', 'ClassifError');
aDTBOTHimportance_classtree=predictorImportance(DTBOTHclassificationTree);
% ------------------------------ TRAIN THE DECISION TREE FOR MALE-----------------------------------
DTWHITEclassificationTree = fitctree(...
    WHITEpredictors, ...
    WHITEresponse, ...
    'SplitCriterion', 'gdi', ...
    'MaxNumSplits', 100, ...
    'Surrogate', 'off', ...
    'ClassNames', [0; 1]);
% ----------------------------------Create the result struct with predict function----------------------------------
DTWHITEpredictorExtractionFcn = @(t) t(:, COMMONpredictorNames);
DTWHITEtreePredictFcn = @(x) predict(DTWHITEclassificationTree, x);
DTWHITEtrainedClassifier.predictFcn = ...
    @(x) DTWHITEtreePredictFcn(DTWHITEpredictorExtractionFcn(x));
% ----------------------------------Add additional fields to the result struct----------------------------------
DTWHITEtrainedClassifier.RequiredVariables = COMMONpredictorNames;
DTWHITEtrainedClassifier.ClassificationTree = DTWHITEclassificationTree;
% --------------------------------------Perform cross-validation--------------------------------------------
DTWHITEpartitionedModel = ...
    crossval(DTWHITEtrainedClassifier.ClassificationTree, 'KFold', 10);
% ----------------------------------Compute validation predictions--------------------------------------------
[DTWHITEvalidationPredictions, DTWHITEvalidationScores] = ...
    kfoldPredict(DTWHITEpartitionedModel);
% ----------------------------------Compute validation accuracy--------------------------------------------
aDTWHITEvalidationAccuracy_ctree = 1 - ...
```

```
    kfoldLoss(DTWHITEpartitionedModel, 'LossFun', 'ClassifError');
aDTWHITEimportance_classtree=predictorImportance(DTWHITEclassificationTree);
% ------------------------TRAIN THE DECISION TREE FOR FEMALE-----------------------------------
DTNONWHITEclassificationTree = fitctree(...
    NONWHITEpredictors, ...
    NONWHITEresponse, ...
    'SplitCriterion', 'gdi', ...
    'MaxNumSplits', 100, ...
    'Surrogate', 'off', ...
    'ClassNames', [0; 1]);
% ---------------------------Create the result struct with predict function-----------------------------------
DTNONWHITEpredictorExtractionFcn = @(t) t(:, COMMONpredictorNames);
DTNONWHITEtreePredictFcn = @(x) predict(DTNONWHITEclassificationTree, x);
DTNONWHITEtrainedClassifier.predictFcn = ...
    @(x) DTNONWHITEtreePredictFcn(DTNONWHITEpredictorExtractionFcn(x));
% -------------------------------Add additional fields to the result struct-----------------------------------
DTNONWHITEtrainedClassifier.RequiredVariables = COMMONpredictorNames;
DTNONWHITEtrainedClassifier.ClassificationTree = DTNONWHITEclassificationTree;
% ----------------------------------------Perform cross-validation-----------------------------------------
DTNONWHITEpartitionedModel = ...
    crossval(DTNONWHITEtrainedClassifier.ClassificationTree, 'KFold', 10);
% ---------------------------------------Compute validation predictions--------------------------------------
[DTNONWHITEvalidationPredictions, DTNONWHITEvalidationScores] = ...
    kfoldPredict(DTNONWHITEpartitionedModel);
% ----------------------------------------Compute validation accuracy-----------------------------------------
aDTNONWHITEvalidationAccuracy_ctree = 1 - ...
    kfoldLoss(DTNONWHITEpartitionedModel, 'LossFun', 'ClassifError');
aDTNONWHITEimportance_classtree= ...
    predictorImportance(DTNONWHITEclassificationTree);
```

*--

14.4. PSID Compilation Program for Chapter 2

```
*           This script is used to extract, collate and create an global analytical dataset
*           From the 1994-2013 Family and Individual PSID Files.
*           The script is expandable but requires the user to have identified the
*           appropriate relationship between variables across the years of interest.
*           For example, in 1994 variable A had ID "B" and in 1995, variable A had ID "C"
*           Thus the script need to rename all variables, for they all change names year over year
*           Modification is thus likely to be tedius and, albiet intuitively laid out, all changes
*           Should be meticoulsy telegraphed across relevant sections.
*           Script By Glen McDermott
*            Department of Economics, University of New Mexico
*           Permanent email: GlenMcDermott1969@gmail.com
*           Phone: 207.902.0354
*----------------------------------------------------------------------------------------------------------------
*--------------------------------------------------------Platform SETUP-----------------------------------------
quietly {
 clear
 clear matrix
 clear mata
 set more off
```

```
  capture log close
  set matsize 10000
  set maxvar 10000
 * set log file
    log using c:\stata\dis_bc1.smcl,replace
 * working directory
 cd "C:\Users\Hay Handsome\Documents\LIBRARIES\University\Dissertation\psid_data\"
 *  temporary storage      *
 tempfile FAM94 FAM95 FAM96 FAM97 FAM99 FAM01 FAM03 FAM05 FAM07 FAM09 FAM11
 FAM13 1999SVAR 2001SVAR 2003SVAR 2005SVAR 2007SVAR
 }
 *-----------------------------------------------CHANGE ORDERS-----------------------------------------------
 quietly {
 * because the dataset is so badly unbalanced, I left truncate the dataset with individuals who
 * were observed in 1997.  Right truncation is allowed to grow through attrition.  Because right side
 * attrition can be caused by death or departure, it may become important to control for attrition
 *
 * other outcome variables that might be interesting - use nights in hospital HNIGHTS - use second
 * heart attacks HHEART2
 *
 * approx. line 623, deduce marital status change for wife given marital status change for head
 * approx. line 780, didn't collect wife variables for dividend, interest, trust fund, income
 *
 * Because I have the age of diagnosis for the chronic disease, I can tabulate when a diagnosis was
 * made, either before the panel, or during the panel, rather than having all diagnoses appear in the
 * last 5 observations.  This might clear up the problem with AGE...or age is actually beneficial
 * disease starts earlier....if you get past the window, you are more likely to stay healthy...something
 * like that.
 *-------------------------------------------CHANGED SUCCESSFULLY-------------------------------------------
 * Around line 5390, I drop individuals who don't report age, but the way it is written it will drop
 * an observation if age is not included, I need to check each individual to see if age is ever included
 * if so, keep the observation and impute the missing age.  - CHECK AGE BY FIRST YEAR AND
 * UNIQUEID, DROPS
 * THE WHOLE PERSON, NOT JUST THE OBSERVATIONS WHICH ARE UNDER AGE
 * construct BMI index and/or repair overweight (OW) measure. eg define means by m/f
 * as it stands few women will be underweight - DONE 1/28
 * Around line 5400, I drop if income is <1 in any given period, this may put holes in my already
 * sparse data, it might be better to identify individuals where income drops below 0 but only drop the
 * individual if income is never > 0  - SINCE INCOME CANNOT BE NEGATIVE, I ASSUME
 * THAT INCOME < 0 IS AR
 * REPORTING ERROR, AS SUCH I ADJUST ALL INCOME OF 0 OR <0 TO $1 TO
 * FACILITATE GENERATING A VALID LOG
 **************************************************************************
 }
 *---------------------SUPPLEMENTARY DATASETS USED IN THIS ANALYSIS---------------------
 quietly {
 insheet using "C:\stata\dissertation data\OCCU_LABOR.csv"
 rename cor_occu COR_OCCU
 save "C:\stata\dissertation data\OCCU_LABOR.dta", replace
 clear
 }
 *----------------------------------------------------------------------------------------------------------------
 *  occupation groups - https://www.census.gov/people/eeotabulation/documentation/jobgroups.pd
```

```
quietly {
 insheet using "C:\stata\dissertation data\OCCU_GROUPS.csv"
 rename cor_occu COR_OCCU
 save "C:\stata\dissertation data\OCCU_GROUPS.dta", replace
 clear
 }
*--------------------------Import Primary PSID datasets organize collate and merge -----------------------
*
*------------------------------- Begin "Individual" File Processing --------------------------------------------
*            From the Individual cross year file we need, the: 1968 family ID, Individual ID, each
*            years interview id, and whether the individual is the head or what
*            These are the important variables from 94 forward from the INDIVIDUAL DATASET
quietly {
 use ER30001 ER30002 ER31996 ER31997 ER32000 ER32004 ER33101 ER33201 ER33301       ///
ER33401 ER33501 ER33601  ER33701 ER33801 ER33901 ER34001 ER34101 ER34201           ///
ER34202 ER33103 ER33203  ER33303 ER33403 ER33503 ER33603 ER33703 ER33803           ///
ER33903 ER34003 ER34103 ER34203 ER33111 ER33211 ER33269 ER33268 ER33311            ///
ER33411 ER33512 ER33612 ER33712 ER33813 ER33913 ER34016 ER34116 ER34216            ///
ER33430 ER33546 ER33637 ER33740 ER33848 ER33950 ER34045 ER34154 ER34268            ///
ER33102 ER33202 ER33302 ER33402 ER33502 ER33602 ER33702 ER33802 ER33902            ///
ER34002 ER34102 ER34202 ///
  using crossyear_ind.dta, clear // last row is a set of sequence numbers
}
*-------------------------------create user friendly names ----------------------------------------------------
quietly{
 rename (ER33102 ER33202 ER33302 ER33402 ER33502 ER33602 ER33702 ER33802 ER33902///
         ER34002 ER34102 ER34202) ///
   (SEQ1994 SEQ1995 SEQ1996 SEQ1997 SEQ1999 SEQ2001 SEQ2003 SEQ2005 SEQ2007    ///
         SEQ2009 SEQ2011 SEQ2013)
 gen seqlink2013CRSS = SEQ2013
rename (ER31996 ER31997) (stratum_variable cluster_variable)
rename (ER33430 ER33546 ER33637 ER33740 ER33848 ER33950 ER34045 ER34154 ER34268) ///
  (IND_WT1997 IND_WT1999 IND_WT2001 IND_WT2003 IND_WT2005 IND_WT2007       ///
         IND_WT2009 IND_WT2011 IND_WT2013)
 gen INDWT2013=IND_WT2013              // in case a single weight is preferable for an individual
//             Dead Section
 rename (ER32004) (DEAD)
}
// Rename family and individual id's
 rename (ER30001 ER30002) (famid indid)
 rename (ER32000) (MALE)
// Alter gender to reflect FEMALE==0 MALE==1
quietly {
 replace MALE=0 if MALE==2  // 0 = female turned to dummy variable [0,1]
 drop if MALE>2   // gets rid of one ambigious designation [1 observation]
}
// ------------------Next rename the yearly interview number with a user friendly names (UFN)-------------
quietly{
 rename (ER33101  ER33201  ER33301  ER33401  ER33501  ER33601  ER33701  ER33801
  ER33901  ER34001  ER34101  ER34201) ///
 (intid1994 intid1995 intid1996 intid1997 intid1999 intid2001 intid2003 intid2005 ///
  intid2007 intid2009 intid2011 intid2013)
}
```

```
// -------------------link variable for the Childhood Retrospective Circumstances Survey-------------------
quietly{
* Rename yearly head of household variables  UFN
 rename (ER33103  ER33203  ER33303  ER33403  ER33503  ER33603  ER33703  ER33803  ER33903 ///
 ER34003  ER34103  ER34203) ///
        (head1994 head1995 head1996 head1997 head1999 head2001 head2003 head2005 head2007 ///
  head2009 head2011 head2013)

* -------------------Rename employment Status at interview from individual file UFN ---------------------

 rename (ER33111  ER33211  ER33311  ER33411  ER33512  ER33612  ER33712 ///
 ER33813  ER33913  ER34016  ER34116  ER34216) ///
        (EMP1S1994 EMP1S1995 EMP1S1996 EMP1S1997 EMP1S1999 EMP1S2001 ///
EMP1S2003 EMP1S2005 EMP1S2007 EMP1S2009 EMP1S2011 EMP1S2013)
 }
* ------------create a unique id using the standard PSID format family id *1000 + individual id-----------
 gen uniqueid=famid*1000+indid
*                  Store base individual dataset
 save .\Dis_dataset\individual_variables, replace
*------------------- --------------------end "Individual" File Processing ------------------------------------
clear
*--------------Begin - Add required SXXX variables to appropriate family datasets 99 - 2007- ------------
* Add missing SXXX variables to the appropriate Family Datasets 99 - 2007
// NOTE: N_svar.dta and s411a.dta add new "s" variables to existing work,
// this selection ofcherry picked variables from the PSID website was
//constructed and imported after the intial program was developed
quietly {
 use allSVAR.dta
 keep ER13002 S417 S419 S416 S416A S417A S411 S411A S417 S418 S402

* -------------------------------------1999 variables of interest -----------------------------------------------
 sort ER13002
 save "1999SVAR", replace
 use fam1999er.dta
 sort ER13002
 merge m:m ER13002 using 1999SVAR, keep(matched)
 drop _merge
 save fam1999er_a.dta, replace
 use allSVAR.dta
 keep ER17002 S517 S519 S516 S516A S517A S511 S511A S518 S502
*-------------------------------------2001 variables of interest -----------------------------------------------
 sort ER17002
 save "2001SVAR", replace
 use fam2001er.dta
 sort ER17002
 merge m:m ER17002 using 2001SVAR, keep(matched)
 drop _merge
 save fam2001er_a.dta, replace
 clear
 use allSVAR.dta
 keep ER21002 S617 S619 S616A S617A S611 S611A S616 S618 S602
*-------------------------------------2003 variables of interest -----------------------------------------------
 sort ER21002
```

```
 save "2003SVAR", replace
 use fam2003er.dta
 sort ER21002
 merge m:m ER21002 using 2003SVAR, keep(matched)
 drop _merge
 save fam2003er_a.dta, replace
 clear
 use allSVAR.dta
 keep ER25002 S717 S719 S716A S717A S711 S711A S718 S702 S716
 *----------------------------------------2005 variables of interest --------------------------------------------------
 sort ER25002
 save "2005SVAR", replace
 use fam2005er.dta
 sort ER25002
 merge m:m ER25002 using 2005SVAR, keep(matched)
 drop _merge
 save fam2005er_a.dta, replace
 clear
use allSVAR.dta
 keep ER36002 S817 S819 S818 S816A S817A S811 S811A S802 S816
 *--------------------------------------------2007 variables of interest -------------------------------------------
 sort ER36002
 save "2007SVAR", replace
 use fam2007er.dta
 sort ER36002
 merge m:m ER36002 using 2007SVAR, keep(matched)
 /*drop _merge */
 save fam2007er_a.dta, replace
 }
* -------------------------delete temporary datasets created in this step -----------------------------
quietly{
 erase 2007SVAR.dta
 erase 2005SVAR.dta
 erase 2003SVAR.dta
 erase 2001SVAR.dta
 erase 1999SVAR.dta
 }
* --------------------Collect relevant variables, build a wide dataset of 94 - 2013 variables--------------
* …………………………………..1994's FAMILY file variables…………………………………..
quietly {
use ER2002 ER3853 ER2007 ER2005A ER4159B ER2032 ER2008 ER4158 ER4019 ER2069      ///
ER2128 ER2129 ER2130 ER2119 ER2120 ER2121 ER2122 ER2123 ER2124 ER2125 ER2126      ///
 ER2127 ER4153 ER4155 ER3219 ER3218 ER3234 ER3233 ER3249 ER3248 ER4159 ER2563      ///
 ER3858 ER2613 ER2614 ER2615 ER2616 ER2617 ER2618 ER2619 ER2620 ER2621 ER2622      ///
ER2623 ER2624 ER2006 ER2010 ER3855 ER3860 ER2234 ER2256 ER2278 ER2300 ER2479      ///
ER2501 ER2523 ER2545 ER2728 ER2750 ER2772 ER2794 ER2972 ER2994 ER3016 ER3038      ///
 ER2235 ER2257 ER2279 ER2301 ER2480 ER2502 ER2524 ER2546 ER2729 ER2751 ER2773      ///
ER2795 ER2973 ER2995 ER3017 ER3039 ER2249 ER2271 ER2293 ER2315 ER2494 ER2516      ///
ER2538 ER2560 ER2743 ER2765 ER2787 ER2809 ER2987 ER3009 ER3031 ER3053 ER2250      ///
ER2272 ER2294 ER2316 ER2495 ER2517 ER2539 ER2561 ER2744 ER2766 ER2788 ER2810      ///
ER2988 ER3010 ER3032 ER3054 ///
 using fam1994er.dta
 rename ER2002 intid1994
```

```
   sort intid1994
   save "FAM94", replace
    merge 1:m intid1994 using .\Dis_dataset\individual_variables, keep(using matched)
   sort famid indid
   drop _merge
   save FAMIND94, replace
}
*……………………………………1995's family file variables ……………………………………
quietly {
//                         number in family unit
//[94]ER2006 [95]ER5005 [96]ER7005 [97]ER10008 [99]ER13009 [01]ER17012
//[03]ER21016 [05]ER25016 [07]ER36016 [09]ER42016 [11]ER47316 [13]ER53016
//                         number of children in family unit
// [94]ER2010 [95]ER5009 [96]ER7009 [97]ER10012 [99]ER13013 [01]ER17016
//[03]ER21020 [05]ER25020 [07]ER36020 [09]ER42020 [11]ER47320 [13]ER53020
//                         work disability head
// [94]ER3855 [95]ER6725 [96]ER8971 [97]ER11725 [99]ER15450 [01]ER19615
//[03]ER23015 [05]ER26996 [07]ER38207 [09]ER44180 [11]ER49499 [13]ER55249
//                         work disability wife
//[94]ER3860 [95]ER6730 [96]ER8976 [97]ER11729 [99]ER15558 [01]ER19723
//[03]ER23142 [05]ER27119 [07]ER39304 [09]ER45277 [11]ER50617 [13]ER56365
//                         health insurance - coverage last two year...anyone covered including govt prog
//[99]ER15779 [01]ER19840 [03]ER23277 [05]ER27237 [07]ER40409 [09]ER46382
//[11]ER51743
}
quietly {
use ER5002 ER6723 ER5006 ER5004A ER6999B ER5031 ER5007 ER6998 ER6859 ER5068      ///
 ER5127 ER5128 ER5129 ER5118 ER5119 ER5120 ER5121 ER5122 ER5123 ER5124 ER5125    ///
ER5126 ER6993 ER6995 ER6219 ER6218 ER6234 ER6233 ER6249 ER6248 ER6999 ER5562     ///
ER6728 ER5612 ER5613 ER5614 ER5615 ER5616 ER5617 ER5618 ER5619 ER5620 ER5621     ///
ER5622 ER5623 ER5005 ER5009 ER6725 ER6730 ER5233 ER5255 ER5277 ER5299 ER5478     ///
ER5500 ER5522 ER5544 ER5727 ER5749 ER5771 ER5793 ER5971 ER5993 ER6015 ER6037     ///
 ER5234 ER5256 ER5278 ER5300 ER5479 ER5501 ER5523 ER5545 ///
 ER5728 ER5750 ER5772 ER5794 ER5972 ER5994 ER6016 ER6038 ///
 ER5248 ER5270 ER5292 ER5314 ER5493 ER5515 ER5537 ER5559 ///
 ER5742 ER5764 ER5786 ER5808 ER5986 ER6008 ER6030 ER6052 ///
 ER5249 ER5271 ER5293 ER5315 ER5494 ER5516 ER5538 ER5560 ///
 ER5743 ER5765 ER5787 ER5809 ER5987 ER6009 ER6031 ER6053 ///
 using fam1995er.dta
 rename ER5002 intid1995
 sort intid1995
 save "FAM95", replace
 merge 1:m intid1995 using .\Dis_dataset\individual_variables, ///
 keep(using matched)
 sort famid indid
 drop _merge
 save FAMIND95, replace
}
*…………………………………..1996's family file variables…………………………………….
quietly {
use ER7002 ER8969 ER7006 ER7004A ER9250B ER7031 ER7007 ER9249 ER9110 ER7164 ///
 ER7223 ER7224 ER7225 ER7214 ER7215 ER7216 ER7217 ER7218 ER7219 ER7220 ///
 ER7221 ER7222 ER9244 ER9246 ER8841 ER8842 ER8843 ER8844 ER8845 ER8846 ER8336 ///
```

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ER8335 ER8351 ER8350 ER8366 ER8365 ER9250 ER7658 ER8974 ER7708 ER7709 ///
ER7710 ER7711 ER7712 ER7713 ER7714 ER7715 ER7716 ER7717 ER7718 ER7719 ///
ER7005 ER7009 ER8971 ER8976 ///
ER7329 ER7351 ER7373 ER7395 ER7574 ER7596 ER7618 ER7640 ER7823 ///
ER7845 ER7867 ER7889 ER8068 ER8090 ER8112 ER8134 ER7330 ER7352 ///
ER7374 ER7396 ER7575 ER7597 ER7619 ER7641 ER7824 ER7846 ER7868 ///
ER7890 ER8069 ER8091 ER8113 ER8135 ER7344 ER7366 ER7388 ER7410 ///
ER7589 ER7611 ER7633 ER7655 ER7838 ER7860 ER7882 ER7904 ER8083 ///
ER8105 ER8127 ER8149 ER7345 ER7367 ER7389 ER7411 ER7590 ER7612 ///
ER7634 ER7656 ER7839 ER7861 ER7883 ER7905 ER8084 ER8106 ER8128 ///
ER8150 ///
 using fam1996er.dta
 rename ER7002 intid1996
 sort intid1996
 save "FAM96", replace
 merge 1:m intid1996 using .\Dis_dataset\individual_variables, keep(using matched)
 sort famid indid
 drop _merge
 save FAMIND96, replace
 }
*………………………………….1997's family file variables ………………………………………
quietly {
use ER10002 ER10009 ER10004A ER12165 ER12223B ER10035 ER10010 ER12222 ER10011 ///
 ER12087 ER10081 ER10147 ER10148 ER10149 ER10138 ER10139 ER10140 ER10141 ///
 ER10142 ER10143 ER10144 ER10145 ER10146 ER12079 ER12220 ER11229 ER11228 ER11244 ///
 ER11243 ER11259 ER11258 ER11723 ER11760 ER11848 ER12223 ER10563 ER11727 ///
 ER10620 ER10621 ER10622 ER10623 ER10624 ER10625 ER10626 ER10627 ER10628 ///
 ER10629 ER10630 ER10631 ER10008 ER10012 ER11725 ER11729 ///
 ER10241 ER10264 ER10286 ER10308 ER10480 ER10502 ER10524 ER10546 ER10723 ///
 ER10746 ER10768 ER10790 ER10962 ER10984 ER11006 ER11028 ER10242 ER10265 ///
 ER10287 ER10309 ER10481 ER10503 ER10525 ER10547 ER10724 ER10747 ER10769 ///
 ER10791 ER10963 ER10985 ER11007 ER11029 ER10256 ER10279 ER10301 ER10323 ///
 ER10495 ER10517 ER10539 ER10561 ER10738 ER10761 ER10783 ER10805 ER10977 ///
 ER10999 ER11021 ER11043 ER10257 ER10280 ER10302 ER10324 ER10496 ER10518 ///
 ER10540 ER10562 ER10739 ER10762 ER10784 ER10806 ER10978 ER11000 ER11022 ///
 ER11044 ER12084 ///
 using fam1997er.dta
 rename ER10002 intid1997
 sort intid1997
 save "FAM97", replace
 merge 1:m intid1997 using .\Dis_dataset\individual_variables, keep(using matched)
 sort famid indid
 drop _merge
 save FAMIND97, replace
 }
*………………………………………… 1999's family file variables …………………………………………
quietly {
use ER13002 ER15020 S419 ER15447 ER15031 ER15553 ER15554 ER15552 ER13010 ER13012 ///
 ER13008A ER15932 ER16424 ER13040 ER13011 ER16516 ER13261 ER13205 ///
 ER13274 ER13275 ER13276 ER13265 ER13266 ER13267 ER13268 ER13269 ER13270 ///
 ER13271 ER13272 ER13273 ER16462 ER16427 ER16429 ER14495 ER14494 ER14510 ///
 ER14509 ER14525 ER14524 S417 ER15928 ER15836 ER15661 ER15662 ER15660 ///
 ER16517 ER13717 ER15555 ER13777 ER13778 ER13779 ER13780 ER13781 ER13782 ///
```

```
ER13783 ER13784 ER13785 ER13786 ER13787 ER13788 ER13009 ER13013 ER15450 ///
ER15558 ER15779 ///
ER14300 ER14301 ER15787 ER15793 S417 S416A S416 S417A S411 S411A  ///
ER15541 ER15649 ER15539 ER15647 ER16431C ///
ER15031 ER15111 ER15100 ER15543 ER15651 ER16454 S418 S402 ///
ER15500 ER15608 ER15506 ER15614 ER15458 ER15566 ER15470 ER15578 ER15464 ///
ER15572 ER15482 ER15590 ER15488 ER15596 ER15476 ER15584 ER15452 ER15560 ///
ER13374 ER13399 ER13423 ER13447 ER13627 ER13651 ER13675 ER13699 ER13886 ///
ER13911 ER13935 ER13959 ER14139 ER14163 ER14187 ER14211 ER13375 ER13400 ///
ER13424 ER13448 ER13628 ER13652 ER13676 ER13700 ER13887 ER13912 ER13936 ///
ER13960 ER14140 ER14164 ER14188 ER14212 ER13389 ER13414 ER13438 ER13462 ///
ER13642 ER13666 ER13690 ER13714 ER13901 ER13926 ER13950 ER13974 ER14154 ///
ER14178 ER14202 ER14226 ER13390 ER13415 ER13439 ER13463 ER13643 ER13667 ///
ER13691 ER13715 ER13902 ER13927 ER13951 ER13975 ER14155 ER14179 ER14203 ///
ER14227 ER16518 ///
 using fam1999er_a.dta
rename ER13002 intid1999
sort intid1999
save "FAM99", replace
merge 1:m intid1999 using .\Dis_dataset\individual_variables, keep(using matched)
sort famid indid
drop _merge
save FAMIND99, replace
 }
*……………………………………… 2001's family file variables……………………………………
quietly {
use ER17002 ER19216 S519 ER19612 ER19227 ER19718 ER19719 ER19717 ER17013 ///
 ER17015 ER17007 ///
 ER19993 ER20370 ER17043 ER17014 ER20457 ER17272 ER17216 ER17285 ///
 ER17286 ER17287 ER17276 ER17277 ER17278 ER17279 ER17280 ER17281 ER17282 ///
 ER17283 ER17284 ER20456 ER20373 ER20375 ER18651 ER18650 ER18667 ER18666 ///
 ER18683 ER18682 S517 ER19989 ER19897 ER19826 ER19827 ER19825 ER20458 ER17786 ///
 ER19720 ER17846 ER17847 ER17848 ER17849 ER17850 ER17851 ER17852 ER17853 ///
 ER17854 ER17855 ER17856 ER17857 ER17012 ER17016 ER19615 ER19723 ER19840 ///
 ER18438 ER18439 ER19848 S516A S516 S517A S511 S511A ///
 ER19854 ER19706 ER19814 ER19704 ER19812 ER20377C ///
 ER19227 ER19307 ER19296 ER19708 ER19816 ER20450 S518 S502 ///
 ER19665 ER19773 ER19671 ER19779 ER19623 ER19731 ER19635 ER19743 ///
 ER19629 ER19737 ER19647 ER19755 ER19653 ER19761 ER19641 ER19749 ///
 ER19617 ER19725 ///
 ER17408 ER17435 ER17460A ER17486 ER17690 ER17716 ER17742 ER17768 ER17978 ///
 ER18005 ER18031 ER18057 ER18261 ER18287 ER18313 ER18339 ER17409 ER17436 ///
 ER17461 ER17487 ER17691 ER17717 ER17743 ER17769 ER17979 ER18006 ER18032 ///
 ER18058 ER18262 ER18288 ER18314 ER18340 ER17423 ER17450 ER17475 ER17501 ///
 ER17705 ER17731 ER17757 ER17783 ER17993 ER18020 ER18046 ER18072 ER18276 ///
 ER18302 ER18328 ER18354 ER17424 ER17451 ER17476 ER17502 ER17706 ER17732 ///
 ER17758 ER17784 ER17994 ER18021 ER18047 ER18073 ER18277 ER18303 ER18329 ///
ER18355 ER20394 ///
 using fam2001er_a.dta
rename ER17002 intid2001
sort intid2001
save "FAM01", replace
merge 1:m intid2001 using .\Dis_dataset\individual_variables, ///
```

```
 keep(using matched)
 sort famid indid
 drop _merge
 save FAMIND01, replace
 }
*………………………………2003's family file variables …………………………………..
quietly {
use ER21002 ER22596 S619 ER23009 ER22622 ER23133 ER23134 ER23132 ER21017 ///
 ER21019 ER21007 ER23430 ER24151 ER21042 ER21018 ER24148 ER21145 ER21123 ///
ER21133 ER21134 ER21135 ER21136 ER21137 ER21138 ER21139 ER21140 ER21141 ///
ER21142 ER21143 ER21144 ER24099 ER24140 ER24142 ER23090 ER22021 ER22020 //
ER22038 ER22037 ER22055 ER22054 S617 ER23426 ER23334 ER23260 ER23261 ///
ER23259 ER24149 ER21373 ER23136 ER21383 ER21384 ER21385 ER21386 ER21387 ///
ER21388 ER21389 ER21390 ER21391 ER21392 ER21393 ER21394 ER23217 ER21016 ///
ER21020 ER23015 ER23142 ER23277 ER21703 ER21704  S616A S616 S617A S611 S611A ///
 ER23285 ER23291 ER23120 ER23247 ER23118 ER23245 ER24144A ER22622 ER22702 ///
ER22691 ER23123 ER23250 ER24101 S618 S602 ER23065 ER23192 ER23071 ER23198 ///
ER23023 ER23150 ER23035 ER23162 ER23029 ER23156 ER23047 ER23174 ER23053 ///
ER23180 ER23041 ER23168 ER23017 ER23144 ER21281 ER21531 ER21189 ER21190 ///
ER21191 ER21192 ER21193 ER21194 ER21195 ER21196 ER21197 ER21198 ER21199 ///
ER21200 ER21439 ER21440 ER21441 ER21442 ER21443 ER21444 ER21445 ER21446 ///
ER21447 ER21448 ER21449 ER21450 ER21221 ER21222 ER21223 ER21224 ER21225 ///
ER21226 ER21227 ER21228 ER21229 ER21230 ER21231 ER21232 ER21471 ER21472 ///
 ER21473 ER21474 ER21475 ER21476 ER21477 ER21478 ER21479 ER21480 ER21481 ///
 ER21482 ER21253 ER21254 ER21255 ER21256 ER21257 ER21258 ER21259 ER21260 ///
ER21261 ER21262 ER21263 ER21264 ER21503 ER21504 ER21505 ER21506 ER21507 ///
ER21508 ER21509 ER21510 ER21511 ER21512 ER21513 ER21514 ER24179 ///
 using fam2003er_a.dta
 rename ER21002 intid2003
 sort intid2003
 save "FAM03", replace
 merge 1:m intid2003 using .\Dis_dataset\individual_variables, ///
 keep(using matched)
 sort famid indid
 drop _merge
 save FAMIND03, replace
 }
*…………………………………….2005's family file variables…………………………………………
quietly {
use ER25002 ER26577 S719 ER27015 ER27011 ER27039 ER27023 ER27004 ER27003 ///
 ER27007 ER27019 ER27053 ER26990 ER26603 ER27110 ER27111 ER27109 ER25017 ///
ER25007 ER27397 ER28050 ER25028 ER25018 ER25019 ER28047 ER25127 ER25104 ///
ER25115 ER25116 ER25117 ER25118 ER25119 ER25120 ER25121 ER25122 ER25123 ///
ER25124 ER25125 ER25126 ER28037 ER28039 ER28041 ER27057 ER26002 ER26001 ///
ER26019 ER26018 ER26036 ER26035 S717 ER27122 ER27126 ER27130 ER27134 ///
ER27142 ER27146 ER27162 ER27176 ER27127 ER27138 ER27393 ER27297 ER27233 ///
ER27234 ER27232 ER28048 ER25362 ER27113 ER25373 ER25374 ER25375 ER25376 ///
ER25377 ER25378 ER25379 ER25380 ER25381 ER25382 ER25383 ER25384 ER27180 ///
ER25016 ER25020 ER26996 ER27119 ER27237 ER25705 ER25706 ER25828 ///
ER25829  ER25823 ER25824 ER27245 ER27251  S716A S716 S717A  S711 S711A ER27092 ///
ER27215 ER27094 ER27217 ER28043A ER26603 ER26683 ER26672 ER27098 ER27221 ///
ER28002 S718 S702 ER27026 ER27149 ER27014 ER27137 ER27010 ER27133 ER27038 ///
ER27161 ER27022 ER27145 ER27002 ER27125 ER27006 ER27129 ER27018 ER27141 ///
```

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ER26998 ER27121 ER25270 ER25528 ER25178 ER25179 ER25180 ER25181 ER25182 ///
ER25183 ER25184 ER25185 ER25186 ER25187 ER25188 ER25189 ER25436 ER25437 ///
ER25438 ER25439 ER25440 ER25441 ER25442 ER25443 ER25444 ER25445 ER25446 ///
ER25447 ER25210 ER25211 ER25212 ER25213 ER25214 ER25215 ER25216 ER25217 ///
ER25218 ER25219 ER25220 ER25221 ER25468 ER25469 ER25470 ER25471 ER25472 ///
ER25473 ER25474 ER25475 ER25476 ER25477 ER25478 ER25479 ER25242 ER25243 ///
ER25244 ER25245 ER25246 ER25247 ER25248 ER25249 ER25250 ER25251 ER25252 ///
ER25253 ER25500 ER25501 ER25502 ER25503 ER25504 ER25505 ER25506 ER25507 ///
ER25508 ER25509 ER25510 ER25511 ER28078 ///
 using fam2005er_a.dta
 rename ER25002 intid2005
 sort intid2005
 save "FAM05", replace
 merge 1:m intid2005 using .\Dis_dataset\individual_variables, ///
 keep(using matched)
 sort famid indid
 drop _merge
 save FAMIND05, replace
 }
*-------------------------------------------2007's family file variables --------------------------------------
quietly {
use ER36002 ER37595 S819 ER38226 ER38222 ER38250 ER38234 ER38215 ER38214 ER38218 ///
 ER38230 ER38264 ER38202 ER37621 ER38321 ER38322 ER38320 ER36017 ER36007 ER40569 ///
 ER41040 ER36028 ER36018 ER36019 ER41037 ER36132 ER36109 ER36120 ER36121 ER36122 ///
 ER36123 ER36124 ER36125 ER36126 ER36127 ER36128 ER36129 ER36130 ER36131 ER41027 ///
 ER41029 ER41031 ER38268 ER37020 ER37019 ER37037 ER37036 ER37054 ER37053 S817 ///
 ER39307 ER39311 ER39315 ER39319 ER39327 ER39331 ER39347 ER39361 ER39312 ER39323 ///
 ER40565 ER40472 ER39418 ER39419 ER39417 ER41038 ER36367 ER39299 ER36378 ER36379 ///
 ER36380 ER36381 ER36382 ER36383 ER36384 ER36385 ER36386 ER36387 ER36388 ER36389 ///
 ER39365 ER36016 ER36020 ER38207 ER39304 ER40409 ER36723 ER36724 ER36846 ER36847 ///
 ER36841 ER36842 ER40420 ER40426 ER38303 ER39400 ER38305 ER39402 ER41033A S816A ///
 S816 S817A S811 S811A ER37621 ER37701 ER37690 ER38309 ER39406 ER40992 S818 S802 ///
 ER38237 ER39334 ER38225 ER39322 ER38221 ER39318 ER38249 ER39346 ER38233 ER39330 ///
 ER38213 ER39310 ER38217 ER39314 ER38229 ER39326 ER38209 ER39306 ER36275 ER36533 ///
 ER36183 ER36184 ER36185 ER36186 ER36187 ER36188 ER36189 ER36190 ER36191 ER36192 ///
ER36193 ER36194 ER36441 ER36442 ER36443 ER36444 ER36445 ER36446 ER36447 ER36448 ///
ER36449 ER36450 ER36451 ER36452 ER36215 ER36216 ER36217 ER36218 ER36219 ER36220 ///
ER36221 ER36222 ER36223 ER36224 ER36225 ER36226 ER36473 ER36474 ER36475 ER36476 ///
ER36477 ER36478 ER36479 ER36480 ER36481 ER36482 ER36483 ER36484 ER36247 ER36248 ///
ER36249 ER36250 ER36251 ER36252 ER36253 ER36254 ER36255 ER36256 ER36257 ER36258 ///
ER36505 ER36506 ER36507 ER36508 ER36509 ER36510 ER36511 ER36512 ER36513 ER36514 ///
ER36515 ER36516 ER41069 ///
 using fam2007er_a.dta
 rename ER36002 intid2007
 sort intid2007
 save "FAM07", replace
 merge 1:m intid2007 using .\Dis_dataset\individual_variables, ///
 keep(using matched)
 sort famid indid
 drop _merge
 save FAMIND07, replace
 }
*-------------------------------------------2009's family file variables----------------------------------------
```

```
quietly {
use ER42002 ER43586 ER46964 ER44199 ER44195 ER44223 ER44207 ER44188 ER44187 ER44191 ///
 ER44203 ER44237 ER44175 ER43612 ER44294 ER44295 ER44293 ER42017 ER42007 ER46547 ///
 ER46984 ER42029 ER42018 ER42019 ER46981 ER42167 ER42140 ER42155 ER42156 ER42157 ///
 ER42158 ER42159 ER42160 ER42161 ER42162 ER42163 ER42164 ER42165 ER42166 ER46935 ///
 ER46972 ER46973 ER44241 ER43011 ER43010 ER43028 ER43027 ER43045 ER43044 ER46970 ///
 ER45280 ER45284 ER45288 ER45292 ER45300 ER45304 ER45320 ER45334 ER45285 ER45296 ///
 ER46543 ER46449 ER45391 ER45392 ER45390 ER46982 ER42392 ER45272 ER42407 ER42408 ///
 ER42409 ER42410 ER42411 ER42412 ER42413 ER42414 ER42415 ER42416 ER42417 ER42418 ///
 ER45338 ER42016 ER42020 ER44180 ER45277 ER46382 ER46969 ER46968 ER46971 ER46970 ///
 ER46954 ER46955 ER42729 ER42730 ER42837 ER42838 ER42832 ER42833 ER46393 ER46399 ///
 ER44276 ER45373 ER44278 ER45375 ER46975A ER43612 ER43692 ER43681 ER44282 ER45379 ///
ER46900 ER46962 ER46936 ER44210 ER45307 ER44198 ER45295 ER44194 ER45291 ER44222 ///
ER42302 ER42554 ER42216 ER42217 ER42218 ER42219 ER42220 ER42221 ER42222 ER42223 ///
 ER42224 ER42225 ER42226 ER42227 ER42468 ER42469 ER42470 ER42471 ER42472 ER42473 ///
 ER42474 ER42475 ER42476 ER42477 ER42478 ER42479 ER42246 ER42247 ER42248 ER42249 ///
 ER42250 ER42251 ER42252 ER42253 ER42254 ER42255 ER42256 ER42257 ER42498 ER42499 ///
 ER42500 ER42501 ER42502 ER42503 ER42504 ER42505 ER42506 ER42507 ER42508 ER42509 ///
 ER42276 ER42277 ER42278 ER42279 ER42280 ER42281 ER42282 ER42283 ER42284 ER42285 ///
 ER42286 ER42287 ER42528 ER42529 ER42530 ER42531 ER42532 ER42533 ER42534 ER42535 ///
ER45319 ER44206 ER45303 ER44186 ER45283 ER44190 ER45287 ER44202 ER45299 ER44182 ///
ER45279 ER42536 ER42537 ER42538 ER42539 ER47012 ///
 using fam2009er.dta
 rename ER42002 intid2009
 sort intid2009
 save "FAM09", replace
 merge 1:m intid2009 using .\Dis_dataset\individual_variables, ///
 keep(using matched)
 sort famid indid
 drop _merge
 save FAMIND09, replace
 }
*-------------------------------------------------2011's family file variables-------------------------------------------
quietly {
use ER47302 ER48911 ER52368 ER49525 ER49520 ER49555 ER49535 ER49510 ER49509 ER49515 ///
 ER49530 ER49574 ER49575 ER49494 ER48066 ER48091 ER48116 ER48128 ER48937 ER48071 ///
 ER48096 ER48945 ER49633 ER49634 ER49631 ER47317 ER47307 ER51908 ER52408 ER47329 ///
 ER47318 ER47319 ER52405 ER47479 ER47448 ER47467 ER47468 ER47469 ER47470 ER47471 ///
 ER47472 ER47473 ER47474 ER47475 ER47476 ER47477 ER47478 ER52343 ER52396 ER52397 ///
 ER50621 ER50627 ER50633 ER50638 ER50648 ER50653 ER50673 ER50693 ER50628 ER50643 ///
 ER47615 ER47872 ER47529 ER47530 ER47531 ER47532 ER47533 ER47534 ER47535 ER47536 ///
 ER47537 ER47538 ER47539 ER47540 ER47786 ER47787 ER47788 ER47789 ER47790 ER47791 ///
 ER47792 ER47793 ER47794 ER47795 ER47796 ER47797 ER47559 ER47560 ER47561 ER47562 ///
 ER47563 ER47564 ER47565 ER47566 ER47567 ER47568 ER47569 ER47570 ER47816 ER47817 ///
 ER47818 ER47819 ER47820 ER47821 ER47822 ER47823 ER47824 ER47825 ER47826 ER47827 ///
 ER47589 ER47590 ER47591 ER47592 ER47593 ER47594 ER47595 ER47596 ER47597 ER47598 ///
 ER47599 ER47600 ER47846 ER47847 ER47848 ER47849 ER47850 ER47851 ER47852 ER47853 ///
ER51904 ER51810 ER50751 ER50752 ER50749 ER52406 ER47705 ER50612 ER47724 ER47725 ///
 ER47726 ER47727 ER47728 ER47729 ER47730 ER47731 ER47732 ER47733 ER47734 ER47735 ///
 ER50697 ER47316 ER47320 ER49499 ER50617 ER51743 ER52393 ER52392 ER52395 ER52394 ///
 ER52358 ER52359 ER48045 ER48046 ER48159 ER48160 ER48154 ER48155 ER51754 ER51760 ///
ER49579 ER48333 ER48332 ER48350 ER48349 ER48367 ER48366 ER52394 ER49614 ER50732 ///
ER49616 ER50734 ER52399A ER49037 ER49026 ER49620 ER50738 ER52308 ER52366 ER52344 ///
```

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  ER49538 ER50656 ER49523 ER50641 ER49518 ER50636 ER49553 ER50671 ER49533 ER50651 ///
  ER49507 ER50625 ER49513 ER50631 ER49528 ER50646 ER49501 ER50619 ER47854 ER47855 ///
  ER47856 ER47857 ER52436 ///
  using fam2011er.dta
  rename ER47302 intid2011
  sort intid2011
  save "FAM11", replace
  merge 1:m intid2011 using .\Dis_dataset\individual_variables, ///
  keep(using matched)
  sort famid indid
  drop _merge
  save FAMIND11, replace
  }
*-------------------------------------------2013's family file variables-------------------------------------------
quietly {
use ER53002 ER54661 ER58181 ER55275 ER55270 ER55304 ER55285 ER55260 ER55259  ///
ER55265 ER55280 ER55322 ER55323 ER55244 ER53762 ER53786 ER53810 ER53822  ///
ER54687 ER53767 ER53791 ER54718 ER54697 ER55381 ER55382 ER55379 ER53017  ///
ER53007 ER57663 ER58226 ER53029 ER53018 ER53019 ER58223 ER53179 ER53148  ///
ER53167 ER53168 ER53169 ER53170 ER53171 ER53172 ER53173 ER53174 ER53175  ///
ER53176 ER53177 ER53178 ER58152 ER58213 ER56369 ER56375 ER56381 ER56386  ///
ER56396 ER56401 ER56420 ER56439 ER56376 ER56391 ER58214 ER55327 ER54010  ///
ER54009 ER54027 ER54026 ER54044 ER54043 ER58211 ER57659 ER57549 ER56497  ///
ER56498 ER56495 ER58224 ER53411 ER56360 ER53430 ER53431 ER53432 ER53433  ///
ER53434 ER53435 ER53436 ER53437 ER53438 ER53439 ER53440 ER53441 ER56443  ///
ER53016 ER53020 ER55249 ER56365 ER58210 ER58209 ER58212 ER58211 ER58171  ///
ER58172 ER53742 ER53743 ER53853 ER53854 ER53848 ER53849 ER57497 ER57503  ///
ER55362 ER56478 ER55364 ER56480 ER58216 ER57484 ER54793 ER54782 ER55368  ///
ER56484 ER58117 ER58179 ER58153 ER55288 ER56404 ER55273 ER56389 ER55268  ///
ER56384 ER55303 ER56419 ER55283 ER56399 ER55257 ER56373 ER55263 ER56379  ///
ER55278 ER56394 ER55251 ER56367 ER53315 ER53578 ER53229 ER53230 ER53231  ///
ER53232 ER53233 ER53234 ER53235 ER53236 ER53237 ER53238 ER53239 ER53240  ///
ER53492 ER53493 ER53494 ER53495 ER53496 ER53497 ER53498 ER53499 ER53500  ///
ER53501 ER53502 ER53503 ER53259 ER53260 ER53261 ER53262 ER53263 ER53264  ///
ER53265 ER53266 ER53267 ER53268 ER53269 ER53270 ER53522 ER53523 ER53524  ///
ER53525 ER53526 ER53527 ER53528 ER53529 ER53530 ER53531 ER53532 ER53533  ///
ER53289 ER53290 ER53291 ER53292 ER53293 ER53294 ER53295 ER53296 ER53297  ///
ER53298 ER53299 ER53300 ER53552 ER53553 ER53554 ER53555 ER53556 ER53557  ///
ER53558 ER53559 ER53560 ER53561 ER53562 ER53563 ER58257     ///
  using fam2013er.dta
  rename ER53002 intid2013
  sort intid2013
  save "FAM13", replace
  merge 1:m intid2013 using .\Dis_dataset\individual_variables,     ///
  keep(using matched)
  sort famid indid
  drop _merge
  save FAMIND13, replace
  }
*----------------------------End collection of relevant "Family" file variables ------------------------------*
*---------------------------------------- Merge the grand dataset ----------------------------------------------*
quietly {
 use FAMIND94, clear
```

```
merge famid indid ///
 using FAMIND95 FAMIND96 FAMIND97 FAMIND99 FAMIND01 ///
FAMIND03 FAMIND05 FAMIND07 FAMIND09 FAMIND11 FAMIND13
drop _merge
}
*-----------------------------.Rename grand dataset variables for reshaping-----------------------------------
quietly{
rename (ER12084 ER16518 ER20394 ER24179 ER28078 ER41069 ER47012 ER52436 ER58257) ///
 (F_SW1997 F_SW1999 F_SW2001 F_SW2003 F_SW2005 F_SW2007 F_SW2009 F_SW2011 ///
F_SW2013)
rename ( ER21281 ER25270 ER36275 ER42302 ER47615 ER53315 )                        ///
 ( head_additionalplus_job2003 head_additionalplus_job2005 head_additionalplus_job2007      ///
head_additionalplus_job2009 head_additionalplus_job2011 head_additionalplus_job2013  )
rename ( ER21531 ER25528 ER36533 ER42554 ER47872 ER53578 )                        ///
 ( wife_additionalplus_job2003 wife_additionalplus_job2005 wife_additionalplus_job2007       ///
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waddjob_w4_byr1999 waddjob_w4_byr2001)
rename (ER2973 ER5972 ER8069 ER10963 ER14140 ER18262) ///
(waddjob_nw1_byr1994 waddjob_nw1_byr1995 waddjob_nw1_byr1996 waddjob_nw1_byr1997 ///

waddjob_nw1_byr1999 waddjob_nw1_byr2001)
rename (ER2995 ER5994 ER8091 ER10985 ER14164 ER18288) ///
 (waddjob_nw2_byr1994 waddjob_nw2_byr1995 waddjob_nw2_byr1996 waddjob_nw2_byr1997 ///
waddjob_nw2_byr1999 waddjob_nw2_byr2001)
rename (ER3017 ER6016 ER8113 ER11007 ER14188 ER18314) ///
 (waddjob_nw3_byr1994 waddjob_nw3_byr1995 waddjob_nw3_byr1996 waddjob_nw3_byr1997 ///
waddjob_nw3_byr1999 waddjob_nw3_byr2001)
rename (ER3039 ER6038 ER8135 ER11029 ER14212 ER18340) ///
 (waddjob_nw4_byr1994 waddjob_nw4_byr1995 waddjob_nw4_byr1996 waddjob_nw4_byr1997 ///
waddjob_nw4_byr1999 waddjob_nw4_byr2001)
rename (ER2249 ER5248 ER7344 ER10256 ER13389 ER17423) ///
 (haddjob_w1_emo1994 haddjob_w1_emo1995 haddjob_w1_emo1996 haddjob_w1_emo1997 ///
haddjob_w1_emo1999 haddjob_w1_emo2001)
rename (ER2271 ER5270 ER7366 ER10279 ER13414 ER17450) ///
 (haddjob_w2_emo1994 haddjob_w2_emo1995 haddjob_w2_emo1996 haddjob_w2_emo1997 ///
haddjob_w2_emo1999 haddjob_w2_emo2001)
rename (ER2293 ER5292 ER7388 ER10301 ER13438 ER17475) ///
 (haddjob_w3_emo1994 haddjob_w3_emo1995 haddjob_w3_emo1996 haddjob_w3_emo1997 ///
haddjob_w3_emo1999 haddjob_w3_emo2001)
rename (ER2315 ER5314 ER7410 ER10323 ER13462 ER17501) ///
 (haddjob_w4_emo1994 haddjob_w4_emo1995 haddjob_w4_emo1996 haddjob_w4_emo1997 ///
haddjob_w4_emo1999 haddjob_w4_emo2001)
rename (ER2494 ER5493 ER7589 ER10495 ER13642 ER17705) ///
 (haddjob_nw1_emo1994 haddjob_nw1_emo1995 haddjob_nw1_emo1996 haddjob_nw1_emo1997 ///
haddjob_nw1_emo1999 haddjob_nw1_emo2001)
rename (ER2516 ER5515 ER7611 ER10517 ER13666 ER17731) ///
 (haddjob_nw2_emo1994 haddjob_nw2_emo1995 haddjob_nw2_emo1996 haddjob_nw2_emo1997 ///
haddjob_nw2_emo1999 haddjob_nw2_emo2001)
rename (ER2538 ER5537 ER7633 ER10539 ER13690 ER17757) ///
 (haddjob_nw3_emo1994 haddjob_nw3_emo1995 haddjob_nw3_emo1996 haddjob_nw3_emo1997 ///
haddjob_nw3_emo1999 haddjob_nw3_emo2001)
rename (ER2560 ER5559 ER7655 ER10561 ER13714 ER17783) ///
 (haddjob_nw4_emo1994 haddjob_nw4_emo1995 haddjob_nw4_emo1996 haddjob_nw4_emo1997 ///
haddjob_nw4_emo1999 haddjob_nw4_emo2001)
rename (ER2743 ER5742 ER7838 ER10738 ER13901 ER17993) ///
 (waddjob_w1_emo1994 waddjob_w1_emo1995 waddjob_w1_emo1996 waddjob_w1_emo1997 ///
waddjob_w1_emo1999 waddjob_w1_emo2001)
rename (ER2765 ER5764 ER7860 ER10761 ER13926 ER18020) ///
 (waddjob_w2_emo1994 waddjob_w2_emo1995 waddjob_w2_emo1996 waddjob_w2_emo1997 ///
waddjob_w2_emo1999 waddjob_w2_emo2001)
rename (ER2787 ER5786 ER7882 ER10783 ER13950 ER18046) ///
 (waddjob_w3_emo1994 waddjob_w3_emo1995 waddjob_w3_emo1996 waddjob_w3_emo1997 ///
waddjob_w3_emo1999 waddjob_w3_emo2001)
rename (ER2809 ER5808 ER7904 ER10805 ER13974 ER18072) ///
 (waddjob_w4_emo1994 waddjob_w4_emo1995 waddjob_w4_emo1996 waddjob_w4_emo1997 ///
waddjob_w4_emo1999 waddjob_w4_emo2001)
rename (ER2987 ER5986 ER8083 ER10977 ER14154 ER18276) ///
 (waddjob_nw1_emo1994 waddjob_nw1_emo1995 waddjob_nw1_emo1996 waddjob_nw1_emo1997 ///
waddjob_nw1_emo1999 waddjob_nw1_emo2001)
rename (ER3009 ER6008 ER8105 ER10999 ER14178 ER18302) ///
 (waddjob_nw2_emo1994 waddjob_nw2_emo1995 waddjob_nw2_emo1996 waddjob_nw2_emo1997 ///
waddjob_nw2_emo1999 waddjob_nw2_emo2001)
rename (ER3031 ER6030 ER8127 ER11021 ER14202 ER18328) ///

(waddjob_nw3_emo1994 waddjob_nw3_emo1995 waddjob_nw3_emo1996 waddjob_nw3_emo1997 ///
waddjob_nw3_emo1999 waddjob_nw3_emo2001)
rename (ER3053 ER6052 ER8149 ER11043 ER14226 ER18354) ///
(waddjob_nw4_emo1994 waddjob_nw4_emo1995 waddjob_nw4_emo1996 waddjob_nw4_emo1997 ///
waddjob_nw4_emo1999 waddjob_nw4_emo2001)
rename (ER2250 ER5249 ER7345 ER10257 ER13390 ER17424) ///
(haddjob_w1_eyr1994 haddjob_w1_eyr1995 haddjob_w1_eyr1996 haddjob_w1_eyr1997 ///
haddjob_w1_eyr1999 haddjob_w1_eyr2001)
rename (ER2272 ER5271 ER7367 ER10280 ER13415 ER17451) ///
(haddjob_w2_eyr1994 haddjob_w2_eyr1995 haddjob_w2_eyr1996 haddjob_w2_eyr1997 ///
haddjob_w2_eyr1999 haddjob_w2_eyr2001)
rename (ER2294 ER5293 ER7389 ER10302 ER13439 ER17476) ///
(haddjob_w3_eyr1994 haddjob_w3_eyr1995 haddjob_w3_eyr1996 haddjob_w3_eyr1997 ///
haddjob_w3_eyr1999 haddjob_w3_eyr2001)
rename (ER2316 ER5315 ER7411 ER10324 ER13463 ER17502) ///
(haddjob_w4_eyr1994 haddjob_w4_eyr1995 haddjob_w4_eyr1996 haddjob_w4_eyr1997 ///
haddjob_w4_eyr1999 haddjob_w4_eyr2001)
rename (ER2495 ER5494 ER7590 ER10496 ER13643 ER17706) ///
(haddjob_nw1_eyr1994 haddjob_nw1_eyr1995 haddjob_nw1_eyr1996 haddjob_nw1_eyr1997 ///
haddjob_nw1_eyr1999 haddjob_nw1_eyr2001)
rename (ER2517 ER5516 ER7612 ER10518 ER13667 ER17732) ///
(haddjob_nw2_eyr1994 haddjob_nw2_eyr1995 haddjob_nw2_eyr1996 haddjob_nw2_eyr1997 ///
haddjob_nw2_eyr1999 haddjob_nw2_eyr2001)
rename (ER2539 ER5538 ER7634 ER10540 ER13691 ER17758) ///
(haddjob_nw3_eyr1994 haddjob_nw3_eyr1995 haddjob_nw3_eyr1996 haddjob_nw3_eyr1997 ///
haddjob_nw3_eyr1999 haddjob_nw3_eyr2001)
rename (ER2561 ER5560 ER7656 ER10562 ER13715 ER17784) ///
(haddjob_nw4_eyr1994 haddjob_nw4_eyr1995 haddjob_nw4_eyr1996 haddjob_nw4_eyr1997 ///
haddjob_nw4_eyr1999 haddjob_nw4_eyr2001)
rename (ER2744 ER5743 ER7839 ER10739 ER13902 ER17994) ///
(waddjob_w1_eyr1994 waddjob_w1_eyr1995 waddjob_w1_eyr1996 waddjob_w1_eyr1997 ///
waddjob_w1_eyr1999 waddjob_w1_eyr2001)
rename (ER2766 ER5765 ER7861 ER10762 ER13927 ER18021) ///
(waddjob_w2_eyr1994 waddjob_w2_eyr1995 waddjob_w2_eyr1996 waddjob_w2_eyr1997 ///
waddjob_w2_eyr1999 waddjob_w2_eyr2001)
rename (ER2788 ER5787 ER7883 ER10784 ER13951 ER18047) ///
(waddjob_w3_eyr1994 waddjob_w3_eyr1995 waddjob_w3_eyr1996 waddjob_w3_eyr1997 ///
waddjob_w3_eyr1999 waddjob_w3_eyr2001)
rename (ER2810 ER5809 ER7905 ER10806 ER13975 ER18073) ///
(waddjob_w4_eyr1994 waddjob_w4_eyr1995 waddjob_w4_eyr1996 waddjob_w4_eyr1997 ///
waddjob_w4_eyr1999 waddjob_w4_eyr2001)
rename (ER2988 ER5987 ER8084 ER10978 ER14155 ER18277) ///
(waddjob_nw1_eyr1994 waddjob_nw1_eyr1995 waddjob_nw1_eyr1996 waddjob_nw1_eyr1997 ///
waddjob_nw1_eyr1999 waddjob_nw1_eyr2001)
rename (ER3010 ER6009 ER8106 ER11000 ER14179 ER18303) ///
(waddjob_nw2_eyr1994 waddjob_nw2_eyr1995 waddjob_nw2_eyr1996 waddjob_nw2_eyr1997 ///
waddjob_nw2_eyr1999 waddjob_nw2_eyr2001)
rename (ER3032 ER6031 ER8128 ER11022 ER14203 ER18329) ///
(waddjob_nw3_eyr1994 waddjob_nw3_eyr1995 waddjob_nw3_eyr1996 waddjob_nw3_eyr1997 ///
waddjob_nw3_eyr1999 waddjob_nw3_eyr2001)
rename (ER3054 ER6053 ER8150 ER11044 ER14227 ER18355) ///
(waddjob_nw4_eyr1994 waddjob_nw4_eyr1995 waddjob_nw4_eyr1996 waddjob_nw4_eyr1997 ///
waddjob_nw4_eyr1999 waddjob_nw4_eyr2001)

rename (ER15500 ER19665 ER23065 ER27026 ER38237 ER44210 ER49538 ER55288) ///
(n_arth_h1999 n_arth_h2001 n_arth_h2003 n_arth_h2005 n_arth_h2007 n_arth_h2009 n_arth_h2011 ///
n_arth_h2013)
rename (ER15608 ER19773 ER23192 ER27149 ER39334 ER45307 ER50656 ER56404) ///
(n_arth_w1999 n_arth_w2001 n_arth_w2003 n_arth_w2005 n_arth_w2007 n_arth_w2009   ///
n_arth_w2011 n_arth_w2013)
rename (ER15506 ER19671 ER23071 ER27014 ER38225 ER44198 ER49523 ER55273) ///
(n_asthma_h1999 n_asthma_h2001 n_asthma_h2003 n_asthma_h2005 n_asthma_h2007   ///
 n_asthma_h2009 n_asthma_h2011 n_asthma_h2013)
rename (ER15614 ER19779 ER23198 ER27137 ER39322 ER45295 ER50641 ER56389) ///
(n_asthma_w1999 n_asthma_w2001 n_asthma_w2003 n_asthma_w2005 n_asthma_w2007 ///
n_asthma_w2009 n_asthma_w2011 n_asthma_w2013)
rename (ER15458 ER19623 ER23023 ER27010 ER38221 ER44194 ER49518 ER55268) ///
(n_hbloodp_h1999 n_hbloodp_h2001 n_hbloodp_h2003 n_hbloodp_h2005 n_hbloodp_h2007 ///
n_hbloodp_h2009 n_hbloodp_h2011 n_hbloodp_h2013)
rename (ER15566 ER19731 ER23150 ER27133 ER39318 ER45291 ER50636 ER56384) ///
(n_hbloodp_w1999 n_hbloodp_w2001 n_hbloodp_w2003 n_hbloodp_w2005 n_hbloodp_w2007 ///
n_hbloodp_w2009 n_hbloodp_w2011 n_hbloodp_w2013)
rename (ER15470 ER19635 ER23035 ER27038 ER38249 ER44222 ER49553 ER55303) ///
(n_cancer_h1999 n_cancer_h2001 n_cancer_h2003 n_cancer_h2005 n_cancer_h2007 n_cancer_h2009 ///
n_cancer_h2011 n_cancer_h2013)
rename (ER15578 ER19743 ER23162 ER27161 ER39346 ER45319 ER50671 ER56419) ///
(n_cancer_w1999 n_cancer_w2001 n_cancer_w2003 n_cancer_w2005 n_cancer_w2007 ///
n_cancer_w2009 n_cancer_w2011 n_cancer_w2013)
rename (ER15464 ER19629 ER23029 ER27022 ER38233 ER44206 ER49533 ER55283) ///
(n_diab_h1999 n_diab_h2001 n_diab_h2003 n_diab_h2005 n_diab_h2007 n_diab_h2009 ///
n_diab_h2011 n_diab_h2013)
rename (ER15572 ER19737 ER23156 ER27145 ER39330 ER45303 ER50651 ER56399) ///
(n_diab_w1999 n_diab_w2001 n_diab_w2003 n_diab_w2005 n_diab_w2007 ///
n_diab_w2009 n_diab_w2011 n_diab_w2013)
rename (ER15482 ER19647 ER23047 ER27002 ER38213 ER44186 ER49507 ER55257) ///
(n_hattack_h1999 n_hattack_h2001 n_hattack_h2003 n_hattack_h2005 n_hattack_h2007 ///
n_hattack_h2009 n_hattack_h2011 n_hattack_h2013)
rename (ER15590 ER19755 ER23174 ER27125 ER39310 ER45283 ER50625 ER56373) ///
(n_hattack_w1999 n_hattack_w2001 n_hattack_w2003 n_hattack_w2005 n_hattack_w2007 ///
n_hattack_w2009 n_hattack_w2011 n_hattack_w2013)
rename (ER15488 ER19653 ER23053 ER27006 ER38217 ER44190 ER49513 ER55263) ///
(n_hdse_h1999 n_hdse_h2001 n_hdse_h2003 n_hdse_h2005 n_hdse_h2007 n_hdse_h2009 ///
n_hdse_h2011 n_hdse_h2013)
rename (ER15596 ER19761 ER23180 ER27129 ER39314 ER45287 ER50631 ER56379) ///
(n_hdse_w1999 n_hdse_w2001 n_hdse_w2003 n_hdse_w2005 n_hdse_w2007 n_hdse_w2009 ///
 n_hdse_w2011 n_hdse_w2013)
rename (ER15476 ER19641 ER23041 ER27018 ER38229 ER44202 ER49528 ER55278) ///
(n_ldse_h1999 n_ldse_h2001 n_ldse_h2003 n_ldse_h2005 n_ldse_h2007 n_ldse_h2009 ///
n_ldse_h2011 n_ldse_h2013)
rename (ER15584 ER19749 ER23168 ER27141 ER39326 ER45299 ER50646 ER56394) ///
(n_ldse_w1999 n_ldse_w2001 n_ldse_w2003 n_ldse_w2005 n_ldse_w2007 n_ldse_w2009 ///
n_ldse_w2011 n_ldse_w2013)
rename (ER15452 ER19617 ER23017 ER26998 ER38209 ER44182 ER49501 ER55251) ///
(n_stroke_h1999 n_stroke_h2001 n_stroke_h2003 n_stroke_h2005 n_stroke_h2007 ///
n_stroke_h2009 n_stroke_h2011 n_stroke_h2013)
rename (ER15560 ER19725 ER23144 ER27121 ER39306 ER45279 ER50619 ER56367) ///
(n_stroke_w1999 n_stroke_w2001 n_stroke_w2003 n_stroke_w2005 n_stroke_w2007 ///

n_stroke_w2009 n_stroke_w2011 n_stroke_w2013)
rename (ER15111 ER19307 ER22702 ER26683 ER37701 ER43692 ER49037 ER54793) ///
 (DEBT_IN1999 DEBT_IN2001 DEBT_IN2003 DEBT_IN2005 DEBT_IN2007 DEBT_IN2009 ///
DEBT_IN2011 DEBT_IN2013)
rename (ER15100 ER19296 ER22691 ER26672 ER37690 ER43681 ER49026 ER54782) ///
 (DEBT_OUT1999 DEBT_OUT2001 DEBT_OUT2003 DEBT_OUT2005 DEBT_OUT2007 ///
DEBT_OUT2009 DEBT_OUT2011 DEBT_OUT2013)
rename (ER15543 ER19708 ER23123 ER27098 ER38309 ER44282 ER49620 ER55368) ///
 (HSMOKES1999 HSMOKES2001 HSMOKES2003 HSMOKES2005 HSMOKES2007 HSMOKES2009
HSMOKES2011 HSMOKES2013)
rename (ER15651 ER19816 ER23250 ER27221 ER39406 ER45379 ER50738 ER56484) ///
 (wSMOKES1999 wSMOKES2001 wSMOKES2003 wSMOKES2005 wSMOKES2007 ///
wSMOKES2009 wSMOKES2011 wSMOKES2013)
rename (ER16454 ER20450 ER24101 ER28002 ER40992 ER46900 ER52308 ER58117) ///
 (TOT_TRANSFERS1999 TOT_TRANSFERS2001 TOT_TRANSFERS2003 ///
TOT_TRANSFERS2005 TOT_TRANSFERS2007 TOT_TRANSFERS2009 TOT_TRANSFERS2011 ///
TOT_TRANSFERS2013)
rename (S418 S518 S618 S718 S818 ER46962 ER52366 ER58179) ///
 (TOT_IRA1999 TOT_IRA2001 TOT_IRA2003 TOT_IRA2005 TOT_IRA2007 TOT_IRA2009 ///
TOT_IRA2011 TOT_IRA2013)
rename (S402 S502 S602 S702 S802 ER46936 ER52344 ER58153) ///
 (OWN_FB1999 OWN_FB2001 OWN_FB2003 OWN_FB2005 OWN_FB2007 OWN_FB2009 ///
OWN_FB2011 OWN_FB2013)
rename (S416A S516A S616A S716A S816A ER46969 ER52393 ER58210) ///
 (NWEALTH_ACC1999 NWEALTH_ACC2001 NWEALTH_ACC2003 NWEALTH_ACC2005 ///
NWEALTH_ACC2007 NWEALTH_ACC2009 NWEALTH_ACC2011 NWEALTH_ACC2013)
rename (S416 S516 S616 S716 S816 ER46968 ER52392 ER58209) ///
 (NWEALTH1999 NWEALTH2001 NWEALTH2003 NWEALTH2005 NWEALTH2007 ///
NWEALTH2009 NWEALTH2011 NWEALTH2013)
rename (S417A S517A S617A S717A S817A ER46971 ER52395 ER58212) ///
 (NWEALTH_EQ_ACC1999 NWEALTH_EQ_ACC2001 NWEALTH_EQ_ACC2003 ///
NWEALTH_EQ_ACC2005 NWEALTH_EQ_ACC2007 NWEALTH_EQ_ACC2009 ///
NWEALTH_EQ_ACC2011 NWEALTH_EQ_ACC2013)
rename (S417 S517 S617 S717 S817 ER46970 ER52394 ER58211) ///
 (NWEALTH_EQ1999 NWEALTH_EQ2001 NWEALTH_EQ2003 NWEALTH_EQ2005 ///
NWEALTH_EQ2007 NWEALTH_EQ2009 NWEALTH_EQ2011 NWEALTH_EQ2013)
rename (S411 S511 S611 S711 S811 ER46954 ER52358 ER58171) ///
 (STOCKS1999 STOCKS2001 STOCKS2003 STOCKS2005 STOCKS2007 STOCKS2009 ///
STOCKS2011 STOCKS2013)
rename (S411A S511A S611A S711A S811A ER46955 ER52359 ER58172) ///
 (STOCK_ACC1999 STOCK_ACC2001 STOCK_ACC2003 STOCK_ACC2005 ///
STOCK_ACC2007 STOCK_ACC2009 STOCK_ACC2011 STOCK_ACC2013)
rename (ER14300 ER18438 ER21703 ER25705 ER36723 ER42729 ER48045 ER53742) ///
 (DININGOUT1999 DININGOUT2001 DININGOUT2003 DININGOUT2005 DININGOUT2007 ///
DININGOUT2009 DININGOUT2011 DININGOUT2013)
rename (ER14301 ER18439 ER21704 ER25706 ER36724 ER42730 ER48046 ER53743) ///
 (DININGOUT_PER1999 DININGOUT_PER2001 DININGOUT_PER2003 ///
DININGOUT_PER2005 DININGOUT_PER2007 DININGOUT_PER2009 ///
DININGOUT_PER2011 DININGOUT_PER2013)
rename (ER25828 ER36846 ER42837 ER48159 ER53853) ///
 (RECREATIONEXP2005 RECREATIONEXP2007 RECREATIONEXP2009 ///
RECREATIONEXP2011 RECREATIONEXP2013)
rename (ER25829 ER36847 ER42838 ER48160 ER53854) ///

```
 (RECREATIONEXP_PER2005 RECREATINEXP_PER2007 RECREATIONEXP_PER2009 ///
 RECREATIONEXP_PER2011 RECREATIONEXP_PER2013)
rename (ER25823 ER36841 ER42832 ER48154 ER53848) ///
 (VACATION2005 VACATION2007 VACATION2009 VACATION2011 VACATION2013)
rename (ER25824 ER36842 ER42833 ER48155 ER53849) ///
 (VACATION_PER2005 VACATION_PER2007 VACATION_PER2009 VACATION_PER2011 ///
VACATION_PER2013)
rename (ER15787 ER19848 ER23285 ER27245 ER40420 ER46393 ER51754 ER57497) ///
 (MEDEXP1999 MEDEXP2001 MEDEXP2003 MEDEXP2005 MEDEXP2007 MEDEXP2009 ///
MEDEXP2011 MEDEXP2013)
rename (ER15793 ER19854 ER23291 ER27251 ER40426 ER46399 ER51760 ER57503) ///
 (SCRIPT1999 SCRIPT2001 SCRIPT2003 SCRIPT2005 SCRIPT2007 SCRIPT2009 SCRIPT2011 ///
SCRIPT2013)
rename (ER15541 ER19706 ER23120 ER27092 ER38303 ER44276 ER49614 ER55362) ///
 (EXERCISE_HH1999 EXERCISE_HH2001 EXERCISE_HH2003 EXERCISE_HH2005 ///
EXERCISE_HH2007 EXERCISE_HH2009 EXERCISE_HH2011 EXERCISE_HH2013)
rename (ER15649 ER19814 ER23247 ER27215 ER39400 ER45373 ER50732 ER56478) ///
 (EXERCISE_HW1999 EXERCISE_HW2001 EXERCISE_HW2003 EXERCISE_HW2005 ///
EXERCISE_HW2007 EXERCISE_HW2009 EXERCISE_HW2011 EXERCISE_HW2013)
rename (ER15539 ER19704 ER23118 ER27094 ER38305 ER44278 ER49616 ER55364) ///
 (EXERCISE_LH1999 EXERCISE_LH2001 EXERCISE_LH2003 EXERCISE_LH2005 ///
EXERCISE_LH2007 EXERCISE_LH2009 EXERCISE_LH2011 EXERCISE_LH2013)
rename (ER15647 ER19812 ER23245 ER27217 ER39402 ER45375 ER50734 ER56480) ///
 (EXERCISE_LW1999 EXERCISE_LW2001 EXERCISE_LW2003 EXERCISE_LW2005 ///
EXERCISE_LW2007 EXERCISE_LW2009 EXERCISE_LW2011 EXERCISE_LW2013)
rename (ER16431C ER20377C ER24144A ER28043A ER41033A ER46975A ER52399A ER58216) ///
 (BEALS1999 BEALS2001 BEALS2003 BEALS2005 BEALS2007 BEALS2009 BEALS2011 ///
BEALS2013)
rename (ER2006 ER5005 ER7005 ER10008 ER13009 ER17012 ER21016 ER25016 ER36016 ER42016 ///
ER47316 ER53016) ///
 (NUMFAMU1994 NUMFAMU1995 NUMFAMU1996 NUMFAMU1997 NUMFAMU1999 ///
NUMFAMU2001 NUMFAMU2003 NUMFAMU2005 NUMFAMU2007 NUMFAMU2009 ///
NUMFAMU2011 NUMFAMU2013)
rename (ER2010 ER5009 ER7009 ER10012 ER13013 ER17016 ER21020 ER25020 ER36020 ER42020 ///
ER47320 ER53020) ///
 (NUMFAMCH1994 NUMFAMCH1995 NUMFAMCH1996 NUMFAMCH1997 NUMFAMCH1999 ///
NUMFAMCH2001 NUMFAMCH2003 NUMFAMCH2005 NUMFAMCH2007 NUMFAMCH2009 ///
NUMFAMCH2011 NUMFAMCH2013)
rename (ER3855 ER6725 ER8971 ER11725 ER15450 ER19615 ER23015 ER26996 ER38207 ER44180 ///
ER49499 ER55249) ///
 (DISABH1994 DISABH1995 DISABH1996 DISABH1997 DISABH1999 DISABH2001 ///
DISABH2003 DISABH2005 DISABH2007 DISABH2009 DISABH2011 DISABH2013)
rename (ER3860 ER6730 ER8976 ER11729 ER15558 ER19723 ER23142 ER27119 ER39304 ER45277 ///
ER50617 ER56365) ///
 (DISABW1994 DISABW1995 DISABW1996 DISABW1997 DISABW1999 DISABW2001 ///
DISABW2003 DISABW2005 DISABW2007 DISABW2009 DISABW2011 DISABW2013)
rename (ER15779 ER19840 ER23277 ER27237 ER40409 ER46382 ER51743 ER57484) ///
 (HINS1999 HINS2001 HINS2003 HINS2005 HINS2007 HINS2009 HINS2011 HINS2013)
}
// --------------------------------------------------------CASHALL--------------------------------------------------------
quietly{
 rename (ER15020   ER19216   ER22596   ER26577   ER37595   ER43586   ER48911   ///
ER54661) (CASHALL1999 CASHALL2001 CASHALL2003 CASHALL2005 CASHALL2007 ///
```

```
CASHALL2009 CASHALL2011 CASHALL2013)
}
//------------------------------------------Retirement IRA and Annuities-------------------------------------
quietly{
rename (S419        S519        S619        S719        S819        ER46964        ER52368
ER58181) ///
    (RETIRAANNU1999 RETIRAANNU2001 RETIRAANNU2003 RETIRAANNU2005 ///
RETIRAANNU2007 RETIRAANNU2009 RETIRAANNU2011 RETIRAANNU2013)
}
//--------------------------------------Current Chronic Conditions and health status-----------------------------
quietly {
* HASTHMAA - Has Asthma
* HBLOODPA - Has High Blood Pressure
* HCANCERA - Has Cancer
* HDIABA   - Has Diab
* HHEART2AA- Has had second heart attack
* HHEARTAA - Has had first heart attack
* HHEARTDA - Has heart disease
* HLUNGDA  - Has lung disease
* HOTHRCHRONTYPE - Has other chronic disease type=text
* HOTHRCHRONA Has other chronic disease [0,1]- treated in Charlson Comorbidity
* index as weight (1)
* HSTATUS - Self reported Health Status
rename (ER3858 ER6728 ER8974 ER11727 ER15555 ER19720 ER23136 ER27113 ER39299 ///
ER45272 ER50612 ER56360) ///
    (wHSTATUS1994 wHSTATUS1995 wHSTATUS1996 wHSTATUS1997 ///
wHSTATUS1999 wHSTATUS2001 wHSTATUS2003 wHSTATUS2005 wHSTATUS2007 ///
 wHSTATUS2009 wHSTATUS2011 wHSTATUS2013)

rename (ER3853     ER6723     ER8969     ER11723     ER15447     ER19612     ER23009     ER26990
ER38202     ER44175     ER49494     ER55244) ///
    (HSTATUS1994 HSTATUS1995 HSTATUS1996 HSTATUS1997 HSTATUS1999 ///
HSTATUS2001 HSTATUS2003 HSTATUS2005 HSTATUS2007 HSTATUS2009 ///
HSTATUS2011 HSTATUS2013)
}
//---------------------------------------------------Debt Variables---------------------------------------------
* these are family variables not "head" or "wife"
quietly {
* DEBT1AUTO - First auto payment
* DEBT2AUTO - Second auto payment
* DEBT3AUTO - Third auto payment
* DEBTAUTOXT - Other auto payments
* DEBTCCARD  - Credit card debt
* DEBTL1AUTO - Auto lease payment #1
* DEBTL2AUTO - Auto lease payment #2
* DEBTOTHR   - Other total debts
* DEBTSTULO  - Debt student loans
* DEBTCUR    - Current Debt
/*W39. If you added up all of these debts (for all of your family),
about how much would they amount to right now?
N Minimum Maximum Mean Std Dev Excluding Values
3259 10.00 2,000,000.00 11,285.86 42,965.35 0, 999999998, 999999999
Count % Value/Range Text
```

3,259 46.58 1 - 999,999,996 Actual amount
- - 999,999,997 $999,999,997 or more
88 1.26 999,999,998 DK
29 .41 999,999,999 NA; refused
3,621 51.75 0 Inap.: does not have other debts
Years
Available: [84]V10933 [89]V17335 [94]ER3753 [99]ER15031 [01]ER19227 [
03]ER22622 [05]ER26603 [07]ER37621 [09]ER43612
*/
rename (ER48066   ER53762) ///
  (DEBT1AUTO2011 DEBT1AUTO2013)
rename (ER48091   ER53786) ///
  (DEBT2AUTO2011 DEBT2AUTO2013)
rename (ER48116   ER53810) ///
  (DEBT3AUTO2011 DEBT3AUTO2013)
rename (ER48128   ER53822) ///
  (DEBTAUTOXT2011 DEBTAUTOXT2013)
rename (ER48937   ER54687) ///
  (DEBTCCARD2011 DEBTCCARD2013)
rename (ER48071   ER53767) ///
  (DEBTL1AUTO2011 DEBTL1AUTO2013)
rename (ER48096   ER53791) ///
  (DEBTL2AUTO2011 DEBTL2AUTO2013)
rename (ER54718) ///
  (DEBTOTHR2013)
rename (ER48945   ER54697) ///
  (DEBTSTULO2011 DEBTSTULO2013)
rename (ER15031   ER19227   ER22622   ER26603   ER37621   ER43612) ///
  (DEBTCUR1999 DEBTCUR2001 DEBTCUR2003 DEBTCUR2005 DEBTCUR2007 DEBTCUR2009)
}
//---Height and weight and age---
quietly{
* HHTFT - height in feet
* HHTIN - height in inches
* HWTLBS - weight in pounds
* AGE - age
 rename (ER10011 ER13012 ER17015 ER21019 ER25019 ER36019 ER42019 ER47319 ER53019) ///
   (wAGE1997 wAGE1999 wAGE2001 wAGE2003 wAGE2005 wAGE2007 wAGE2009 wAGE2011 ///
wAGE2013)
   rename (ER15661   ER19826 ER23260   ER27233 ER39418   ER45391 ER50751 ER56497) ///
   (wHTFT1999 wHTFT2001 wHTFT2003 wHTFT2005 wHTFT2007 wHTFT2009 wHTFT2011 ///
wHTFT2013)
   rename (ER15662   ER19827 ER23261   ER27234 ER39419   ER45392 ER50752   ER56498) ///
   (wHTIN1999 wHTIN2001 wHTIN2003 wHTIN2005 wHTIN2007 wHTIN2009 wHTIN2011 ///
wHTIN2013)
   rename (ER15660   ER19825   ER23259 ER27232   ER39417   ER45390 ER50749 ER56495) ///
     (wWTLBS1999 wWTLBS2001 wWTLBS2003 wWTLBS2005 wWTLBS2007 wWTLBS2009 ///
wWTLBS2011 wWTLBS2013)
 rename (ER15553   ER19718   ER23133   ER27110   ER38321   ER44294   ER49633   ER55381) ///
   (HHTFT1999 HHTFT2001 HHTFT2003 HHTFT2005 HHTFT2007 HHTFT2009 HHTFT2011 ///
HHTFT2013)
 rename (ER15554   ER19719   ER23134   ER27111   ER38322   ER44295   ER49634   ER55382) ///
    (HHTIN1999 HHTIN2001 HHTIN2003 HHTIN2005 HHTIN2007 HHTIN2009 HHTIN2011 ///

HHTIN2013)
 rename (ER15552   ER19717   ER23132   ER27109   ER38320   ER44293   ER49631   ER55379) ///
   (HWTLBS1999 HWTLBS2001 HWTLBS2003 HWTLBS2005 HWTLBS2007 HWTLBS2009 ///
HWTLBS2011 HWTLBS2013)
 rename (ER2007 ER5006 ER7006 ER10009 ER13010 ER17013 ER21017 ER25017 ER36017 ///
ER42017 ER47317 ER53017) ///
   (AGE1994 AGE1995 AGE1996 AGE1997 AGE1999 AGE2001 AGE2003 AGE2005 AGE2007 ///
AGE2009 AGE2011 AGE2013)
}
*---Additional family variables:---
quietly {
* CHANGEFU - change in family unit composition
* ETHNIC - identified ethnicity
* MSTATUS - marital status
* OWNRENT - whether own or rent home
* SEX - sex
* YSCHOO - years of schooling
* NEEDS - federal needs standard
* OCCUPA - occupation
* PACOREC - whether in a correctional facility as an adult
* PYCOREC - whether in a correctional facility as a youth
 rename (ER2005A   ER5004A   ER7004A   ER10004A   ER13008A   ER17007   ///
ER21007   ER25007   ER36007   ER42007   ER47307   ER53007) ///
   (CHANGEFU1994 CHANGEFU1995 CHANGEFU1996 CHANGEFU1997 CHANGEFU1999 ///
CHANGEFU2001 CHANGEFU2003 CHANGEFU2005 CHANGEFU2007 CHANGEFU2009 ///
CHANGEFU2011 CHANGEFU2013)
* ----------------------------------no ethnic group for "wife" in datasets --
 rename (ER12165   ER15932   ER19993   ER23430   ER27397   ER40569   ER46547   ///
ER51908   ER57663) ///
   (ETHNIC1997 ETHNIC1999 ETHNIC2001 ETHNIC2003 ETHNIC2005 ETHNIC2007 ///
ETHNIC2009 ETHNIC2011 ETHNIC2013)
*---------------------------------no change in marital status for "wife" can deduce...?--------------------------
 rename (ER4159B   ER6999B   ER9250B   ER12223B   ER16424   ER20370   ER24151   ///
 ER28050   ER41040   ER46984   ER52408   ER58226) ///
   (MSTATUS1994 MSTATUS1995 MSTATUS1996 MSTATUS1997 MSTATUS1999 ///
MSTATUS2001 MSTATUS2003 MSTATUS2005 MSTATUS2007 MSTATUS2009 ///
MSTATUS2011 MSTATUS2013)
* ---------------------------------------family variable not "head" or "wife"-----------------------------------
 rename (ER2032   ER5031   ER7031   ER10035   ER13040   ER17043   ER21042   ///
ER25028   ER36028   ER42029   ER47329   ER53029) ///
   (OWNRENT1994 OWNRENT1995 OWNRENT1996 OWNRENT1997 OWNRENT1999 ///
OWNRENT2001 OWNRENT2003 OWNRENT2005 OWNRENT2007 OWNRENT2009 ///
OWNRENT2011 OWNRENT2013)
* -----------------------------------ONLY HAVE SEX FOR HEAD IN FAMILY FILE ------------------------
 rename (ER2008 ER5007 ER7007 ER10010 ER13011 ER17014 ER21018 ER25018 ER36018///
 ER42018 ER47318 ER53018) (SEX1994 SEX1995 SEX1996 SEX1997 SEX1999 SEX2001 ///
SEX2003 SEX2005 SEX2007 SEX2009 SEX2011 SEX2013)
* --years of school Head ---
 rename (ER4158   ER6998   ER9249   ER12222   ER16516   ER20457   ER24148   ER28047
ER41037   ER46981   ER52405   ER58223) ///
   (YSCHOO1994 YSCHOO1995 YSCHOO1996 YSCHOO1997 YSCHOO1999 YSCHOO2001 ///
YSCHOO2003 YSCHOO2005 YSCHOO2007 YSCHOO2009 YSCHOO2011 YSCHOO2013)
* WIFE completed years of schooling [94]ER4159 [95]ER6999 [96]ER9250 [97]ER12223

```
*[99]ER16517 [01]ER20458 [03]ER24149 [05]ER28048 [07]ER41038 [09]ER46982
*[11]ER52406 [13]ER58224
 rename (ER4159    ER6999    ER9250    ER12223   ER16517   ER20458   ER24149   ///
ER28048   ER41038   ER46982   ER52406   ER58224) ///
   (wYSCHOO1994 wYSCHOO1995 wYSCHOO1996 wYSCHOO1997 wYSCHOO1999 ///
wYSCHOO2001 wYSCHOO2003 wYSCHOO2005 wYSCHOO2007 wYSCHOO2009 ///
wYSCHOO2011 wYSCHOO2013)
* ------------------------Needs is a family variable not a "head" or "wife" variable ------------------------
 rename (ER4155    ER6995    ER9246    ER12220   ER16429   ER16427 ER20375    ///
ER20373   ER24142   ER24140   ER28041   ER28039   ER41031   ER41029    ///
ER46973   ER46972   ER52397   ER52396   ER58214   ER58213) ///
   (NEEDS1994 NEEDS1995 NEEDS1996 NEEDS1997 NEEDS1998 NEEDS1999 NEEDS2000 ///
NEEDS2001 NEEDS2002 NEEDS2003 NEEDS2004 NEEDS2005 NEEDS2006 NEEDS2007  ///
NEEDS2008 NEEDS2009 NEEDS2010 NEEDS2011 NEEDS2012 NEEDS2013)

* -----------------------------------both PACOREC are individual level variables-------------------------------
 rename (ER33269) ///
   (PACOREC1995)
rename (ER33268) ///
   (PYCOREC1995)
}
*-----------Occupation was split across the 2001 - 2003 window.  Assemble into a continuous variable------
*              corrections for occupation numeration sequence later in the program
*              don't have occupation for wife in datasets ..asked 88-93, then again in 2013
quietly{
 rename (ER4019    ER6859    ER9110    ER12087   ER13261   ER17272   ER21145   ER25127
ER36132   ER42167   ER47479   ER53179) ///
   (OCCUPA1994 OCCUPA1995 OCCUPA1996 OCCUPA1997 OCCUPA1999 OCCUPA2001 ///
OCCUPA2003 OCCUPA2005 OCCUPA2007 OCCUPA2009 OCCUPA2011 OCCUPA2013)
}
//-------------------------------------------Employment variables-----------------------------------------------
*                    EMPS - employment status at time of interview
*                     EMP01M - retrospective employment status
*                     (working or not [1,0] for january ... through december
* EMP02M
* EMP03M|
* EMP04M|
* EMP05M|
* EMP06M|     note that the question and varaiables changed between 1999 and
* EMP07M|     2001.  Upon inspection the difference is minor and I believe
* EMP08M|     that the two variables are consistent recording the same thing
* EMP09M|
* EMP10M|
* EMP11M
* EMP12M
quietly {
//                              heads employment - family level at time of interview
 rename (ER2069  ER5068  ER7164  ER10081  ER13205  ER17216  ER21123  ER25104  ER36109  ///
 ER42140  ER47448  ER53148) ///
   (EMPS1994 EMPS1995 EMPS1996 EMPS1997 EMPS1999 EMPS2001 EMPS2003 EMPS2005 ///
EMPS2007 EMPS2009 EMPS2011 EMPS2013)
*              wife's employment status equiv to EMPS for wife - family file at timme of interview
rename (ER2563    ER5562  ER7658  ER10563 ER13717    ER17786  ER21373  ER25362 ER36367 ///
```

```
   ER42392   ER47705 ER53411) ///
   (wEMPS1994 wEMPS1995 wEMPS1996 wEMPS1997 wEMPS1999 wEMPS2001 wEMPS2003 ///
wEMPS2005 wEMPS2007 wEMPS2009 wEMPS2011 wEMPS2013)
*         Head - January  - from family file ~5600 observations per month
 rename (ER2119    ER5118    ER7214    ER10138    ER13265   ER17276   ER21133    ///
ER25115   ER36120   ER42155   ER47467   ER53167) ///
   (EMP01M1994 EMP01M1995 EMP01M1996 EMP01M1997 EMP01M1999 EMP01M2001 ///
EMP01M2003 EMP01M2005 EMP01M2007 EMP01M2009 EMP01M2011 EMP01M2013)
*         February
 rename (ER2120    ER5119    ER7215    ER10139    ER13266   ER17277   ER21134   ER25116
ER36121   ER42156   ER47468   ER53168) ///
   (EMP02M1994 EMP02M1995 EMP02M1996 EMP02M1997 EMP02M1999 EMP02M2001
EMP02M2003 EMP02M2005 EMP02M2007 EMP02M2009 EMP02M2011 EMP02M2013)
*         March
 rename (ER2121    ER5120    ER7216    ER10140    ER13267   ER17278   ER21135   ER25117
ER36122   ER42157   ER47469   ER53169) ///
   (EMP03M1994 EMP03M1995 EMP03M1996 EMP03M1997 EMP03M1999 EMP03M2001
EMP03M2003 EMP03M2005 EMP03M2007 EMP03M2009 EMP03M2011 EMP03M2013)
*         April
 rename (ER2122    ER5121    ER7217    ER10141    ER13268   ER17279   ER21136   ER25118
ER36123   ER42158   ER47470   ER53170) ///
   (EMP04M1994 EMP04M1995 EMP04M1996 EMP04M1997 EMP04M1999 EMP04M2001
EMP04M2003 EMP04M2005 EMP04M2007 EMP04M2009 EMP04M2011 EMP04M2013)
*         May
 rename (ER2123    ER5122    ER7218    ER10142    ER13269   ER17280   ER21137   ER25119
ER36124   ER42159   ER47471   ER53171) ///
   (EMP05M1994 EMP05M1995 EMP05M1996 EMP05M1997 EMP05M1999 EMP05M2001
EMP05M2003 EMP05M2005 EMP05M2007 EMP05M2009 EMP05M2011 EMP05M2013)
*         June
 rename (ER2124    ER5123    ER7219    ER10143    ER13270   ER17281   ER21138   ER25120
ER36125   ER42160   ER47472   ER53172) ///
   (EMP06M1994 EMP06M1995 EMP06M1996 EMP06M1997 EMP06M1999 EMP06M2001
EMP06M2003 EMP06M2005 EMP06M2007 EMP06M2009 EMP06M2011 EMP06M2013)
*         July
 rename (ER2125    ER5124    ER7220    ER10144    ER13271   ER17282   ER21139   ER25121
ER36126   ER42161   ER47473   ER53173) ///
   (EMP07M1994 EMP07M1995 EMP07M1996 EMP07M1997 EMP07M1999 EMP07M2001
EMP07M2003 EMP07M2005 EMP07M2007 EMP07M2009 EMP07M2011 EMP07M2013)
*         August
 rename (ER2126    ER5125    ER7221    ER10145    ER13272   ER17283   ER21140   ER25122
ER36127   ER42162   ER47474   ER53174) ///
   (EMP08M1994 EMP08M1995 EMP08M1996 EMP08M1997 EMP08M1999 EMP08M2001
EMP08M2003 EMP08M2005 EMP08M2007 EMP08M2009 EMP08M2011 EMP08M2013)
*         September
 rename (ER2127    ER5126    ER7222    ER10146    ER13273   ER17284 ER21141   ER25123
ER36128   ER42163   ER47475   ER53175) ///
   (EMP09M1994 EMP09M1995 EMP09M1996 EMP09M1997 EMP09M1999 EMP09M2001
EMP09M2003 EMP09M2005 EMP09M2007 EMP09M2009 EMP09M2011 EMP09M2013)
*         October
 rename (ER2128    ER5127    ER7223    ER10147    ER13274   ER17285   ER21142   ER25124
ER36129   ER42164   ER47476   ER53176) ///
   (EMP10M1994 EMP10M1995 EMP10M1996 EMP10M1997 EMP10M1999 EMP10M2001
EMP10M2003 EMP10M2005 EMP10M2007 EMP10M2009 EMP10M2011 EMP10M2013)
```

*   November
 rename (ER2129   ER5128   ER7224   ER10148   ER13275   ER17286   ER21143   ER25125
ER36130   ER42165   ER47477   ER53177) ///
    (EMP11M1994 EMP11M1995 EMP11M1996 EMP11M1997 EMP11M1999 EMP11M2001
EMP11M2003 EMP11M2005 EMP11M2007 EMP11M2009 EMP11M2011 EMP11M2013)
*   December
 rename (ER2130   ER5129   ER7225   ER10149   ER13276   ER17287   ER21144   ER25126
ER36131   ER42166   ER47478   ER53178) ///
    (EMP12M1994 EMP12M1995 EMP12M1996 EMP12M1997 EMP12M1999 EMP12M2001
EMP12M2003 EMP12M2005 EMP12M2007 EMP12M2009 EMP12M2011 EMP12M2013)
*----------WIFE's MONTHLY WORK HISTORY - from family file ~2500 observations per year---------
* Wife January through 2001 [94]ER2613 [95]ER5612 [96]ER7708 [97]ER10620
*[99]ER13777 [01]ER17846 [03]ER21383 [05]ER25373 [07]ER36378 [09]ER42407
*[11]ER47724 [13]ER53430
rename (ER2613 ER5612 ER7708 ER10620 ER13777 ER17846 ER21383 ER25373 ER36378 ///
ER42407 ER47724 ER53430) ///
    (wEMP01M1994 wEMP01M1995 wEMP01M1996 wEMP01M1997 wEMP01M1999 ///
wEMP01M2001 wEMP01M2003 wEMP01M2005 wEMP01M2007 wEMP01M2009 ///
wEMP01M2011 wEMP01M2013)
* wife fefruary through 2001 [94]ER2614 [95]ER5613 [96]ER7709 [97]ER10621
*[99]ER13778 [01]ER17847 [03]ER21384 [05]ER25374 [07]ER36379 [09]ER42408
*[11]ER47725 [13]ER53431
rename (ER2614 ER5613 ER7709 ER10621 ER13778 ER17847 ER21384 ER25374 ER36379 ///
ER42408 ER47725 ER53431) ///
    (wEMP02M1994 wEMP02M1995 wEMP02M1996 wEMP02M1997 wEMP02M1999 ///
wEMP02M2001 wEMP02M2003 wEMP02M2005 wEMP02M2007 wEMP02M2009 ///
wEMP02M2011 wEMP02M2013)
* wife march throuh 2001 [94]ER2615 [95]ER5614 [96]ER7710 [97]ER10622
*[99]ER13779 [01]ER17848 [03]ER21385 [05]ER25375 [07]ER36380 [09]ER42409
*[11]ER47726 [13]ER53432
rename (ER2615 ER5614 ER7710 ER10622 ER13779 ER17848 ER21385 ER25375 ER36380 ///
ER42409 ER47726 ER53432) ///
    (wEMP03M1994 wEMP03M1995 wEMP03M1996 wEMP03M1997 wEMP03M1999 ///
wEMP03M2001 wEMP03M2003 wEMP03M2005 wEMP03M2007 wEMP03M2009 ///
wEMP03M2011 wEMP03M2013)
* wife april through 2001 [94]ER2616 [95]ER5615 [96]ER7711 [97]ER10623
*[99]ER13780 [01]ER17849 [03]ER21386 [05]ER25376 [07]ER36381 [09]ER42410
*[11]ER47727 [13]ER53433
rename (ER2616 ER5615 ER7711 ER10623 ER13780 ER17849 ER21386 ER25376 ER36381 ///
ER42410 ER47727 ER53433) ///
    (wEMP04M1994 wEMP04M1995 wEMP04M1996 wEMP04M1997 wEMP04M1999 ///
wEMP04M2001 wEMP04M2003 wEMP04M2005 wEMP04M2007 wEMP04M2009 ///
wEMP04M2011 wEMP04M2013)
* wife May through 2001 [94]ER2617 [95]ER5616 [96]ER7712 [97]ER10624
*[99]ER13781 [01]ER17850 [03]ER21387 [05]ER25377 [07]ER36382 [09]ER42411
*[11]ER47728 [13]ER53434
rename (ER2617 ER5616 ER7712 ER10624 ER13781 ER17850 ER21387 ER25377 ER36382 ///
ER42411 ER47728 ER53434) ///
    (wEMP05M1994 wEMP05M1995 wEMP05M1996 wEMP05M1997 wEMP05M1999 ///
wEMP05M2001 wEMP05M2003 wEMP05M2005 wEMP05M2007 wEMP05M2009 ///
wEMP05M2011 wEMP05M2013)
* wife june through 2001 [94]ER2618 [95]ER5617 [96]ER7713 [97]ER10625
*[99]ER13782 [01]ER17851 [03]ER21388 [05]ER25378 [07]ER36383 [09]ER42412

*[11]ER47729 [13]ER53435
rename (ER2618 ER5617 ER7713 ER10625 ER13782 ER17851 ER21388 ER25378 ER36383 ///
ER42412 ER47729 ER53435) ///
    (wEMP06M1994 wEMP06M1995 wEMP06M1996 wEMP06M1997 wEMP06M1999 ///
wEMP06M2001 wEMP06M2003 wEMP06M2005 wEMP06M2007 wEMP06M2009 ///
wEMP06M2011 wEMP06M2013)
* wife july through 2001 [94]ER2619 [95]ER5618 [96]ER7714 [97]ER10626
*[99]ER13783 [01]ER17852 [03]ER21389 [05]ER25379 [07]ER36384 [09]ER42413
*[11]ER47730 [13]ER53436
rename (ER2619 ER5618 ER7714 ER10626 ER13783 ER17852 ER21389 ER25379 ER36384 ///
ER42413 ER47730 ER53436) ///
    (wEMP07M1994 wEMP07M1995 wEMP07M1996 wEMP07M1997 wEMP07M1999 ///
wEMP07M2001 wEMP07M2003 wEMP07M2005 wEMP07M2007 wEMP07M2009 ///
wEMP07M2011 wEMP07M2013)
* wife august through 2001 [94]ER2620 [95]ER5619 [96]ER7715 [97]ER10627
*[99]ER13784 [01]ER17853 [03]ER21390 [05]ER25380 [07]ER36385 [09]ER42414
*[11]ER47731 [13]ER53437
rename (ER2620 ER5619 ER7715 ER10627 ER13784 ER17853 ER21390 ER25380 ER36385 ///
ER42414 ER47731 ER53437) ///
    (wEMP08M1994 wEMP08M1995 wEMP08M1996 wEMP08M1997 wEMP08M1999 ///
wEMP08M2001 wEMP08M2003 wEMP08M2005 wEMP08M2007 wEMP08M2009 ///
wEMP08M2011 wEMP08M2013)
* wife september through 200 [94]ER2621 [95]ER5620 [96]ER7716 [97]ER10628
*[99]ER13785 [01]ER17854 [03]ER21391 [05]ER25381 [07]ER36386 [09]ER42415
*[11]ER47732 [13]ER53438
rename (ER2621 ER5620 ER7716 ER10628 ER13785 ER17854 ER21391 ER25381 ER36386 ///
ER42415 ER47732 ER53438) ///
    (wEMP09M1994 wEMP09M1995 wEMP09M1996 wEMP09M1997 wEMP09M1999 ///
wEMP09M2001 wEMP09M2003 wEMP09M2005 wEMP09M2007 wEMP09M2009 ///
wEMP09M2011 wEMP09M2013)
* wife october through 2001 [94]ER2622 [95]ER5621 [96]ER7717 [97]ER10629
*[99]ER13786 [01]ER17855 [03]ER21392 [05]ER25382 [07]ER36387 [09]ER42416
*[11]ER47733 [13]ER53439
rename (ER2622 ER5621 ER7717 ER10629 ER13786 ER17855 ER21392 ER25382 ER36387 ///
ER42416 ER47733 ER53439) ///
    (wEMP10M1994 wEMP10M1995 wEMP10M1996 wEMP10M1997 wEMP10M1999 ///
wEMP10M2001 wEMP10M2003 wEMP10M2005 wEMP10M2007 wEMP10M2009 ///
wEMP10M2011 wEMP10M2013)
* wife novemeber through 2001 [94]ER2623 [95]ER5622 [96]ER7718 [97]ER10630
*[99]ER13787 [01]ER17856 [03]ER21393 [05]ER25383 [07]ER36388 [09]ER42417
*[11]ER47734 [13]ER53440
rename (ER2623 ER5622 ER7718 ER10630 ER13787 ER17856 ER21393 ER25383 ER36388 ///
ER42417 ER47734 ER53440) ///
    (wEMP11M1994 wEMP11M1995 wEMP11M1996 wEMP11M1997 wEMP11M1999 ///
wEMP11M2001 wEMP11M2003 wEMP11M2005 wEMP11M2007 wEMP11M2009 ///
wEMP11M2011 wEMP11M2013)
* wife December through 2001 [94]ER2624 [95]ER5623 [96]ER7719 [97]ER10631
*[99]ER13788 [01]ER17857 [03]ER21394 [05]ER25384 [07]ER36389 [09]ER42418
*[11]ER47735 [13]ER53441
rename (ER2624 ER5623 ER7719 ER10631 ER13788 ER17857 ER21394 ER25384 ER36389 ///
ER42418 ER47735 ER53441) ///
    (wEMP12M1994 wEMP12M1995 wEMP12M1996 wEMP12M1997 wEMP12M1999 ///
wEMP12M2001 wEMP12M2003 wEMP12M2005 wEMP12M2007 wEMP12M2009 ///

```
wEMP12M2011 wEMP12M2013)
}
*------------------------------------Family Income: FAMINC---------------------------------
* family variable not "head" or "wife"
quietly{
 rename (ER4153    ER6993    ER9244    ER12079   ER16462   ER20456   ER24099    ///
ER28037   ER41027   ER46935   ER52343   ER58152) ///
   (FAMINC1994 FAMINC1995 FAMINC1996 FAMINC1997 FAMINC1999 FAMINC2001 ///
FAMINC2003 FAMINC2005 FAMINC2007 FAMINC2009 FAMINC2011 FAMINC2013)
}
*------------------------------------Financial Strain-------------------------------------------
* The following variable is a retrospective question posed in
*1996 about trouble paying bills for each  *
* year 1991 to 1996, I put them in the variable STRMPBR
*  family not "head" or "wife"              *
quietly{
rename (ER8841    ER8842    ER8843    ER8844    ER8845    ER8846) ///
   (STRMPRB STRMPRB_2ND STRMPRB_3RD STRMPRB_4TH STRMPRB_5TH STRMPRB_6TH)
}
//-----------------------------------Nights in Hopsital: HNIGHTS----------------------------
quietly{
rename (ER23090   ER27057   ER38268   ER44241   ER49579   ER55327) ///
  (HNIGHTS2003 HNIGHTS2005 HNIGHTS2007 HNIGHTS2009 HNIGHTS2011 HNIGHTS2013)
* wife nights in hospital  [03]ER23217 [05]ER27180 [07]ER39365
*[09]ER45338 [11]ER50697 [13]ER56443
rename(ER23217 ER27180 ER39365 ER45338 ER50697 ER56443) ///
(wHNIGHTS2003 wHNIGHTS2005 wHNIGHTS2007 wHNIGHTS2009 wHNIGHTS2011 ///
wHNIGHTS2013)
* can do an earlier sum of nights in hospital across years 81,83,84,85,86,87
}
//---------------------------------------------Dividend Income----------------------------------
quietly {
* DIVTIME - time frame for dividend income
* DIVIDEND - amount of dividend income
* INTTIME - time frame for interest income
* INTEREST - amount of interest income
* TFUNDTIME - trust fund income timeframe
* TFUND - amount of trust fund income
* NETWEALTH - net wealth measure
   rename (ER3219    ER6219    ER8336    ER11229   ER14495   ER18651   ER22021    ///
ER26002   ER37020   ER43011   ER48333   ER54010) ///
   (DIVTIME1994 DIVTIME1995 DIVTIME1996 DIVTIME1997 DIVTIME1999 DIVTIME2001 ///
DIVTIME2003 DIVTIME2005 DIVTIME2007 DIVTIME2009 DIVTIME2011 DIVTIME2013)
   rename (ER3218    ER6218    ER8335    ER11228   ER14494   ER18650    ///
ER22020   ER26001   ER37019   ER43010   ER48332   ER54009) ///
   (DIVIDEND1994 DIVIDEND1995 DIVIDEND1996 DIVIDEND1997 DIVIDEND1999 ///
DIVIDEND2001 DIVIDEND2003 DIVIDEND2005 DIVIDEND2007 DIVIDEND2009 ///
DIVIDEND2011 DIVIDEND2013)
rename (ER3234    ER6234    ER8351    ER11244   ER14510   ER18667   ER22038    ///
 ER26019   ER37037   ER43028   ER48350   ER54027) ///
   (INTTIME1994 INTTIME1995 INTTIME1996 INTTIME1997 INTTIME1999 INTTIME2001 ///
INTTIME2003 INTTIME2005 INTTIME2007 INTTIME2009 INTTIME2011 INTTIME2013)
rename (ER3233    ER6233    ER8350    ER11243   ER14509   ER18666   ER22037    ///
```

```
        ER26018    ER37036    ER43027    ER48349    ER54026) ///
      (INTEREST1994 INTEREST1995 INTEREST1996 INTEREST1997 INTEREST1999 ///
INTEREST2001 INTEREST2003 INTEREST2005 INTEREST2007 INTEREST2009 ///
INTEREST2011 INTEREST2013)
 rename (ER3249      ER6249     ER8366     ER11259    ER14525    ER18683    ///
ER22055    ER26036    ER37054    ER43045    ER48367    ER54044) ///
     (TFUNDTIME1994 TFUNDTIME1995 TFUNDTIME1996 TFUNDTIME1997 ///
TFUNDTIME1999 TFUNDTIME2001 TFUNDTIME2003 TFUNDTIME2005 ///
TFUNDTIME2007 TFUNDTIME2009 TFUNDTIME2011 TFUNDTIME2013)
 rename (ER3248     ER6248     ER8365     ER11258    ER14524    ER18682    ///
ER22054    ER26035    ER37053    ER43044    ER48366    ER54043) ///
   (TFUND1994 TFUND1995 TFUND1996 TFUND1997 TFUND1999 TFUND2001 ///
TFUND2003 TFUND2005 TFUND2007 TFUND2009 TFUND2011 TFUND2013)
}
//----------------------------------------------------RACE------------------------------------------------
quietly{
rename (ER11848   ER15928   ER19989    ER23426   ER27393   ER40565   ER46543    ///
ER51904   ER57659) ///
   (RACEH1997  RACEH1999  RACEH2001   RACEH2003  RACEH2005  RACEH2007  ///
RACEH2009  RACEH2011 RACEH2013)
 rename (ER11760 ER15836 ER19897 ER23334 ER27297 ER40472 ER46449 ER51810 ///
ER57549) (RACEW1997  RACEW1999  RACEW2001   RACEW2003  RACEW2005  ///
RACEW2007  RACEW2009  RACEW2011 RACEW2013)
}
*---------------------------------------Save Grand Dataset Construction----------------------------------
save .\Dis_dataset\Dissertation_GrandDset , replace
*--------------------------END GRAND INDIVIDUAL/FAMILY DATASET--------------------------
*---------------------Merge in CRCS variables to the grand/individual file--------------------------------
*                  using the 2013 interview number and the sequence number
quietly {
 clear
 use CS14V2 CS14V3 CS14V63  CS14V115 CS14V67  CS14V91  CS14V83  CS14V103 ///
CS14V71 CS14V75 CS14V147 CS14V108 CS14V52 CS14V155 CS14V158 CS14V163 ///
CS14V165 CS14V164 CS14V260 CS14V293 CS14V280 CS14V298 CS14V292 ///
CS14V172 CS14V174 CS14V173 CS14V285 CS14V286 CS14V279 CS14V17 CS14V18 ///
CS14V19 CS14V20 CS14V21 CS14V22 CS14V60 CS14V297 CS14V284 CS14V178 ///
CS14V191 CS14V183 CS14V41 CS14V261   CS14V243 CS14V262 CS14V267 CS14V273 ///
 CS14V266 CS14V248 CS14V254 CS14V259 CS14V277 CS14V244 CS14V249 CS14V255 ///
CS14V306 CS14V202 CS14V203 CS14V79  CS14V56  CS14V54  CS14V55  CS14V87  CS14V95 ///
CS14V99 CS14V169 CS14V171 CS14V170 CS14V242 CS14V313 CS14V213 CS14V207 ///
CS14V212 CS14V206 CS14V217 CS14V211 CS14V216 CS14V210 CS14V198 CS14V195 ///
CS14V197 CS14V194 CS14V139 CS14V123 CS14V131 CS14V224 CS14V225 CS14V230 ///
CS14V241 CS14V218 CS14V302 CS14V290 CS14V310 CS14V311 ///
 using CRSS.dta
 rename (CS14V2 CS14V3) (intid2013 seqlink2013CRSS)
 sort intid2013 seqlink2013CRSS
 save CRSS_needed.dta, replace
 use .\Dis_dataset\Dissertation_GrandDset, clear
 sort intid2013 seqlink2013CRSS
 merge m:1 intid2013 seqlink2013CRSS using CRSS_needed.dta, keep(matched)
 sort famid indid
 drop _merge
 save .\Dis_dataset\Dis_Grand_BC1, replace
```

```
 }
*----------------------------END CRCS variable assembly and merge-----------------------------
*-----------------------------Reshape from WIDE to LONG format--------------------------------
quietly {
 clear
 use .\Dis_dataset\Dis_Grand_BC1
 sort uniqueid
 reshape long head intid SEQ CASHALL RETIRAANNU HASTHMAA HBLOODPA ///
HCANCERA HDIABA /*STROKE*/HHEART2AA HHEARTAA  HHEARTDA HLUNGDA ///
HOTHRCHRONTYPE HOTHRCHRONA HSTATUS wHASTHMAA wHBLOODPA wHCANCERA
wHDIABA wHHEART2AA wHHEARTAA wHHEARTDA wHLUNGDA wSTROKE ///
wHOTHRCHRONA wHSTATUS DEBT1AUTO DEBT2AUTO DEBT3AUTO DEBTAUTOXT ///
DEBTCCARD DEBTL1AUTO DEBTL2AUTO DEBTOTHR DEBTSTULO DEBTCUR HHTFT ///
HHTIN HWTLBS wHTFT wHTIN wWTLBS AGE wAGE CHANGEFU ETHNIC MSTATUS ///
OWNRENT SEX YSCHOO wYSCHOO NEEDS OCCUPA EMPS EMP1S EMP01M EMP02M ///
EMP03M EMP04M EMP05M EMP06M EMP07M EMP08M EMP09M EMP10M EMP11M ///
EMP12M NUMFAMU NUMFAMCH DISABH DISABW HINS wEMPS wEMP01M wEMP02M ///
wEMP03M wEMP04M wEMP05M wEMP06M wEMP07M wEMP08M wEMP09M wEMP10M ///
wEMP11M wEMP12M FAMINC HNIGHTS wHNIGHTS DIVTIME DIVIDEND INTTIME ///
INTEREST TFUNDTIME TFUND NETWEALTH RACEH RACEW NWEALTH_ACC ///
NWEALTH NWEALTH_EQ_ACC NWEALTH_EQ STOCKS STOCK_ACC ///
 DININGOUT_PER RECREATIONEXP RECREATIONEXP_PER VACATION ///
VACATION_PER MEDEXP SCRIPT EXERCISE_HH EXERCISE_HW EXERCISE_LH ///
EXERCISE_LW BEALS DEBT_IN DEBT_OUT HSMOKES wSMOKES TOT_TRANSFERS ///
TOT_IRA OWN_FB n_arth_h n_arth_w n_asthma_h n_asthma_w n_hbloodp_h n_hbloodp_w ///
n_cancer_h n_cancer_w n_diab_h n_diab_w n_hattack_h n_hattack_w n_hdse_h n_hdse_w ///
n_ldse_h n_ldse_w n_stroke_h n_stroke_w haddjob_w1_bmo haddjob_w2_bmo haddjob_w3_bmo ///
haddjob_w4_bmo waddjob_w1_bmo waddjob_w2_bmo waddjob_w3_bmo waddjob_w4_bmo ///
  haddjob_nw1_bmo haddjob_nw2_bmo haddjob_nw3_bmo haddjob_nw4_bmo ///
waddjob_nw1_bmo waddjob_nw2_bmo waddjob_nw3_bmo waddjob_nw4_bmo haddjob_w1_byr ///
haddjob_w2_byr haddjob_w3_byr haddjob_w4_byr waddjob_w1_byr waddjob_w2_byr ///
waddjob_w3_byr waddjob_w4_byr haddjob_nw1_byr haddjob_nw2_byr haddjob_nw3_byr ///
haddjob_nw4_byr waddjob_nw1_byr waddjob_nw2_byr waddjob_nw3_byr waddjob_nw4_byr ///
  haddjob_w1_emo haddjob_w2_emo haddjob_w3_emo haddjob_w4_emo waddjob_w1_emo ///
waddjob_w2_emo waddjob_w3_emo waddjob_w4_emo haddjob_nw1_emo haddjob_nw2_emo ///
haddjob_nw3_emo haddjob_nw4_emo waddjob_nw1_emo waddjob_nw2_emo ///
waddjob_nw3_emo waddjob_nw4_emo haddjob_w1_eyr haddjob_w2_eyr haddjob_w3_eyr ///
haddjob_w4_eyr waddjob_w1_eyr waddjob_w2_eyr waddjob_w3_eyr waddjob_w4_eyr ///
  haddjob_nw1_eyr haddjob_nw2_eyr haddjob_nw3_eyr haddjob_nw4_eyr waddjob_nw1_eyr ///
waddjob_nw2_eyr waddjob_nw3_eyr waddjob_nw4_eyr head_additionalplus_job ///
wife_additionalplus_job haddjob1_jan haddjob1_feb haddjob1_mar haddjob1_apr haddjob1_may ///
  haddjob1_jun haddjob1_jul haddjob1_aug haddjob1_sept haddjob1_oct haddjob1_nov ///
haddjob1_dec waddjob1_jan waddjob1_feb waddjob1_mar waddjob1_apr waddjob1_may waddjob1_jun
waddjob1_jul waddjob1_aug waddjob1_sept waddjob1_oct waddjob1_nov waddjob1_dec ///
haddjob2_jan haddjob2_feb haddjob2_mar haddjob2_apr haddjob2_may haddjob2_jun haddjob2_jul ///
haddjob2_aug haddjob2_sept haddjob2_oct haddjob2_nov haddjob2_dec waddjob2_jan ///
  waddjob2_feb waddjob2_mar waddjob2_apr waddjob2_may waddjob2_jun waddjob2_jul ///
waddjob2_aug waddjob2_sept waddjob2_oct waddjob2_nov waddjob2_dec haddjob3_jan ///
haddjob3_feb haddjob3_mar haddjob3_apr haddjob3_may haddjob3_jun haddjob3_jul ///
haddjob3_aug haddjob3_sept haddjob3_oct haddjob3_nov haddjob3_dec waddjob3_jan ///
  waddjob3_feb waddjob3_mar waddjob3_apr waddjob3_may waddjob3_jun waddjob3_jul ///
waddjob3_aug waddjob3_sept waddjob3_oct waddjob3_nov waddjob3_dec F_SW IND_WT ///
  , i(famid indid) j(year)
```

```
}
*-------------------------------------- Generate a sequential time variable --------------------------------
* The panel dataset to use factor variables needs a sequential time variable
quietly{
 gen time=1 if year==1994
 replace time=2 if year==1995
 replace time=3 if year==1996
 replace time=4 if year==1997
 replace time=5 if year==1999
 replace time=6 if year==2001
 replace time=7 if year==2003
 replace time=8 if year==2005
 replace time=9 if year==2007
 replace time=10 if year==2009
 replace time=11 if year==2011
 replace time=12 if year==2013
 drop if time==.
}
*-------------------INDIVIDUAL VARIABLE MANIPULATIONS-----------------------------------

*-------------------------------DEMOGRAPHICS MISC----------------------------------------------------
quietly {
/*                    ER14300 F25 COST OF FOOD EATEN OUT
F25. About how much do you (and everyone else in your family) spend eating out?--AMOUNT
N  Minimum  Maximum  Mean Std Dev  Excluding Values
5772 2.00  5,000.00 58.03 134.19  0, 99998, 99999
Count  %  Value/Range Text
5,772  82.49 .01 - 99,996.99 Actual amount
-  -  99,997.00 $99,997 or more
34  .49  99,998.00 DK
40  .57  99,999.00 NA; refused
1,151  16.45 .00 Inap.: nothing; used food stamps this year*/

//ER14301 DININGOUT_PER
/*ER14301 F25 COST OF FOOD EATEN OUT PER
F25. About how much do you (and everyone else in your family) spend eating
out?--TIME UNIT
Count % Value/Range Text
3 .04 2 Day
4,553 65.07 3 Week
110 1.57 4 Two weeks
1,635 23.37 5 Month
106 1.51 6 Year
- - 7 Other
34 .49 8 DK
3 .04 9 NA; refused
553 7.90 0 Inap.: used food stamps this year*/

gen COR_DININGOUT=0
replace COR_DININGOUT=DININGOUT*365 if DININGOUT_PER==2
replace COR_DININGOUT=DININGOUT*52 if DININGOUT_PER==3
replace COR_DININGOUT=DININGOUT*26 if DININGOUT_PER==4
replace COR_DININGOUT=DININGOUT*12 if DININGOUT_PER==5
```

```
replace COR_DININGOUT=DININGOUT if DININGOUT_PER==6
replace COR_DININGOUT=. if DININGOUT_PER>=7
}
//ER25828 RECREATIONEXP
quietly{
/*ER25828 F91 COST OF OTR RECREATION LAST YEAR
F91. How much did you (and your family living there) spend altogether in 2004
on recreation and entertainment, including tickets to movies, sporting events,
and performing arts and hobbies including exercise, bicycles, trailers,
camping, photography, and reading materials?--Do not include costs associated
with the trips and vacations you mentioned above.--AMOUNT
N  Minimum  Maximum  Mean Std Dev  Excluding Values
7834 .00   55,000.00 727.66 1,941.23 999998, 999999
Count % Value/Range   Text
1,542 19.27 0    Nothing
6,292 78.63 1 - 999,996  Actual amount
-  -  999,997 $999,997 or more
158  1.97 999,998   DK
10  .12  999,999   NA; refused*/


//ER25829 RECREATIONEXP_PER
/*ER25829 F91 TIME UNIT FOR OTR RECREATON
F91. How much did you (and your family living there) spend altogether in 2004
on recreation and entertainment, including tickets to movies, sporting events,
and performing arts and hobbies including exercise, bicycles, trailers,
camping, photography, and reading materials?--Do not include costs associated
with the trips and vacations you mentioned above.--TIME UNIT
Count  % Value/Range  Text
2  .02 3  Week
340  4.25 5  Month
5,929  74.09 6  Year
22  .27 7  Other
165  2.06 8  DK
1  .01 9  NA; refused
1,543  19.28 0  Inap.: spent nothing*/


gen COR_RECREATION=0
replace COR_RECREATION=RECREATIONEXP*52 if RECREATIONEXP_PER==3
replace COR_RECREATION=RECREATIONEXP*12 if RECREATIONEXP_PER==5
replace COR_RECREATION=RECREATIONEXP if RECREATIONEXP_PER==6
replace COR_RECREATION=. if RECREATIONEXP_PER>=7
}
//ER25823 VACATION
quietly{
/*ER25823 F90 COST OF TRIPS, VACATIONS LAST YEAR
F90. How much did you (and your family living there) spend altogether in 2004
on trips and vacations, including transportation, accommodations, and
recreational expenses on trips?--AMOUNT
N   Minimum  Maximum  Mean Std Dev  Excluding Values
7917 .00    136,000.00 1,320.21 2,925.74 999998, 999999
Count % Value/Range   Text
3,083 38.53 0    Nothing
4,834 60.41 1 - 999,996  Actual amount
```

- - 999,997 $999,997 or more
74 .92 999,998 DK
11 .14 999,999 NA; refused*/

//ER25824 VACATION_PER
/*ER25824 F90 TIME UNIT FOR TRIPS, VACATIONS
F90. How much did you (and your family living there) spend altogether in 2004
on trips and vacations, including transportation, accommodations, and
recreational expenses on trips?--TIME UNIT
Count % Value/Range Text
- - 3 Week
55 .69 5 Month
4,775 59.67 6 Year
5 .06 7 Other
- - 8 DK
83 1.04 9 NA; refused
3,084 38.54 0 Inap.: spent nothing*/

gen COR_VACATION=0
replace COR_VACATION=VACATION*52 if VACATION==3
replace COR_VACATION=VACATION*12 if VACATION_PER==5
replace COR_VACATION=VACATION if VACATION_PER==6
replace COR_VACATION=. if VACATION_PER>=7
}
//ER15787 MEDEXP
quietly{
/*ER15787 H70 TOT 1997-98 DR/OUTP SURG/DENTAL EXP
H70. About how much did you pay out-of-pocket for doctor, outpatient surgery,
dental bills in 1997 and 1998 combined?
N Minimum Maximum Mean Std Dev Excluding Values
6607 .00 20,000.00 618.04 1,302.01 9999998, 9999999
Count % Value/Range Text
2,130 30.44 0 Nothing
4,477 63.98 1 - 9,999,996 Actual amount
- - 9,999,997 $9,999,997 or more
372 5.32 9,999,998 DK
18 .26 9,999,999 NA; refused*/

//ER15793 SCRIPT
/*ER15793 H76 TOT 1997-98 PRESCRIP/OTR SVCS EXPENS
H76. About how much did you pay out-of-pocket for prescriptions, in-home
medical care, special facilities, and other services in 1997 and 1998 combined?
N Minimum Maximum Mean Std Dev Excluding Values
6596 .00 60,000.00 395.11 1,239.30 9999998, 9999999
Count % Value/Range Text
1,737 24.82 0 Nothing
4,859 69.44 1 - 9,999,996 Actual amount
- - 9,999,997 $9,999,997 or more
383 5.47 9,999,998 DK
18 .26 9,999,999 NA; refused*/
}
//ER15541 EXERCISE_HH
quietly{

/*ER15541 H12 FREQ OF HEAVY PHYSICAL ACTIVITY
H12. How often do you participate in vigorous physical activity or sports--
such as heavy housework, aerobics, running, swimming, or bicycling?--
NUMBER OF TIMES
N Minimum Maximum Mean Std Dev Excluding Values
6939 .00 99.00 1.34 2.68 998, 999
Count % Value/Range Text
2,947 42.12 0   Never
3,992 57.05 1 - 100   Actual number of times
18 .26 998   DK
40 .57 999   NA; refused*/

//ER15649 EXERCISE_HW
/*ER15649 H36 FREQ OF HEAVY PHYSICAL ACTIVITY
H36. How often does she participate in vigorous physical activity or sports--
such as heavy housework, aerobics, running, swimming, or bicycling?--
NUMBER OF TIMES
N Minimum Maximum Mean Std Dev Excluding Values
2352 1.00 910.00 2.61 18.89 0, 998, 999
Count % Value/Range Text
2,352 33.61 1 - 997 Actual number of times
10 .14 998 DK
24 .34 999 NA; refused
4,611 65.90 0   Inap.: never; no wife/"wife" in FU*/

gen COR_HEXERCISE= EXERCISE_HH if head==10
replace COR_HEXERCISE=EXERCISE_HW if head==20 | head==22
replace COR_HEXERCISE=0 if COR_HEXERCISE==.
replace COR_HEXERCISE=. if COR_HEXERCISE>=998

//ER15539 EXERCISE_LH
/*ER15539 H11 FREQ OF LIGHT PHYSICAL ACTIVITY
H11. (I know you have already told me about your condition, but I need to ask
these next questions anyway.) How often do you particpate in light physical
activity -- such as walking, dancing, gardening, golfing, bowling, etc.?
--NUMBER OF TIMES
N Minimum Maximum Mean Std Dev Excluding Values
6935 .00 75.00 1.92 2.17 998, 999
Count % Value/Range Text
838 11.98 0 Never
6,097 87.14 1 - 100 Actual number of times
20 .29 998 DK
42 .60 999 NA; refused*/

//ER15647 EXERCISE_LW
/*ER15647 H35 FREQ OF LIGHT PHYSICAL ACTIVITY
H35. (I know you have already told me about her condition, but I need to ask
these next questions anyway.) How often does she particpate in light physical
activity -- such as walking, dancing, gardening, golfing, bowling, etc.?
--NUMBER OF TIMES
N Minimum Maximum Mean Std Dev Excluding Values
3524 1.00 150.00 2.30 3.10 0, 998, 999
Count % Value/Range Text

3,524 50.36 1 - 997 Actual number of times
16 .23 998 DK
23 .33 999 NA; refused
3,434 49.08 0 Inap.: never; no wife/"wife" in FU*/

gen COR_LEXERCISE= EXERCISE_LH if head==10
replace COR_LEXERCISE=EXERCISE_LW if head==20 | head==22
replace COR_LEXERCISE=0 if COR_LEXERCISE==.
replace COR_LEXERCISE=. if COR_HEXERCISE >= 998
}
//ER16431C BEALS
quietly{
/*ER16431C RURAL-URBAN CODE (BEALE-COLLAPSED)
Beale-Ross Rural-Urban Continuum Code for 1999 Residence - Collapsed Version
These codes are based on matches to the FIPS state and county codes. However,
code values have been increased by one; that is, code 1 here is equivalent to
code 0 as originally used by Beale and Ross. In addition for this variable, we
have collapsed originial codes 9 and 10 into one category to maintain the
anonymity of our respondents.

Metropolitan status is that announced by the Office of Management and Budget
in June 1983, when the current population criteria were first applied to
results of the 1980 Census. Adjacency was determined by both physical boundary
 adjacency and a finding that at least 2 percent of the employed labor force
 in the nonmetropolitan county commuted to metropolitan central counties.
N Minimum Maximum Mean Std Dev Excluding Values
6963 1.00 9.00 3.50 2.48 0, 99
Count % Value/Range Text
1,865 26.65 1 Central counties of metropolitan areas of 1 million population or more
1,050 15.01 2 Fringe counties of metropolitan areas of 1 million population or more
1,704 24.35 3 Counties in metropolitan areas of 250 thousand to 1 million population
496 7.09 4 Counties in metropolitan areas of less than 250 thousand population
225 3.22 5 Urban population of 20,000 or more, adjacent to metropolitan area
228 3.26 6 Urban population of 20,000 or more, not adjacent to a metropolitan area
519 7.42 7 Urban population of fewer than 20,000, adjacent to a metropolitan area
670 9.58 8 Urban population of fewer than 20,000, not adjacent to a metropolitan area
206 2.94 9 Completely rural
2 .03 99 NA
32 .46 0 Inap.: foreign country*/
replace BEALS=. if BEALS==99
replace BEALS=. if BEALS==0
}
// --NUMBER health insurance--
quietly{
/*ER15779(1999) "H60 WTR ANY FU MEMBER W/HLTH INS 1997-98"
H60. In 1997 or 1998, was anyone in the family covered by health insurance or
some other kind of health care plan? (Including health insurance obtained
through employment or purchased directly as well as government programs like
Medicare and Medicaid that provide medical care or help pay medical bills.)

Count % Value/Range Text
6,393 91.37 1 Yes, one or more persons covered
595 8.50 5 No, no one is covered

1 .01 8 DK
8 .11 9 NA; refused*/

/*ER57484(2013) "H61D2 WTR ANY FU MEMBER HLTH INSURANCE"

H61D2. Next, please think about health insurance. Including health insurance
obtained through employment, or purchased directly or through a government
program like Medicare and Medicaid that provide medical care or help pay
medical bills, does anyone in (your/the) family living there currently have
health insurance or health care coverage?

Count % Value/Range Text
7,910 87.28 1 Yes
1,108 12.23 5 No
14 .15 8 DK
31 .34 9 NA; refused*/

replace HINS=0 if HINS==5
replace HINS=. if HINS>7
}
//--TRANSFER INCOME--
quietly{
 /*
1999 Head's and Wife's/"Wife's" Total Transfer Income in 1998 - TOT_TRANSFERS
Beware of outliers. Analysts are urged to exclude or otherwise allow for cases
in which the value is above the top 99 percentile point.

This variable excludes Head's and Wife's/"Wife's" Social Security income.
N Minimum Maximum Mean Std Dev Excluding Values
6997 .00 557,000.00 3,884.05 15,683.11 -
Count % Value/Range Text
3,916 55.97 0 no tansfer income in 1998
3,081 44.03 1 - 9,999,998 Actual amount of gain
- - 9,999,999 $9,999,999 or more
 */

/*V1220(1970)
quietly {
Total transfer income in 1969 (1970 question)
Sum of variable 1209, the amounts bracketed in V1211 - V1215, plus help
from relatives, income from other sources, and Wife's transfer income

N Minimum Maximum Mean Std Dev Excluding Values
4645 .00 14,082.00 776.32 1,407.84 -
Count % Value/Range Text
2,749 59.18 0 None
1,896 40.82 1 - 99,998 Actual amount
- - 99,999 $99,999 or more
*/
}
//--Debt--
quietly{
/*W119. Altogether, what is the total dollar value of debts that were

brought into the family this way?
N Minimum Maximum Mean Std Dev Excluding Values
120 1.00 190,000.00 20,910.05 31,815.16 0, 999999998, 999999999
Count % Value/Range Text
120 1.62 1 - 999,999,996 Actual amount
- - 999,999,997 $999,999,997 or more
18 .24 999,999,998 DK
1 .01 999,999,999 NA; refused
7,267 98.12 0 Inap.: no debts added by movers in; neither assets
nor debts added by movers in*/
replace DEBT_IN=. if DEBT_IN >=999999997
replace DEBT_OUT=. if DEBT_OUT>=999999997
}
//--Smoking---
quietly{
gen COR_SMOKES = 0
replace COR_SMOKES=1 if HSMOKES==1 & head==10| wSMOKES==1 & head==20 | wSMOKES==1
& head==22
}
//S418(1999) "IMP WTR ANNUITY/IRA (W21) 99" - TOT_IRA - FARM - Family Business
quietly {
/*
W21. Do [you/you or anyone in your family] have any money in private annuities
or Individual Retirement Accounts (IRAs)?

This is an imputed version of a variable used in the creation of the 1999
Wealth summary variables.

Count % Value/Range Text
5,240 74.89 0 No
1,757 25.11 1 Yes
*/
replace RETIRAANNU=. if RETIRAANNU   > 999999997
/*
S102(1984) "IMP WTR FARM/BUS (K122) 84" OWN_FB

K122. Do [you/you or anyone in your family living there] own part or all
of a farm or business?

This is an imputed version of a variable used in the creation of the 1984
 Wealth summary variables.

Count % Value/Range Text
6,262 90.52 0 No
656 9.48 1 Yes
*/
}
//-- disability head and wife --
quietly{
/*V13428(1986) "H12 NOT DO CERTAIN WRK H"

H12. Does this condition keep you from doing some types of work?

Count % Value/Range Text
1,026 14.62 1 Yes
84 1.20 5 No
56 .80 7 Can do nothing
13 .19 8 DK
- - 9 NA; DK
5,839 83.20 0 Inap.: no limiting condition (V13427=5 or 9)

and wife

V13463(1986) "H48 NOT DO CERTAIN WRK W"

H48. Does this condition keep her from doing some types of work?

Count % Value/Range Text
424 6.04 1 Yes
55 .78 5 No
7 .10 7 Can do nothing
8 .11 8 DK
1 .01 9 NA
6,523 92.95 0 Inap.: only Head in FU (V13449=1); no Wife/"Wife" in FU
(V13451=5); no limiting condition (V13462=5 or 9)
*/
gen COR_DISAB=0
replace COR_DISAB=1 if head==10 & DISABH==1
gen SEVERE_CORDISAB=0
replace SEVERE_CORDISAB=1 if head==1 & DISABH==7
replace COR_DISAB=1 if head==20 & DISABW==1 | head==22 & DISABW==1
replace SEVERE_CORDISAB=1 if head==20 & DISABW==7 | head==22 & DISABW==7
}
// ---------------------------------NUMBER IN FAMILY Unit and children-----------------------------------
quietly {
/* V115(1968):Number of people (children plus adults) in this FAMILY UNIT
(living here) (from listing box)

N Minimum Maximum Mean Std Dev Excluding Values
4802 1.00 16.00 3.71 2.38 -
Count % Value/Range Text
4,802 100.00 1 - 16 Actual number of people
- - 99 NA */

/*ER2010(1994) "# CHILDREN IN FU"

Number of Persons Now in the FU Under 18 Years of Age

This variable represents the actual number of persons currently in the FU
who are neither Head nor Wife/"Wife" from newborns through those 17 years of
age, whether or not they are actually children of the Head or Wife/"Wife."

N Minimum Maximum Mean Std Dev Excluding Values
10764 .00 9.00 .96 1.23 -
Count % Value/Range Text
5,546 51.52 0 None

```
5,218 48.48 1 - 18 Actual number*/
}
// Cashall
quietly{
 replace CASHALL=. if CASHALL      > 999999997
}
// ---------------------------------------Chronic Disease Variable Manipulations--------------------------------
quietly {
/*
H5. Has a doctor ever told you that you have or had any of the following--
i. arthritis or rheumatism?

Count % Value/Range Text
1,155 16.51 1 Yes
5,799 82.88 5 No
1 .01 0 Wild code
3 .04 8 DK
39 .56 9 NA; refused
*/
//global b "COR_n_arth COR_n_asthma COR_n_hbloodp COR_n_cancer COR_n_diab
//COR_n_hattack COR_n_hdse COR_n_ldse COR_n_stroke_h"

global a "n_arth_h n_arth_w n_asthma_h n_asthma_w n_hbloodp_h n_hbloodp_w n_cancer_h n_cancer_w
n_diab_h n_diab_w n_hattack_h n_hattack_w n_hdse_h n_hdse_w n_ldse_h n_ldse_w n_stroke_h
n_stroke_w"
tab time
foreach x in $a {
replace `x'=. if `x'>7
replace `x'=0 if `x'==5
replace `x'=. if time<5
}
//foreach x in $b {
//gen `x'=0
//}
gen COR_n_arth = n_arth_h if head==10
replace COR_n_arth = n_arth_w if head==20 | head==22
gen COR_n_asthma = n_asthma_h if head==10
replace COR_n_asthma = n_asthma_w if head==20 | head==22
gen COR_n_hbloodp =n_hbloodp_h if head==10
replace COR_n_hbloodp =n_hbloodp_w if head==20 | head==22
gen COR_n_cancer = n_cancer_h if head==10
replace COR_n_cancer = n_cancer_w if head==20 | head==22
gen COR_n_diab = n_diab_h if head==10
replace COR_n_diab = n_diab_w if head==20 | head==22
gen COR_n_hattack = n_hattack_h if head==10
replace COR_n_hattack = n_hattack_w if head==20 | head==22
gen COR_n_hdse = n_hdse_h if head==10
replace COR_n_hdse = n_hdse_w if head==20 | head==22
gen COR_n_ldse = n_ldse_h if head==10
replace COR_n_ldse = n_ldse_w if head==20 | head==22
gen COR_n_stroke_h = n_stroke_h if head==10
replace COR_n_stroke_h = n_stroke_w if head==20 | head==22
}
```

```
// ---------------------------------------------SELF Assessed health------------------------------------------------
quietly{
/*
H1. Now I have a few questions about your health, including
any serious limitations you might have. Would you (HEAD) say
your health in general is excellent, very good, good, fair, or poor?
Count % Value/Range Text
1,663 23.77 1 Excellent
2,225 31.80 2 Very good
1,974 28.21 3 Good
800  11.43 4 Fair
292  4.17 5 Poor
2  .03  8 DK
40  .57  9 NA; refused
1  .01  0 Wild code
*/
 replace HSTATUS=. if HSTATUS     > 7
 replace wHSTATUS=. if wHSTATUS     > 7
 gen NHSTATUS=.
 replace NHSTATUS=5 if HSTATUS==1 & head==10
 replace NHSTATUS=5 if wHSTATUS==1 & head==20 | wHSTATUS==1 & head==22
 replace NHSTATUS=4 if HSTATUS==2 & head==10
 replace NHSTATUS=4 if wHSTATUS==2 & head==20 | wHSTATUS==2 & head==22
 replace NHSTATUS=3 if HSTATUS==3 & head==10
 replace NHSTATUS=3 if wHSTATUS==3 & head==20 | wHSTATUS==3 & head==22
 replace NHSTATUS=2 if HSTATUS==4 & head==10
 replace NHSTATUS=2 if wHSTATUS==4 & head==20 | wHSTATUS==4 & head==22
 replace NHSTATUS=1 if HSTATUS==5 & head==10
 replace NHSTATUS=1 if wHSTATUS==5 & head==20 | wHSTATUS==5 & head==22
 rename NHSTATUS COR_HSTATUS
}
// -----------------------DEBT - leases auto, credit card, current, student loans, other-------------------------
quietly {
/*
 ER48066 - F67. How much are your payments and how often are they made?--
 AMOUNT FOR FIRST VEHICLE

 N  Minimum Maximum  Mean Std Dev Excluding Values
 1646 1.00 11,700.00 375.17 368.52 0, 999998, 999999

 Count %  Value/Range Text
 1,646 18.48 1 - 999,996 Actual amount
 - - 999,997  $999,997 or more
 33 .37  999,998 DK
 18 .20  999,999 NA; refused
 7,210 80.95 0   Inap.: loan payment was zero; does not

 own/lease a vehicle (ER48048=5);
 DK, NA, or RF whether own/lease a vehicle (ER48048=8 or 9); NA or RF
 number of vehicles that are for personal use (ER48049=99); vehicle not
 purchased or purchased before 2009 (ER48061=3 or 5); did not borrow or
 finance part of the total price (ER48064=5); NA, DK, RF whether borrowed
 or financed part of the total price (ER48064=8 or 9)
```

```
*/
replace DEBT1AUTO =. if DEBT1AUTO      > 999997
replace DEBT2AUTO =. if DEBT2AUTO      > 999997
replace DEBT3AUTO =. if DEBT3AUTO      > 999997
replace DEBTAUTOXT =. if DEBTAUTOXT     > 999997
/*
```

ER48937 - W39a. If you added up all credit card and store card debts for
(all of (your/the) family living there), about how much would they amount
to right now?

N Minimum Maximum Mean Std Dev Excluding Values
3273 23.00 435,000.00 7,538.44 12,871.67 0, 9999998, 9999999

Count % Value/Range Text
3,273 36.75 1 - 9,999,997 Actual amount of credit card and store card debts
26 .29 9,999,998 DK
31 .35 9,999,999 NA; refused
5,577 62.61 0   Inap.: no credit card debt (ER48936=5); DK, NA, or RF whether
      FU has credit card debt (ER48936=8 or 9)
```
*/
replace DEBTCCARD =. if DEBTCCARD      > 9999997
/*
```

ER48071 - F72. How much are your payments and how often are they
made?--AMOUNT FOR FIRST VEHICLE

N Minimum Maximum Mean Std Dev Excluding Values
265 1.00 4,000.00 375.02 314.67 0, 999998, 999999

Count % Value/Range Text
265 2.98 1 - 999,996 Actual amount
- - 999,997 $999,997 or more
3 .03 999,998 DK
4 .04 999,999   NA; refused
8,635 96.95 0   Inap.: does not own/lease a vehicle

(ER48048=5); DK, NA, or RF
whether own/lease a vehicle (ER48048=8 or 9); NA or RF number
of vehicles that are for personal use (ER48049=99); vehicle not
leased or leased before 2009 (ER48061=1 or 5)
```
*/
replace DEBTL1AUTO =. if DEBTL1AUTO     > 999997
replace DEBTL2AUTO =. if DEBTL2AUTO     > 999997
/*
```

ER54718 - W39B7. If you added up all other debts for all of your
family living there,
about how much would they amount to right now?
N Minimum Maximum Mean Std Dev Excluding Values
107 179.00 320,000.00 11,266.61 32,932.99 0, 9999998, 9999999
Count % Value/Range Text
107 1.18 1 - 9,999,996 Actual amount
- - 9,999,997 $9,999,997 or more
1 .01 9,999,998 DK
2 .02 9,999,999 NA; refused

8,953 98.79 0   Inap.: no other type of debt (ER54696=5);

DK, NA, or RF whether FU has other type of debt (ER54696=8 or 9)
*/
 replace DEBTOTHR =. if DEBTOTHR   > 9999997
/*
ER48945 - W39B1. If you added up all student loans (for all of (your/the)
family living there),
about how much would they amount to right now?

 N   Minimum Maximum   Mean   Std Dev Excluding Values
2119 15.00 550,000.00 28,623.08 37,155.25 0, 9999998, 9999999

 Count % Value/Range Text
2,119 23.79 1 - 9,999,997 Actual amount of student loans
44 .49 9,999,998 DK
14 .16 9,999,999 NA; refused
6,730 75.56 0   Inap.: no student loans (ER48941=0);

DK, NA, or RF whether FU has student loans (ER48941=8 or 9)
*/
 replace DEBTSTULO =. if DEBTSTULO   > 9999997
/*
ER26603 - W39. If you added up all of these debts (for all of your
family living there),
about how much would they amount to right now?

 N Minimum Maximum   Mean Std Dev Excluding Values
4066 1.00 2,500,000.00 15,383.49 46,791.050, 999999998,999999999

 Count % Value/Range Text
4,066 50.81 1 - 999,999,996 Actual amount
 - - 999,999,997 $999,999,997 or more
113 1.41 999,999,998 DK
31 .39 999,999,999 NA; refused
3,792 47.39 0   Inap.: does not have other debts
*/
 replace DEBTCUR =. if DEBTCUR   > 999999997
}
// --------------------------------Net Wealth Variable Modifications and definitions---------------------------
quietly {
* -----------------------The PSID summarizes wealth net of debt and includes home value. -----------------
/*
 S717 AND ER46970
This variable (S717) is constructed as sum of values of seven asset types
(S703, S705, S709, S711, S713, S715, S719) net of debt value (S707)
plus value of home equity.

 N Minimum Maximum   Mean Std Dev Excluding Values
8002 -363,000.00 42,047,000.00 229,129.45 923,756.23 -

 Count % Value/Range   Text
 - - -99,999,999   Net worth of -$99,999,999 or less

1,001 12.51 -99,999,998 - -1 Actual amount of negative net worth
428 5.35 0   Does not own any asset or home equity,
        or their net value is zero;
6,573 82.14 1 - 999,999,998 Actual amount of positive net worth
- - 999,999,999   Net worth of $999,999,999 or more

Constructed wealth variable ER46970, including equity.

Constructed wealth variable, including equity. This imputed variable is
constructed
as sum of values of seven asset types (ER46938, ER46942, ER46950, ER46954,
ER46956, ER46960, ER46964) net of debt value (ER46946) plus value of home
equity (ER46966). All missing data were assigned.

N Minimum Maximum Mean Std Dev Excluding Values
8690 -1,974,000.00 100,555,000.00 250,534.42 1,819,245.18 -

Count % Value/Range   Text
1,565 18.01 -99,999,998 - -1 Actual amount of negative net worth
571 6.57 0   Does not own any asset or home equity,
        or their net value is zero
6,554 75.42 1 - 999,999,996 Actual amount of positive net worth
- - 999,999,997   Net worth of $999,999,997 or more
*/
* replace NETWEALTH =. if NETWEALTH   >
*---other net wealth variables ---
 //   S416A NWEALTH_ACC
/*S416A ACC WEALTH W/O EQUITY (WEALTH1) 99
Accuracy code for imputation of 1999 wealth summary variables.
Count % Value/Range Text
5,570 79.61 0 Not Imputed
1,427 20.39 1 Imputed*/

//---S417A NWEALTH_EQ_ACC--------------------------------------
/*S417A ACC WEALTH W/ EQUITY (WEALTH2) 99
Accuracy code for imputation of 1999 wealth summary variables.
Count % Value/Range Text
5,427 77.56 0 Not Imputed
1,570 22.44 1 Imputed*/

//---S411A STOCK_ACC--
/*S411A ACC VALUE STOCKS (W16) 99
Accuracy code for imputation of 1999 wealth summary variables.
Count % Value/Range Text
6,731 96.20 0 Not Imputed
266 3.80 1 Imputed*/

//---S416 NWEALTH--
/*S416 IMP WEALTH W/O EQUITY (WEALTH1) 99
This variable is constructed as sum of values of seven asset types
(S403, S405, S409, S411, S413, S415, S419) net of debt value (S407).
N Minimum Maximum Mean Std Dev Excluding Values
6997 -898,150.00 27,572,000.00 126,947.17 730,314.27 -

Count % Value/Range Text
- - -99,999,999 Balance of - $99,999,999 or less
937 13.39 -99,999,998 - -1 Actual amount of negative balance
507 7.25 0 Does not own any asset, or their net
      value is zero;
5,553 79.36 1 - 999,999,998 Actual amount of positive balance
- - 999,999,999 Balance of $999,999,999 or more*/

//---S417 NWEALTH_EQ--
/*S417 IMP WEALTH W/ EQUITY (WEALTH2) 99
This variable is constructed as sum of values of seven asset types (S403,
S405, S409, S411, S413, S415, S419) net of debt value (S407) plus value of
home equity.
N Minimum Maximum Mean Std Dev Excluding Values
6997 -898,150.00 27,732,000.00 169,589.42 762,947.95 -
Count % Value/Range Text
- - -99,999,999 Balance of - $99,999,999 or less
729 10.42 -99,999,998 - -1 Actual amount of negative balance
418 5.97 0 Does not own any asset or home, or their
      net value is zero;
5,850 83.61 1 - 999,999,998 Actual amount of positive balance
- - 999,999,999 Balance of $999,999,999 or more*/
}
//--S411 STOCKS1999--
quietly {
/*S411 IMP VALUE STOCKS (W16) 99
W16. If you sold all that and paid off anything you owed on it, how much would
you have?
This is an imputed version of a variable used in the creation of the 1999 Wealth
summary variables.
N Minimum Maximum Mean Std Dev Excluding Values
1484 10.00 25,000,000.00 140,217.08 841,750.63 0
Count % Value/Range Text
- - -99,999,999 Balance of - $99,999,999 or less
- - -99,999,998 - -1 Actual amount of negative balance
1,484 21.21 1 - 999,999,998 Actual amount of positive balance
- - 999,999,999 Balance of $999,999,999 or more
5,513 78.79 0 Inap.: does not own stocks; would
      break even*/
}
//-- height, weight, bmi--
quietly{
/*
 ER27110 - H23. How tall are you?--FEET
 Count % Value/Range Text
 7,934 99.15 2 - 7 Actual number of feet
 30 .37 8 DK
 38 .47 9 NA; refused
*/
 replace HHTFT =. if HHTFT   > 7
 replace wHTFT =. if wHTFT   > 7
 gen COR_HTFT=.
 replace COR_HTFT=HHTFT if head==10

```
 replace COR_HTFT=wHTFT if head==20 | head==22
 drop HHTFT wHTFT
 rename COR_HTFT HHTFT
quietly {
/*
 ER27111 - H23. How tall are you?--INCHES

 N  Minimum Maximum Mean Std Dev Excluding Values
 7964 .00  11.00 5.45 3.66 98, 99

 Count %  Value/Range Text
 7,964 99.53 0 - 11  Actual number of inches
 13  .16  98  DK
 25  .31  99  NA; refused
*/
}
 replace HHTIN =. if HHTIN        > 97
 replace wHTIN =. if wHTIN        > 97
 gen COR_HTIN=.
 replace COR_HTIN=HHTIN if head==10
 replace COR_HTIN=wHTIN if head==20 | head==22
 drop HHTIN wHTIN
 rename COR_HTIN HHTIN
quietly {
/*
 ER27109 - H22. About how much do you weigh?--POUNDS
 N  Minimum Maximum Mean Std Dev Excluding Values
 7858 50.00 400.00 187.64 41.80 998, 999

 Count %  Value/Range Text
 1  .01  50  Fifty pounds or less
 7,853 98.14 51 - 399 Actual number of pounds
 4  .05  400  Four hundred pounds or more
 50  .62  998  DK
 94  1.17 999  NA; refused
*/
}
 replace HWTLBS =. if HWTLBS        > 997
 replace wWTLBS =. if wWTLBS        > 997
 gen COR_WTLBS=.
 replace COR_WTLBS=HWTLBS if head==10
 replace COR_WTLBS=wWTLBS if head==20 | head==22
 drop HWTLBS wWTLBS
 rename COR_WTLBS HWTLBS
 gen BMI=.
 gen HTFT=.
 replace HTFT=HHTFT*12
 gen TOTHT=.
 replace TOTHT=HTFT+HHTIN
 replace BMI=(HWTLBS/((TOTHT)^2))*703
}
// ------------------------------------------AGE and cohort modifications------------------------------------------
quietly {
```

```
/*
ER25017 - Age of 2005 Head - This variable represents the actual
age of the 2005 Head of the FU. The minimum value is usually 18,
although in rare cases a person under 18 might become Head.


N  Minimum Maximum Mean Std Dev Excluding Values
8000 16.00 99.00 45.08 16.26 999


Count % Value/Range  Text
8,000 99.98 14 - 120 Actual age
2  .02  999   NA; DK
*/
replace AGE =. if AGE        ==999
replace wAGE =. if wAGE        ==999
***************Now Connect the HEAD and WIFE responses with the right individual
*---------------------------------------------Begin AGE modifications -------------------------------------
gen COR_AGE=.
replace COR_AGE=AGE if head==10
replace COR_AGE=wAGE if head==20 | head==22
drop AGE wAGE
rename COR_AGE AGE
bysort uniqueid (time):gen t_AGE=AGE[_n+1]
replace AGE=t_AGE-2 if AGE==.
bysort uniqueid (time):replace t_AGE=AGE[_n+2]
replace AGE=t_AGE-4 if AGE==.
bysort uniqueid (time):replace t_AGE=AGE[_n+3]
replace AGE=t_AGE-6 if AGE==.
bysort uniqueid (time):replace t_AGE=AGE[_n+4]
replace AGE=t_AGE-8 if AGE==.
bysort uniqueid (time):replace t_AGE=AGE[_n+5]
replace AGE=t_AGE-10 if AGE==.
gen t_compare=time
bysort uniqueid (time): gen t_marker = _n
gen COHORT=.
replace COHORT=5 if AGE>1 & AGE<=30 & AGE !=. & t_marker==1
replace COHORT=4 if AGE>30 & AGE<=40 & AGE !=. & t_marker==1
replace COHORT=3 if AGE>40 & AGE<=50 & AGE !=. & t_marker==1
replace COHORT=2 if AGE>50 & AGE<=60 & AGE !=. & t_marker==1
replace COHORT=1 if AGE>60 & AGE !=. & t_marker==1
 //                              drop if AGE==.
bysort uniqueid: egen COR_COHORT= sum(COHORT)
tabulate COR_COHORT, gen(COHORT_)
 drop COHORT
drop if COHORT_1==1
drop COHORT_1
rename (COHORT_2 COHORT_3 COHORT_4 COHORT_5 COHORT_6) ///
  (COHORT_1 COHORT_2 COHORT_3 COHORT_4 COHORT_5)
 gen AGE2=AGE^2/10 // generate age square
gen AGE3=AGE^3/100 // generate age cube
gen AGE4=AGE^4/1000
}
// -------------------------------------Changes in Family Unit and Marital Status---------------------------------
quietly {
```

```
/*
```
ER25007 - All recontact cases, including splitoffs from recontacts,
   are coded 8 for this variable.

Codes 2-8 have priority over codes 0 and 1, and code 8 has priority over
everything else.

Count % Value/Range Text
4,892 61.13 0 No change; no movers-in or movers-out
        of the family
1,570 19.62 1 Change in members other than head or
        wife/"wife" only
313 3.91 2 Head is the same person as in 2003 but
        wife/"wife" left or died; head has
        new wife/"wife"; used also when cohabiting,
        nonrelative female becomes "wife"
213 2.66 3 Wife/"wife" from 2003 is now head
191 2.39 4 2003 female head got married--husband
        (usually a nonsample member)
        is now head. Used also when cohabiting
        nonrelative male becomes head
443 5.54 5 Some followable individual other than 2003
        head or wife/"wife" has become
        head of this FU. (Used primarily for male
        and unmarried female splitoffs.)
107 1.34 6 Some followable female other than 2003 head
        got married and her husband is now head.
        (Used primarily for married female splitoffs.)
9 .11 7 Female head in 2003 with husband in institution--
        husband in FU in 2005 and is now head
234 2.92 8 Other (used for recontacts and recombined
        families--these latter are usually heads and wives
        who have parted for a wave or more, been interviewed
        separately, and who have reconciled at some time since
        the 2003 interview but prior to the 2005 interview).
30 .37 9 Neither head nor wife/"wife" (if there is one) is followable
        and neither of them was a head or wife/"wife" last year.
        (Used primarily for underage splitoff children.)
```
*/
/*
```
ER28050 - This change variable uses the definition of marital status
given at ER28049 above.
Count % Value/Range Text
3,764 47.04 1 2003 head and wife/"wife" or head and husband
        of head remained
        married to each other in 2005
2,626 32.82 2 2003 head remained unmarried (single, separated,
        widowed, divorced)
        in 2005. There was no wife,"wife" or husband
        in FU in either year
280 3.50 3 2003 head and wife/"wife" or head and husband of
        head were married
        in 2003; 2005 head is one of these two
```

```
        individuals and divorced or separated
  50  .62  4  2003 head and wife/"wife" or head and husband
           of head were married
           in 2003; 2005 head is one of these two
           individuals and is widowed
 469 5.86 5  2003 head was unmarried (i.e. no spouse present)
           in 2003 but was married by 2005
           and has either stayed head or become
           wife/"wife" or husband of head for 2005
  19  .24  6  2003 head and wife/"wife" or head and husband
           of head were married in 2003,
           became divorced and married someone by 2005
   1  .01  7  2003 head and wife/"wife" or head and husband
            of head were married in 2003,
            became widowed and remarried by 2005
 793 9.91 8  Other, including all splitoffs except those who
          were either head or wife/"wife" in 2003;
          recontact family
*/
 gen STABLEMAR=0
 replace STABLEMAR=1 if MSTATUS==1
 gen STABLESINGL=0
 replace STABLESINGL=1 if MSTATUS==2
 gen FAMDEATH=0
 replace FAMDEATH=1 if MSTATUS==4
 gen NEWLYWED=0
 replace NEWLYWED=1 if MSTATUS==5
 gen MARINSTAB=0
 replace MARINSTAB=1 if MSTATUS==6 | MSTATUS==3 | MSTATUS==7 | MSTATUS==8
}
// -----------------------------------------OWN or RENT variables-------------------------------------------
quietly {
/*
 ER25028 - A19. Do you (or anyone else in your family living there) own the
 (home/apartment), pay rent, or what?


 Count %  Value/Range Text
 4,784 59.79 1  Owns or is buying home, either fully or jointly;
      mobile home owners who rent lots are included here
 2,801 35.00 5  Pays rent
 417  5.21 8  Neither owns nor rents
*/
 replace OWNRENT =. if OWNRENT      > 6
}
//----------------------------------------------------EDUCATION----------------------------------------------------
quietly {
/*
 ER28047 - Head's Completed Education Level
 Values in the range 1-16 represent the actual grade of school completed;
 e.g., a value of 8 indicates that the Head completed the eighth grade. A code
 value of 17 indicates that the Head completed at least some postgraduate work.
 Values were computed as follows: If it is not known whether Head attended
 college (ER27413=8 or 9) or the number of years of college is unknown
```

(ER27416=8 or 9), then the value is 99. Otherwise, if Head attended college (ER27413=1), then the value is 12 plus the number of years of college attended (ER27416). Otherwise, if Head did not attend college, (ER27413=5), the values are as follows:

(a) if Head is a high school graduate (ER27402=1), the value is 12;
(b) if Head received a GED (ER27402=2), the value is the last grade
 finished (ER27405);

 (c) if Head neither graduated from high school nor got a GED (ER27402=3),
  the value is the last grade finished (ER27410);

 (d) if it is not known whether Head graduated from high school, got a GED,
  or neither (ER27402=8 or 9), then the value is 99.

Education is asked only when the FU acquires a new Head. In cases where the Head has
remained the same person from the previous interview (ER27352=5), this variable has
been carried forward from previous years' data with no updating or other change. Education
was reasked of all Heads in 1985. See ER28052 for the recency of this
information.

This variable differs from the individual level variable ER33817 in the
treatment of
Heads who received a GED but did not attend college. The family-level
variable value
for such Heads is the grade completed; for the individual-level variable,
the value is 12.

N Minimum Maximum Mean Std Dev Excluding Values
7558 .00 17.00 12.88 2.68 99

Count % Value/Range Text
27 .34 0   Completed no grades of school
6,907 86.32 1 - 16 Actual number
624 7.80 17 At least some post-graduate work
444 5.55 99 NA; DK
*/
 replace YSCHOO =. if YSCHOO   == 99
 replace wYSCHOO =. if wYSCHOO   == 99
 gen COR_YSCHOO = .
 replace COR_YSCHOO = YSCHOO if head==10
 replace COR_YSCHOO = wYSCHOO if head==20 | head==22
 drop YSCHOO wYSCHOO
 rename COR_YSCHOO YSCHOO
 gen SQYSCHOO=YSCHOO^2
}
// ---Annual Needs Standard---
quietly {
/*
 ER28041 and ER28039: Annual Needs Standard for the 2004 Family

--CENSUS VERSION
This poverty threshold was taken from Census Bureau's website,
http://www.census.gov/hhes/www/poverty/threshld.html. This is Table,
'Poverty Thresholds for 2004 by Size of Family and Number of Related
Children Under 18 Years: 2004.' The threshold values are based on family
size,
the number of persons in the family under age 18, and the age of the
householder.
This variable has been adjusted for changes in family composition
during 2004.
Please refer to Section I, Part 5, of guide to the 1993 PSID data,
93GUIDE.PDF,
for further details about the generation process.

NOTE: The range given is valid for this wave's calculations only.

N Minimum Maximum Mean Std Dev Excluding Values
8002 9,060.00 41,480.00 14,855.57 4,787.52 -

Count % Value/Range Text
8,002 100.00 9,060 - 42,039 Actual Census needs

ER28041 - Annual Needs Standard for the 2003 Family--CENSUS VERSION
This poverty threshold was taken from Census Bureau's website,
http://www.census.gov/hhes/www/poverty/threshld.html. This is Table,
'Poverty Thresholds for 2003 by Size of Family and Number of Related
Children Under 18 Years.' The threshold values are based on family size,
the number of persons in the family under age 18, and the age of the
householder. This variable has been adjusted for changes in family
composition
during 2003. Please refer to Section I, Part 5, of the guide to the
1993 data,
93GUIDE.PDF, for further details about the generation process.

NOTE: The range given is valid for this wave's calculations only.

N Minimum Maximum Mean Std Dev Excluding Values
8002 8,825.00 40,404.00 14,559.87 4,679.63 -

Count % Value/Range Text
8,002 100.00 8,825 - 40,948 Actual Census needs
*/
}
// ---OCCUPATION Variables---
quietly{
/*
ER25127 and ER17272
ER25127 - BC20. Now I have a few questions about each of the jobs you have
told me about. In your work for [EMPLOYER NAME], what (is/was) your (HEAD'S)
occupation (when you left that employer)? What sort of work (do/did) you do?
What (are/were) your most important activities or duties?--CURRENT OR MOST
RECENT MAIN JOB

The 3-digit occupation code from 2000 CENSUS OF POPULATION AND HOUSING:
ALPHABETICAL INDEX OF INDUSTRIES AND OCCUPATIONS issued by the U.S. Department
of Commerce and the Bureau of the Census was used for this variable. Please
refer to www.census.gov/hhes/www/ioindex/ioindex.html for complete listings.

N Minimum Maximum Mean Std Dev Excluding Values
6526 1.00 983.00 474.15 282.29 0, 999

Count % Value/Range Text
682 8.52 1 - 43 Management Occupations
124 1.55 50 - 73 Business Operations Specialists
101 1.26 80 - 95 Financial Specialists
165 2.06 100 - 124 Computer and Mathematical Occupations
158 1.97 130 - 156 Architecture and Engineering Occupations
56 .70 160 - 196 Life, Physical, and Social Science Occupations
93 1.16 200 - 206 Community and Social Services Occupations
58 .72 210 - 215 Legal Occupations
232 2.90 220 - 255 Education, Training, and Library Occupations
111 1.39 260 - 296 Arts, Design, Entertainment, Sports, and Media
     Occupations
184 2.30 300 - 354 Healthcare Practitioners and Technical Occupations
139 1.74 360 - 365 Healthcare Support Occupations
188 2.35 370 - 395 Protective Service Occupations
290 3.62 400 - 416 Food Preparation and Serving Occupations
293 3.66 420 - 425 Building and Grounds Cleaning and Maintenance Occupations
171 2.14 430 - 465 Personal Care and Service Occupations
594 7.42 470 - 496 Sales Occupations
679 8.49 500 - 593 Office and Administrative Support Occupations
102 1.27 600 - 613 Farming, Fishing, and Forestry Occupations
473 5.91 620 - 676 Construction Trades
1 .01 680 - 694 Extraction Workers
387 4.84 700 - 762 Installation, Maintenance, and Repair Workers
593 7.41 770 - 896 Production Occupations
572 7.15 900 - 975 Transportation and Material Moving Occupations
80 1.00 980 - 983 Military Specific Occupations
45 .56 999 NA; DK
1,431 17.88 0 Inap.: did not work for money in 2004 or has not
     worked for money since January 1, 2003
     (ER25109=5, 8, or 9)

ER17272 - B35. What was your occupation when you started working for your
 present employer in 2000?
B36. What sort of work did you do?

The 3-digit occupation code from 1970 Census of Population; Alphabetical Index
of Industries and Occupations issued June 1971 by the U.S. Department of
Commerce and the Bureau of Census was used for this variable. Please refer
to Appendix V2, Wave XIV (1981) documentation, for complete listings.

N Minimum Maximum Mean Std Dev Excluding Values
56 3.00 964.00 499.46 289.93 0, 999

Count % Value/Range Text
8 .11 1 - 195 Professional, Technical, and Kindred Workers
6 .08 201 - 245 Managers and Administrators, except Farm
1 .01 260 - 285 Sales Workers
10 .14 301 - 395 Clerical and Kindred Workers
4 .05 401 - 600 Craftsman and Kindred Workers
11 .15 601 - 695 Operatives, except Transport
2 .03 701 - 715 Transport Equipment Operatives
5 .07 740 - 785 Laborers, except Farm
- - 801 - 802 Farmers and Farm Managers
- - 821 - 824 Farm Laborers and Farm Foremen
9 .12 901 - 965 Service Workers, except Private Household
- - 980 - 984 Private Household Workers
4 .05 999 NA; DK
7,346 99.19 0 Inap.: not working for money now; did not begin
     working
     for present employer during 2000; same
     position as in 2000
*/
 replace OCCU =. if OCCU   > 998
}
*---correctional facility measure---
quietly {
/*
 ER33269 - M30. How many times (was he/she]/were you) ever sentenced
to an adult corrections institution?

 N Minimum Maximum Mean Std Dev Excluding Values
578 1.00 20.00 1.84 1.72 0, 98, 99

Count % Value/Range Text
578 .77 1 - 20 Actual number of times
13 .02 98 DK
3 .00 99 NA; refused
74,659 99.21 0 Inap.: none; from Immigrant sample
(ER30001=3001-3511)
     ; main family nonresponse by 1995 or
     mover-out nonresponse
     by 1994 (ER33201=0); born or moved in
     after the 1995 interview
     (ER33201>0 and ER33202=0); under age 13
     or aged 50 or over
     (ER33204=001-012, 050-125 or 999); never
     in school (ER33225=9996);
     never been booked or charged (ER33266=5,
     8 or 9); never spent time
     in a corrections institution (ER33267=5,
     8 or 9)
*/
 replace PACOREC =. if PACOREC   > 97
/*
 ER33268
*/

```
 replace PYCOREC =. if PYCOREC      > 97
}
*---------------------------------------Simple Unemployment Measure---------------------------------------
*               At the time of interview, the PSID
*               interviewer asks the employment state of the interviewee
quietly {
/*
 ER25104 - BC1. We would like to know about what you do--are you
 (HEAD) working now, looking for work, retired, keeping house,
 a student, or what?--FIRST MENTION

 N  Minimum Maximum Mean Std Dev Excluding Values
 7995 1.00 8.00 1.85 1.56 0, 99

 Count %  Value/Range Text
 5,957 74.44 1   Working now
 41 .51   2   Only temporarily laid off, sick leave or matern
 402 5.02  3   Looking for work, unemployed
 914 11.42  4   Retired
 370 4.62  5   Permanently disabled; temporarily disabled
 204 2.55  6   Keeping house
 80 1.00  7   Student
 27 .34   8   Other; "workfare"; in prison or jail
 5 .06   99   NA; DK
 2 .02   0   Wild code
*/
*--------------simplify above answers using temporary laid off or unemployed as "unemployed"------------

 gen UNEMP = .
 replace UNEMP=0 if EMPS<=1 & head==10 | EMPS>=7 & head==10 ///
       |wEMPS<=1 & head==20| wEMPS>=7 & head==20 ///
     | wEMPS<=1 & head==22| wEMPS>=7 & head==22
  replace UNEMP=1 if EMPS == 2 & head==10 | EMPS == 3 & head==10
 replace UNEMP=1 if wEMPS==2 & head==20 | wEMPS==3 & head ==20
 replace UNEMP=1 if wEMPS==2 & head==22 | wEMPS==3 & head ==22
  gen RETIRE=.
 replace RETIRE=0 if EMPS<=3 & head==10 | EMPS>=6 & head==10 ///
    |wEMPS<=3 & head==20 | wEMPS>=6 & head==20 ///
    |wEMPS<=3 & head==22 | wEMPS>=6 & head==22
 replace RETIRE=1 if EMPS==4 & head==10 | EMPS==5 & head==10
 replace RETIRE=1 if wEMPS==4 & head==20 | wEMPS==5 & head==20
 replace RETIRE=1 if wEMPS==4 & head==22 | wEMPS==4 & head==22
}
rename wEMPS wEMP1S
}
// ------------------MONTHLY EMPLOYMENT VARIABLES and MANIPULATIONS------------------
quietly {
/*
 ER21133 AND ER2119 - BC6. When did you (HEAD) start and when did
 you stop working for this employer? Please give me all of the start and
 stop dates if you have gone to work for (this employer/yourself) more than
 once.--JANUARY 2002 FOR CURRENT OR MOST RECENT MAIN JOB
```

Count % Value/Range Text
4,823 61.66 1 Was working for this employer at least part of this
    month
23 .29 9 NA; DK
2,976 38.05 0 Inap.: did not work for this employer at all
    during this month;
    did not work for money in 2002 or has not
    worked for money since
    January 1, 2001 (ER21127=5, 8, or 9); began
    working for this employer
    in 2003 (ER21130=2003)

B39. In which months during 1993 were you working for that employer as your
 main job?--JANUARY 1993

Count % Value/Range Text
5,670 52.68 1 Was working on this job at least part of this month
41 .38 8 DK
11 .10 9 NA; refused
5,042 46.84 0 Inap.: did not work on this job at all during this
    month; not working for money now; began working for
    present employer in 1994
*/
 replace EMP01M =. if EMP01M   > 7
 replace wEMP01M =. if wEMP01M   > 7

/* ER21134 AND ER2120 */
 replace EMP02M =. if EMP02M   > 7
 replace wEMP02M =. if wEMP02M   > 7
/* ER21135 AND ER2121*/
 replace EMP03M =. if EMP03M   > 7
 replace wEMP03M =. if wEMP03M   > 7
/* ER21136 AND ER2122*/
 replace EMP04M =. if EMP04M   > 7
 replace wEMP04M =. if wEMP04M   > 7
/* ER21137 AND ER2123*/
 replace EMP05M =. if EMP05M   > 7
 replace wEMP05M =. if wEMP05M   > 7
/* ER21138 AND ER2124*/
 replace EMP06M =. if EMP06M   > 7
  replace wEMP06M =. if wEMP06M   > 7
/* ER21139 AND ER2125*/
 replace EMP07M =. if EMP07M   > 7
 replace wEMP07M =. if wEMP07M   > 7
/* ER21140 AND ER2126*/
 replace EMP08M =. if EMP08M   > 7
 replace wEMP08M =. if wEMP08M   > 7
/* ER21141 AND ER2127*/
 replace EMP09M =. if EMP09M   > 7
 replace wEMP09M =. if wEMP09M   > 7
/* ER21142 AND ER2128*/
 replace EMP10M =. if EMP10M   > 7
 replace wEMP10M =. if wEMP10M   > 7

```
/*  ER21143 AND ER2129*/
 replace EMP11M =. if EMP11M      > 7
 replace wEMP11M =. if wEMP11M      > 7
/*  ER21144 AND ER2130*/
 replace EMP12M =. if EMP12M      > 7
 replace wEMP12M =. if wEMP12M      > 7
*------------------develop a measure of a employment from monthly employment dummies-------------
gen COR_EMP01M=.
replace COR_EMP01M=EMP01M if head==10
replace COR_EMP01M=wEMP01M if head==20 | head==22
gen COR_EMP02M=.
replace COR_EMP02M=EMP02M if head==10
replace COR_EMP02M=wEMP02M if head==20 | head==22
gen COR_EMP03M=.
replace COR_EMP03M=EMP03M if head==10
replace COR_EMP03M=wEMP03M if head==20 | head==22
gen COR_EMP04M=.
replace COR_EMP04M=EMP04M if head==10
replace COR_EMP04M=wEMP04M if head==20 | head==22
gen COR_EMP05M=.
replace COR_EMP05M=EMP05M if head==10
replace COR_EMP05M=wEMP05M if head==20 | head==22
gen COR_EMP06M=.
replace COR_EMP06M=EMP06M if head==10
replace COR_EMP06M=wEMP06M if head==20 | head==22
gen COR_EMP07M=.
replace COR_EMP07M=EMP07M if head==10
replace COR_EMP07M=wEMP07M if head==20 | head==22
gen COR_EMP08M=.
replace COR_EMP08M=EMP08M if head==10
replace COR_EMP08M=wEMP08M if head==20 | head==22
gen COR_EMP09M=.
replace COR_EMP09M=EMP09M if head==10
replace COR_EMP09M=wEMP09M if head==20 | head==22
gen COR_EMP10M=.
replace COR_EMP10M=EMP10M if head==10
replace COR_EMP10M=wEMP10M if head==20 | head==22
gen COR_EMP11M=.
replace COR_EMP11M=EMP11M if head==10
replace COR_EMP11M=wEMP11M if head==20 | head==22
gen COR_EMP12M=.
replace COR_EMP12M=EMP12M if head==10
replace COR_EMP12M=wEMP12M if head==20 | head==22
gen yearemp= (EMP01M+EMP02M+EMP03M+EMP04M+EMP05M+EMP06M+EMP07M+ ///
EMP08M+EMP09M+EMP10M+EMP11M+EMP12M)
//              note that in this measure a higher value is fuller employment
}
*----------------------------------------------------------------------------------------------------------------------
//                        FAMILY INCOME VARIABLE
quietly {
/*
ER28037 - The income reported here was collected in 2005 about tax year 2004.
Please note that this variable can contain negative values. Negative
```

values indicate a net loss, which in waves prior to 1994 were bottom-coded
at $1, as were zero amounts. These losses occur as a result of
business or farm losses.

This variable is the sum of these seven variables:

ER27953 Head and Wife/"Wife" Taxable Income-2004
ER28002 Head and Wife/"Wife" Transfer Income-2004
ER28009 Taxable Income of Other FU Members-2004
ER28030 Transfer Income of OFUMS-2004
ER28031 Head Social Security Income-2004
ER28033 Wife/"Wife" Social Security Income-2004
ER28035 OFUM Social Security Income-2004

N Minimum Maximum   Mean Std Dev Excluding Values
8002 -39,000.00 5,500,000.00 62,375.62 104,829.96 -

Count % Value/Range Text
 - - -999,999 Loss of $999,999 or more
 3 .04 -999,998 - -1 Actual loss
 29 .36 0   No family money income in 2004
 7,970 99.601 - 9,999,998 Actual amount
 - - 9,999,999 $9,999,999 or more
*/
* replace FAMINC =. if FAMINC   >
}
*----------------------- GENERATE MEASURE OF PAST FINANCIAL STRAIN-------------------------
*   A retrospective question was asked in 1996 about the years 1991-1996 and the
*   ability to pay and deal with a variety of indebtedness. The scale appears to
*   be defined as an increasing burden up to (7)- None of the above
quietly {
/*
ER8841 AND ER8842 AND ER8843 ETC....G115. Sometimes people
run short of cash. Since January 1991 have you found
 yourself unable to pay your bills when they were due, obtained a loan to
consolidate or pay off your debts, had a creditor call or come to see you
to demand payment, had your wages attached or garnished by a creditor, had a
lien filed against your property because you could not pay a bill,
or had your home, car, or other property repossessed?--FIRST MENTION

 Count % Value/Range Text
 2,135 25.09 1 Found yourself unable to pay your bills when they were
     due
 385 4.52 2 Obtained a loan to consolidate or pay off your debts
 156 1.83 3 Had a creditor call or come to see you to demand payment
 14 .16 4 Had your wages attached or garnished by a creditor
 7 .08 5 Had a lien filed against your property because you could
     not pay a bill
 7 .08 6 Had your home, car, or other property repossessed
 5,614 65.96 7 No to all of the above
 2 .02 8 DK
 7 .08 9 NA; refused
 184 2.16 0 Inap.: respondent is not head, wife or "wife"

```
*/
*--------------------------------I assume that answers 7,8,9 all = NOSTRESS -------------------------------

 replace STRMPRB =0 if STRMPRB      > 6
 replace STRMPRB_2ND =0 if STRMPRB_2ND   > 6
 replace STRMPRB_3RD =0 if STRMPRB_3RD   > 6
 replace STRMPRB_4TH =0 if STRMPRB_4TH   > 6
 replace STRMPRB_5TH =0 if STRMPRB_5TH   > 6
 replace STRMPRB_6TH =0 if STRMPRB_6TH   > 6
// this composite variable is naturally weighted by values 1,2,3,4,5,6 in increasing penalty
gen PASTFS = STRMPRB + STRMPRB_2ND + STRMPRB_3RD + STRMPRB_4TH + ///
STRMPRB_5TH + STRMPRB_6TH
 }
//---------------------------------------------------Hospital Nights --------------------------------------------
quietly {
/*
ER23090 - H8a. How many nights were you in a hospital altogether in 2002?--DAYS

 N Minimum Maximum Mean Std Dev Excluding Values
 785 1.00 300.00 8.22 19.41 0, 998

 Count %  Value/Range Text
 785  10.04 1 - 365 Actual number of days
 7  .09  998 DK
 -  -  999 NA; refused
7,030 89.87 0 Inap.: response given as weeks only; not hospitalized in
2002
*/
*------------NOTE THAT I DROPPED THE 7 INDIVIDUALS WHO ANSWERED DK --------------
*
 replace HNIGHTS =. if HNIGHTS      > 997
 replace wHNIGHTS =. if wHNIGHTS      > 997
 gen COR_HNIGHTS=.
 replace COR_HNIGHTS=HNIGHTS if head==10
 replace COR_HNIGHTS=wHNIGHTS if head==20 | head==22
 drop HNIGHTS wHNIGHTS
 rename COR_HNIGHTS HNIGHTS
}
*-------------BEGIN DIVIDEND, INTEREST, and TRUSTFUND INCOME ADJUSTMENTS------------
*               Amounts are cross referenced with the time period of distribution and adjusted
*               as necessary.
quietly {
/*
 ER26002 - G26b. How much was it?--TIME UNIT

 Count %  Value/Range Text
 -  -  3 Week
 -  -  4 Two weeks
 23  .29  5 Month
 886  11.07 6 Year
 6  .07  7 Other
 170  2.12 8 DK
 1  .01 9 NA; refused
```

```
 6,916 86.43 0 Inap.: did not receive income from dividends in 2004
*/


 replace DIVTIME =. if DIVTIME      > 7
/*
 ER26001 - G26b. How much was it?--AMOUNT

 N Minimum Maximum  Mean  Std Dev  Excluding Values
 914 1.00 300,000.00 4,713.47 15,298.07 0, 999997, 999998, 999999

 Count %  Value/Range Text
 914  11.42 1 - 999,996 Actual amount
 1  .01  999,997 $999,997 or more
 139  1.74 999,998 DK
 32  .40  999,999 NA; refused
 6,916 86.43 0 Inap.: did not receive income from dividends in 2004
*/
 replace DIVIDEND =. if DIVIDEND      > 999997
 gen COR_DIVIDEND = DIVIDEND if DIVTIME==6
 replace COR_DIVIDEND = DIVIDEND*12 if DIVTIME==5
 replace COR_DIVIDEND = DIVIDEND*2 if DIVTIME==7 /*assume biannual
 distributions - if quarterly it underestimates*/
 replace COR_DIVIDEND = DIVIDEND*52 if DIVTIME==3
 replace COR_DIVIDEND = DIVIDEND*26 if DIVTIME==4
 }
//-----------------------------------------------------------INTEREST---------------------------------------------------
 quietly {
/*
 ER26019 - G26c. How much was it?--TIME UNIT

 Count  % Value/Range  Text
 2   .02   3 Week
 -   -  4 Two weeks
 19   .24  5 Month
 1,572  19.65 6 Year
 3   .04  7 Other
 224  2.80 8  DK
 4   .05  9  NA; refused
 6,178  77.21 0  Inap.: did not receive income from interest in 2004
*/
 replace INTTIME =. if INTTIME      > 7
/*
 ER26018 - G25c. How much was it?--AMOUNT
 N  Minimum Maximum  Mean  Std Dev  Excluding Values
 1594 1.00 120,000.00 1,541.99 6,386.62 0, 999998, 999999

 Count %  Value/Range Text
 1,594 19.92 1 - 999,996 Actual amount
 -  -  999,997 $999,997 or more
 180  2.25 999,998 DK
 50  .62  999,999 NA; refused
 6,178 77.21 0 Inap.: did not receive income from interest in 2004
*/
```

```
replace INTEREST =. if INTEREST     > 999997
gen COR_INTEREST = INTEREST if INTTIME==6
replace COR_INTEREST = INTEREST*12 if INTTIME==5
replace COR_INTEREST = INTEREST*2 if INTTIME==7
/*assume biannual distributions - if quarterly it underestimates*/
replace COR_INTEREST = INTEREST*52 if INTTIME==3
replace COR_INTEREST = INTEREST*26 if INTTIME==4
}
//--------------------------------------------Trust Fund-----------------------------------------------------------
quietly {
/*
ER26036 - G26d. How much was it?--TIME UNIT

Count % Value/Range Text
- - 3 Week
- - 4 Two weeks
4 .05 5 Month
56 .70 6 Year
- - 7 Other
4 .05 8 DK
- - 9 NA; refused
7,938 99.20 0 Inap.: no income from trust funds or royalties in 2004
*/
replace TFUNDTIME =. if TFUNDTIME     > 7
/*
ER26035 - G25d. How much was it?--AMOUNT

N Minimum Maximum  Mean  Std Dev  Excluding Values
60 27.00 534,000.00 20,437.57 69,143.66 0, 999998, 999999

Count %  Value/Range Text
60  .75  1 - 999,996 Actual amount
-  -  999,997 $999,997 or more
3  .04  999,998 DK
1  .01  999,999 NA; refused
7,938 99.20 0 Inap.: did not receive income from trust funds or
royalties in 2004
*/
replace TFUND =. if TFUND       > 999997
gen COR_TFUND = TFUND if TFUNDTIME==6
replace COR_TFUND = TFUND*12 if TFUNDTIME==5
replace COR_TFUND = TFUND*2 if TFUNDTIME==7 /*assume biannual distributions
- if quarterly it underestimates*/
replace COR_TFUND = TFUND*52 if TFUNDTIME==3
replace COR_TFUND = TFUND*26 if TFUNDTIME==4
}
//--------------------------------ETHNIC and RACE HEAD and WIFE DISCUSSION------------------------
quietly {
/* ((((((note ethnic is NOT race...more a cultural identifier)))))

ER27397 - See the note at ER27352.  This variable indicates the
type of response
we received to this question. Codes 2 and 3 had priority.
```

Count % Value/Range Text
433 5.41 1   American
1,115 13.93 2   Hyphenated American (e.g., African-American,
      Mexican-American)
3,722 46.51 3   National origin (e.g., French, German, Dutch,
      Iranian, Scots-Irish)
104 1.30 4   Nonspecific Hispanic identity (e.g., Chicano,
      Latino)
1,725 21.56 5   Racial (e.g., white or Caucasian, black)
96 1.20 6   Religious (e.g., Jewish, Roman, Catholic,
      Baptist)
52 .65 7   Other (e.g., "a mutt", "Heinz 57", "good old
      boy", "hillbilly")
755 9.44 9   NA; DK
*/
*-------------------------------------RACE combined HEAD and WIFE --
*-------------------------------note that race is not asked of non head or wife designation--------------------
/*
ER11848(1997) "L40/95 RACE OF HEAD 1"
L40/L95. In order to get an idea of the different races and ethnic groups that
participate
in the study, I would like to ask you about your background. Are you white,
black,
American Indian, Aleut, Eskimo, Asian, Pacific Islander, or another race?--
FIRST MENTION

See the note at ER11812.

Count % Value/Range Text
4,130 61.21 1 White
2,034 30.15 2 Black
40 .59 3 American Indian, Aleut, Eskimo
114 1.69 4 Asian, Pacific Islander
298 4.42 5 Mentions Latino origin or descent
2 .03 6 Mentions color other than black or white
83 1.23 7 Other
- - 8 DK
46 .68 9 NA; refused
--------------------------------- NEED TO STITCH TOGETHER THE RACE OF WIFE ---------------------

ER11760(1997) "K34/87 RACE OF WIFE 1"
K34/K87. In order to get an idea of the different races and ethnic groups
that participate in the study,
I would like to ask you about your (wife/"WIFE'S) background. Is she white,
black, American Indian,
Aleut, Eskimo, Asian, Pacific Islander, or another race?--FIRST MENTION

See the note at ER11731.

Count % Value/Range Text
2,684 39.78 1 White
795 11.78 2 Black

18 .27 3 American Indian, Aleut, Eskimo
84 1.24 4 Asian, Pacific Islander
205 3.04 5 Mentions Latino origin or descent
1 .01 6 Mentions color other than black or white
47 .70 7 Other
- - 8 DK
20 .30 9 NA; refused
2,893 42.88 0 Inap.: no wife/"wife" in FU
*/
*---BEGIN RACE DEFINITION --------------------------------------
gen comborace=.
 bysort uniqueid: replace comborace=RACEW if head==20 | head==22
                                /*WIFE'S RACE SWITCH*/
 bysort uniqueid: replace comborace=RACEH if head==10
//---HEAD'S RACE SWITCH---
 egen RACE = min(comborace), by(uniqueid)
 gen COR_RACE = 1 if RACE ==1   /* WHITE   = 1 */
 replace COR_RACE = 2 if RACE ==2 /* BLACE   = 2 */
 replace COR_RACE = 3 if RACE ==5 /* HISPANIC = 5 */
* All other races aggregated, notice that total is less than 400 total
*   observations
 replace COR_RACE = 4 if RACE ==3|RACE==4|RACE==6|RACE==7|RACE==9|RACE==0
 gen WHITE=0
 gen BLACK=0
 gen HISPANIC=0
 gen OTHERRACE=0
 replace WHITE=1 if COR_RACE==1
 replace BLACK=1 if COR_RACE==2
 replace HISPANIC=1 if COR_RACE==3
 replace OTHERRACE=1 if COR_RACE==4
 gen NON_WHITE1=1 if BLACK==1 | HISPANIC==1 | OTHERRACE==1
 replace NON_WHITE1=0 if NON_WHITE1==.
 }
*--- End Race Discussion --
*---Begin Gender Modifications ---------------------------------------
 replace SEX=. if SEX==0 // wildcard sex=0 is unknown
 replace SEX=0 if SEX==2 /* female = 0 */
*--BEGIN CRCS MODIFICATIONS --
* Rename and transform Non-Responses to missing data form "."
*--RENAMING--
quietly {
 rename CS14V63 PCHCRAsthma
 rename CS14V115 PCHCRDepression
 rename CS14V67 PCHCRDiabetes
 rename CS14V91 PCHCREpil
 rename CS14V83 PCHCRHeart
 rename CS14V103 PCHCRHighBloodp
 rename CS14V71 PCHCRResp
 rename CS14V75 PDemSpeech
 rename CS14V147 RPCHOthrPsych
 rename CS14V108 RPDemDrugsAlc
 rename CS14V52 PCHSRHS
 rename CS14V155 PCHHT13

```
rename CS14V158 PCHWT13
rename CS14V163 PEMPDad05
rename CS14V165 PEMPDad1316
rename CS14V164 PEMPDad612
rename CS14V260 PEMPDADHoldjob
rename CS14V293 PHMConfideDad
rename CS14V280 PHMConfideMom
rename CS14V298 PHMDADAffection
rename CS14V292 PHMDadUnderstood
rename CS14V172 PHMFinSTR05
rename CS14V174 PHMFinSTR1316
rename CS14V173 PHMFinSTR612
rename CS14V285 PHMMomAffection
rename CS14V286 PHMMomParenting
rename CS14V279 PHMMomUnderstood
rename CS14V17  PHMParD
rename CS14V18  PHMParDAgeA
rename CS14V19  PHMParDAgeB
rename CS14V20  PHMParDAgeC
rename CS14V21  PHMParDAgeD
rename CS14V22  PHMParDAgeE
rename CS14V60  PHMPSmoke
rename CS14V297 PHMStrictDAD
rename CS14V284 PHMStrictMom
rename CS14V178 PHMWealthComp
rename CS14V191 PNhood1316
rename CS14V183 PNhood612
rename CS14V41  PNumSchools
rename CS14V261 RPHMCFaughtD
rename CS14V243 RPHMCFaughtM
rename CS14V262 RPHMDadAnxiety
rename CS14V267 RPHMDADDepress
rename CS14V273 RPHMDadDrugs
rename CS14V266 RPHMDAnxityIntfer
rename CS14V248 RPHMMAnxityIntfer
rename CS14V254 RPHMMDepresIntfer
rename CS14V244 RPHMMomAnxiety
rename CS14V249 RPHMMomDepress
rename CS14V255 RPHMMomDrugs
rename CS14V306 RPHMParHarmedPar
rename CS14V202 PRepeatSchGrd
rename CS14V203 PRepeatSchNum
rename CS14V79  PCHAllergy
rename CS14V56  PCHChicenPos
rename CS14V54  PCHMeasles
rename CS14V55  PCHMumps
rename CS14V87  PCHEAR
rename CS14V95  PCHHeadache
rename CS14V99  PCHStomach
rename CS14V169 PEMPMom05
rename CS14V171 PEMPMom1316
rename CS14V170 PEMPMom612
rename CS14V242 PEMPMomHoldjob
```

```
rename CS14V313 PEMPNonFMentor
rename CS14V213 PBulliedNSCH1316
rename CS14V207 PBulliedNSCH612
rename CS14V212 PBulliedSCH1316
rename CS14V206 PBulliedSCH612
rename CS14V217 PBullyNSCH1316
rename CS14V211 PBullyNSCH612
rename CS14V216 PBullySCH1316
rename CS14V210 PBullySCH612
rename CS14V198 PFrndCom1316
rename CS14V195 PFrndCom612
rename CS14V197 PLone1316
rename CS14V194 PLone612
rename CS14V139 RPCHADD
rename CS14V123 RPCHAnxiety
rename CS14V131 RPCHPanic
rename CS14V224 RPCrArrest26
rename CS14V225 RPCrArrestNUM26
rename CS14V230 RPCrConvicted26
rename CS14V241 RPCrJailtime26
rename CS14V218 RPCrVictim17
rename CS14V302 RPHMDADHarmedC
rename CS14V290 RPHMMomHarmedC
rename CS14V310 RPHMSibHarmedC
rename CS14V311 PEMPFamMentor
*-------------------------------------------------------END RENAMING--------------------------------------------
*---------------------------------------Replacing missing data with stata convention "."---------------------
replace PCHCRAsthma  =0 if  PCHCRAsthma  == 99
replace PCHCRDepression =0 if  PCHCRDepression == 99
replace PCHCRDiabetes =0 if  PCHCRDiabetes == 99
replace PCHCREpil  =0 if  PCHCREpil  == 99
replace PCHCRHeart  =0 if  PCHCRHeart  == 99
replace PCHCRHighBloodp =0 if  PCHCRHighBloodp == 99
replace PCHCRResp  =0 if  PCHCRResp  == 99
replace PDemSpeech  =0 if  PDemSpeech  == 99
replace PCHSRHS   =. if  PCHSRHS   == 9
replace PCHHT13   =. if  PCHHT13   == 99
replace PCHWT13   =. if  PCHWT13   == 999
replace PEMPDad05  =. if  PEMPDad05  == 9
replace PEMPDad1316  =. if  PEMPDad1316  == 9
replace PEMPDad612  =. if  PEMPDad612  == 9
replace PEMPDADHoldjob =. if  PEMPDADHoldjob == 9
replace PHMConfideDad  =. if  PHMConfideDad  == 9
replace PHMConfideMom  =. if  PHMConfideMom  == 9
replace PHMDADAffection =. if  PHMDADAffection == 9
replace PHMDadUnderstood =. if  PHMDadUnderstood== 9
replace PHMFinSTR05  =. if  PHMFinSTR05 == 99
replace PHMFinSTR1316 =. if  PHMFinSTR1316 == 9
replace PHMFinSTR612 =. if  PHMFinSTR612 == 9
replace PHMMomAffection =. if  PHMMomAffection == 9
replace PHMMomParenting =. if  PHMMomParenting == 9
replace PHMMomUnderstood =. if  PHMMomUnderstood== 9
replace PHMParD   =. if  PHMParD   == 9
```

```
replace PHMParDAgeA  =. if  PHMParDAgeA  == 99
replace PHMParDAgeB  =. if  PHMParDAgeB  == 99
replace PHMParDAgeC  =. if  PHMParDAgeC  == 99
replace PHMParDAgeD  =. if  PHMParDAgeD  == 99
replace PHMParDAgeE  =. if  PHMParDAgeE  == 99
replace PHMPSmoke  =. if  PHMPSmoke  == 9
replace PHMStrictDAD =. if  PHMStrictDAD == 9
replace PHMStrictMom =. if  PHMStrictMom == 9
replace PHMWealthComp  =. if  PHMWealthComp == 9
replace PNhood1316  =. if  PNhood1316  == 9
replace PNhood612  =. if  PNhood612  == 9
replace PNumSchools  =. if  PNumSchools  == 99
replace PRepeatSchGrd  =. if  PRepeatSchGrd == 9
replace PRepeatSchNum  =. if  PRepeatSchNum  == 99
replace PCHAllergy  =. if  PCHAllergy  == 99
replace PCHChicenPos  =. if  PCHChicenPos  == 9
replace PCHMeasles  =. if  PCHMeasles  == 9
replace PCHMumps  =. if  PCHMumps  == 9
replace PCHEAR   =. if  PCHEAR   == 99
replace PCHHeadache  =. if  PCHHeadache  == 99
replace PCHStomach  =. if  PCHStomach  == 99
replace PEMPMom05  =. if  PEMPMom05  == 9
replace PEMPMom1316  =. if  PEMPMom1316  == 9
replace PEMPMom612  =. if  PEMPMom612  == 9
replace PEMPMomHoldjob =. if  PEMPMomHoldjob == 9
replace PEMPNonFMentor =. if  PEMPNonFMentor == 9
replace PBulliedNSCH1316 =. if  PBulliedNSCH1316== 9
replace PBulliedNSCH612 =. if  PBulliedNSCH612 == 9
replace PBulliedSCH1316 =. if  PBulliedSCH1316 == 9
replace PBulliedSCH612 =. if  PBulliedSCH612 == 9
replace PBullyNSCH1316 =. if  PBullyNSCH1316 == 9
replace PBullyNSCH612 =. if  PBullyNSCH612 == 9
replace PBullySCH1316 =. if  PBullySCH1316 == 9
replace PBullySCH612 =. if  PBullySCH612 == 9
replace PFrndCom1316 =. if  PFrndCom1316 == 9
replace PFrndCom612 =. if  PFrndCom612 == 9
replace PLone1316 =. if  PLone1316 == 9
replace PLone612 =. if  PLone612 == 9
replace PEMPFamMentor =. if  PEMPFamMentor == 9
}
*-------------------------------------------------End CRCS Modifications-------------------------------------------------
*------------------------------------- Generate the Childhood Charlson Comorbidity Index -------------------
quietly{
 gen C_PSEUDOCH=.
 replace PCHCRHeart=1 if PCHCRHeart>0
 replace PCHCRHighBloodp=1 if PCHCRHighBloodp>0
 replace PCHCRAsthma=1 if PCHCRAsthma>0
 replace PCHCRResp=1 if PCHCRResp>0
 replace PCHCRDiabetes=1 if PCHCRDiabetes>0
 replace PCHCREpil=1 if PCHCREpil>0
 replace C_PSEUDOCH=PCHCRHeart+ PCHCRHighBloodp+ ///
  PCHCRAsthma + PCHCRResp + PCHCRDiabetes*2 ///
   + PCHCREpil
```

```
gen C_DEPRESSION = PCHCRDepression
gen C_OTHRPSYCH = RPCHOthrPsych
 gen C_DRUG_ALCO = RPDemDrugsAlc
 gen C_BMI=(PCHWT13/(PCHHT13^2))*703
 * what the hell is this PCHSRHS
}
//------------------------------------------Intermediate save  ------------------------------------------------------
 save totaldata, replace
*--------END PSID/INDIVIDUAL/FAMILY DATASET GENERATION AND MODIFICATION-----------
*--------BEGIN appending supplementary datasets to PSID/INDIVIDUAL/FAMILY DATASET -----------
*  Import occupation labor component - reason, math, language, strength,
*  svp=special vocational training, care=community engagement
*  reference at top of program
quietly {
 merge m:1 COR_OCCU using "c:\stata\dissertation data\OCCU_LABOR.dta"
 drop _merge
*                 Import occupation groups - with 9 major groups and 14 major occupation
*                 categories from:
*                 US CENSUS - reference at top of program
 merge m:1 COR_OCCU using "C:\stata\dissertation data\OCCU_GROUPS.dta"
 sort uniqueid time
 drop _merge
*                 add the CPI deflator
 merge m:1 year using "c:\stata\dissertation data\cpi_deflator.dta"
 sort uniqueid time
 drop _merge
 }
*---------------------------------------Modify merge and add relevant variables --------------------------------
quietly {
 destring eeo_job, replace
 destring eeo_group, replace
 replace eeo_job=10 if COR_OCCU==905   /* add military job var, but - no: math reason etc for it*/
 replace eeo_group=15 if COR_OCCU==905 /* add military industry group, but - no: math reason etc. */
}
*-------BEGIN CLEAN AND TRANSFORM DATASET/VARIABLES FOR ECONOMETRIC USE-------
* Cull all extraneous years from analysis set
 drop if year<1994| year==1998 | year==2000 | year==2002 | year==2004 | year==2006 | year==2008 ///
     | year==2010| year==2012 | year==.
*---------------------------------------------generate job type dummies--------------------------------------------
quietly {
 tabulate eeo_job, gen(temp_job_d)
 rename temp_job_d1 notemployed
 rename temp_job_d2 mgmtoffice
 rename temp_job_d3 professionals
 rename temp_job_d4 technicians
 rename temp_job_d5 sales
 rename temp_job_d6 adminsupport
 rename temp_job_d7 craftworkers
 rename temp_job_d8 operatives
 rename temp_job_d9 Laborers
 rename temp_job_d10 service
 rename temp_job_d11 military
 save .\Dis_Dataset\temp.dta, replace
```

```
//---------------------------------------- start job history construction ----------------------------------------------
//---------------------------------------- deal with the head of household = 10 -----------------------------------
quietly{
global months "jan feb mar apr may jun jul aug sept oct nov dec"
global keephauxjobs "haddjob1  haddjob2  haddjob3 "
global keepwauxjobs "waddjob1 waddjob2 waddjob3"
global head_by_auxjob "haddjob_w1_byr haddjob_w2_byr haddjob_w3_byr haddjob_w4_byr"
}
////////// step 1:  create a dummy variable that points to a start year that is equal to or lesser than the year
//               for which data is being collected.
quietly{
//               first do head of household working
foreach job in $head_by_auxjob {
gen cond_bh_`job'=1 if `job' > 0 & `job' <= year-1 & head==10 & EMPS==1
 gen cond_bh_y_`job'=`job' if `job'>0
 }
rename (cond_bh_haddjob_w1_byr cond_bh_haddjob_w2_byr ///
cond_bh_haddjob_w3_byr cond_bh_haddjob_w4_byr) ///
 (cond_bh_haddjob1 cond_bh_haddjob2 cond_bh_haddjob3 cond_bh_extrajob)
rename (cond_bh_y_haddjob_w1_byr cond_bh_y_haddjob_w2_byr ///
cond_bh_y_haddjob_w3_byr cond_bh_y_haddjob_w4_byr) ///
 (cond_bh_y_haddjob1 cond_bh_y_haddjob2 cond_bh_y_haddjob3 cond_bh_y_extrajob)
foreach njob in $keephauxjobs {
 foreach m in $months {
 replace `njob'_`m'=1 if cond_bh_`njob'==1
 //replace `njob'_`m'=0 if `njob'_`m'==.
 //took out this line above 10/4
 }
 /*bysort uniqueid (time): gen temp_cond_y_`njob' = cond_y_`njob'[_n+1]
 if cond_y_`njob' < year-1*/
 }
 }
//step 2: identify a temporary dummy variable for whether a end year for each job is identified
quietly{
global head_ey_auxjob "haddjob_w1_eyr haddjob_w2_eyr haddjob_w3_eyr haddjob_w4_eyr"
foreach job in $head_ey_auxjob {
gen cond_eh_`job'=1 if `job' > 0 & `job' == (year - 1) & head==10 & EMPS==1
gen cond_eh_y_`job'=`job' if `job'>0
}
rename (cond_eh_haddjob_w1_eyr cond_eh_haddjob_w2_eyr ///
cond_eh_haddjob_w3_eyr cond_eh_haddjob_w4_eyr) ///
 (cond_eh_haddjob1 cond_eh_haddjob2 cond_eh_haddjob3 cond_eh_extrajoby)
rename (cond_eh_y_haddjob_w1_eyr cond_eh_y_haddjob_w2_eyr ///
cond_eh_y_haddjob_w3_eyr cond_eh_y_haddjob_w4_eyr) ///
 (cond_eh_y_haddjob1 cond_eh_y_haddjob2 cond_eh_y_haddjob3 cond_eh_y_extrajob)
}
///  step 3: identify the end years that are the same as the sample year and correct for jobs that were
//           ended mid-survey year
quietly{
global head_em_auxjob "haddjob_w1_em haddjob_w2_em haddjob_w3_em haddjob_w4_em"
foreach bmj in $head_em_auxjob {
 gen cond_eh_m_`bmj'= `bmj'
 }
```

```stata
rename (cond_eh_m_haddjob_w1_em cond_eh_m_haddjob_w2_em ///
cond_eh_m_haddjob_w3_em cond_eh_m_haddjob_w4_em) ///
 (cond_eh_m_haddjob1 cond_eh_m_haddjob2 cond_eh_m_haddjob3 cond_eh_m_extrajob)
// a:
foreach njob in $keephauxjobs {
 foreach m in $months {
// note this looks at each month in the year of the survey and corrects for a job that was terminated
// during the year.
  display "`njob'_`m'"
  if "`m'" == "jan" {
   replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'<1
 }
  if "`m'" == "feb" {
   replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'<2
 }
   if "`m'" == "mar" {
   replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'<3
 }
    if "`m'" == "apr" {
   replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'<4
 }
    if "`m'" == "may" {
   replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'<5
 }
    if "`m'" == "jun" {
   replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'<6
 }
     if "`m'" == "jul" {
   replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'<7
 }
     if "`m'" == "aug" {
   replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'<8
 }
     if "`m'" == "sept" {
   replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'<9
 }
     if "`m'" == "oct" {
   replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'<10
 }
      if "`m'" == "nov" {
   replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'<11
 }
       if "`m'" == "dec" {
   replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'<12
 }
 }
 }
 }
///////////////// now look at jobs that were begun in the survey year and turn the 0=no job month to a 1=job
// month for the period in the year when the job was had
quietly{
global head_bm_auxjob "haddjob_w1_bm haddjob_w2_bm haddjob_w3_bm haddjob_w4_bm"
foreach bmj in $head_bm_auxjob {
```

```stata
 gen cond_bh_m_`bmj'= `bmj'
 }
rename (cond_bh_m_haddjob_w1_bm cond_bh_m_haddjob_w2_bm ///
cond_bh_m_haddjob_w3_bm cond_bh_m_haddjob_w4_bm) ///
 (cond_bh_m_haddjob1 cond_bh_m_haddjob2 cond_bh_m_haddjob3 cond_bh_m_extrajob)
 // b.
foreach njob in $keephauxjobs {
 foreach m in $months { // note this looks at each month in the year of the
 //survey and corrects for a job that was terminated during the year.
  display "`njob'_`m'"
 if "`m'" == "jan" {
  replace `njob'_`m'=0 if cond_bh_`njob' == 1 & cond_bh_m_`njob'>1
 }
  if "`m'" == "feb" {
  replace `njob'_`m'=0 if cond_bh_`njob' == 1 & cond_bh_m_`njob'>2
 }
   if "`m'" == "mar" {
  replace `njob'_`m'=0 if cond_bh_`njob' == 1 & cond_bh_m_`njob'>3
 }
    if "`m'" == "apr" {
  replace `njob'_`m'=0 if cond_bh_`njob' == 1 & cond_bh_m_`njob'>4
 }
    if "`m'" == "may" {
  replace `njob'_`m'=0 if cond_bh_`njob' == 1 & cond_bh_m_`njob'>5
 }
    if "`m'" == "jun" {
  replace `njob'_`m'=0 if cond_bh_`njob' == 1 & cond_bh_m_`njob'>6
 }
     if "`m'" == "jul" {
  replace `njob'_`m'=0 if cond_bh_`njob' == 1 & cond_bh_m_`njob'>7
 }
     if "`m'" == "aug" {
  replace `njob'_`m'=0 if cond_bh_`njob' == 1 & cond_bh_m_`njob'>8
 }
     if "`m'" == "sept" {
  replace `njob'_`m'=0 if cond_bh_`njob' == 1 & cond_bh_m_`njob'>9
 }
     if "`m'" == "oct" {
  replace `njob'_`m'=0 if cond_bh_`njob' == 1 & cond_bh_m_`njob'>10
 }
      if "`m'" == "nov" {
  replace `njob'_`m'=0 if cond_bh_`njob' == 1 & cond_bh_m_`njob'>11
 }
      if "`m'" == "dec" {
  replace `njob'_`m'=0 if cond_bh_`njob' == 1 & cond_bh_`njob'>12
 }
 }
 }
 }
// now we need to check for the seasonal recollection not just the monthly here's the problem:
// a recollection may remember a season but not a
//month of either beginning or ending a job
// the seasons are winter spring summer and fall.  If winter,
```

```
//I will assume that FEB is the transition month
// this limits the censoring issue...Jan would be the preferred month.
// for spring - APR == 1 , Summer July == 1, and fall OCT == 1
// using the code from step 3 a:
// first check to zero out months AFTER the job is quit in the survey period
// c.
quietly{
foreach njob in $keephauxjobs {
 foreach m in $months { // note this looks at each month in the year of the
 //                         survey and corrects for a job that was terminated during the year.
display "`njob'_`m'"
if "`m'" == "feb" {
replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' > 20 & cond_eh_m_`njob'<=21
replace `njob'_mar=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' > 20 & cond_eh_m_`njob'<=21
}
if "`m'" == "apr" {
replace `njob'_`m' =0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' > 20 & cond_eh_m_`njob'<=22
replace `njob'_may =0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' > 20 & cond_eh_m_`njob'<=22
replace `njob'_jun =0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' > 20 & cond_eh_m_`njob'<=22
}
if "`m'" == "jul" {
replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' > 20 & cond_eh_m_`njob'<=23
replace `njob'_aug=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' > 20 & cond_eh_m_`njob'<=23
replace `njob'_sept=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' > 20 & cond_eh_m_`njob'<=23
}
if "`m'" == "oct" {
replace `njob'_`m'=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' > 20 & cond_eh_m_`njob'<=24
replace `njob'_nov=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' > 20 & cond_eh_m_`njob'<=24
replace `njob'_dec=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' > 20 & cond_eh_m_`njob'<=24
}
}
}
}
//second check to zero out months AFTER the job is quit in the survey period
// d.
quietly{
foreach njob in $keephauxjobs {
 foreach m in $months {
// note this looks at each month in the year of the survey and corrects for a job that was gained during
// the year.
  display "`njob'_`m'"
  if "`m'" == "feb" {
  replace `njob'_jan=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'==21
  }
  if "`m'" == "apr" {
  replace `njob'_mar =0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'==22
  replace `njob'_feb =0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'==22
  replace `njob'_jan =0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'==22
  }
  if "`m'" == "jul" {
  replace `njob'_jun=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'==23
  replace `njob'_may=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'==23
  replace `njob'_apr=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'==23
```

```
  replace `njob'_mar =0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'==23
  replace `njob'_feb =0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'==23
  replace `njob'_jan =0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'==23
  }
  if "`m'" == "oct" {
  replace `njob'_sept=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob'==24
  replace `njob'_aug=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' ==24
  replace `njob'_jul=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' ==24
  replace `njob'_jun=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' ==24
  replace `njob'_may=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' ==24
  replace `njob'_apr=0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' ==24
  replace `njob'_mar =0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' ==24
  replace `njob'_feb =0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' ==24
  replace `njob'_jan =0 if cond_eh_`njob' == 1 & cond_eh_m_`njob' ==24
  }
 }
 }
 }
//------------------------------------------ now for the wife's jobs --------------------------------------------------
quietly{
global wife_by_auxjob "waddjob_w1_byr waddjob_w2_byr waddjob_w3_byr waddjob_w4_byr"
//                                  first do head of household working
foreach job in $wife_by_auxjob {
 //replace `job'=0 if `job'==.
 // took out this line 10/4
 gen cond_bw_`job'=1 if `job' > 0 & `job' <= year-1 & head==10 & EMPS==1
 gen cond_bw_y_`job'=`job' if `job'>0
 }
 rename (cond_bw_waddjob_w1_byr cond_bw_waddjob_w2_byr ///
cond_bw_waddjob_w3_byr cond_bw_waddjob_w4_byr) ///
 (cond_bw_waddjob1 cond_bw_waddjob2 cond_bw_waddjob3 cond_bw_wextrajob)
 rename (cond_bw_y_waddjob_w1_byr cond_bw_y_waddjob_w2_byr ///
cond_bw_y_waddjob_w3_byr cond_bw_y_waddjob_w4_byr) ///
 (cond_bw_y_waddjob1 cond_bw_y_waddjob2 cond_bw_y_waddjob3 cond_bw_y_wextrajob)
foreach njob in $keepwauxjobs {
 foreach m in $months {
 replace `njob'_`m'=1 if cond_bw_`njob'==1
 }
 }
 }
// step 2: identify a temporary dummy variable for whether a end year for each job is identified
quietly{
global wife_ey_auxjob "waddjob_w1_eyr waddjob_w2_eyr waddjob_w3_eyr waddjob_w4_eyr"
foreach job in $wife_ey_auxjob {
 //replace `job'=0 if `job'==.
 //took out this line10/4
 gen cond_ew_`job'=1 if `job' > 0 & `job' == (year - 1) & head==10 & EMPS==1
 gen cond_ew_y_`job'=`job' if `job'>0
 }
 rename (cond_ew_waddjob_w1_eyr cond_ew_waddjob_w2_eyr ///
cond_ew_waddjob_w3_eyr cond_ew_waddjob_w4_eyr) ///
 (cond_ew_waddjob1 cond_ew_waddjob2 cond_ew_waddjob3 cond_ew_wextrajoby)
 rename (cond_ew_y_waddjob_w1_eyr cond_ew_y_waddjob_w2_eyr ///
```

```
cond_ew_y_waddjob_w3_eyr cond_ew_y_waddjob_w4_eyr) ///
 (cond_ew_y_waddjob1 cond_ew_y_waddjob2 cond_ew_y_waddjob3 cond_ew_y_wextrajob)
//                              step 3: identify the end years that are the same as
//the sample year and correct for jobs that were ended mid-survey year
global wife_em_auxjob "waddjob_w1_em waddjob_w2_em waddjob_w3_em waddjob_w4_em"
foreach bmj in $wife_em_auxjob {
 gen cond_ew_m_`bmj'= `bmj'
 }
rename (cond_ew_m_waddjob_w1_em cond_ew_m_waddjob_w2_em ///
cond_ew_m_waddjob_w3_em cond_ew_m_waddjob_w4_em) ///
 (cond_ew_m_waddjob1 cond_ew_m_waddjob2 cond_ew_m_waddjob3 cond_ew_m_wextrajob)
// a:
foreach njob in $keepwauxjobs {
 foreach m in $months { // note this looks at each month in the year
 //of the survey and corrects for a job that was terminated during the year.
  display "`njob'_`m'"
  if "`m'" == "jan" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'<1
 }
  if "`m'" == "feb" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'<2
 }
   if "`m'" == "mar" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'<3
 }
    if "`m'" == "apr" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'<4
 }
    if "`m'" == "may" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'<5
 }
    if "`m'" == "jun" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'<6
 }
     if "`m'" == "jul" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'<7
 }
    if "`m'" == "aug" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'<8
 }
    if "`m'" == "sept" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'<9
 }
    if "`m'" == "oct" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'<10
 }
     if "`m'" == "nov" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'<11
 }
      if "`m'" == "dec" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'<12
 }
}
```

```
}
}
///////////// now look at jobs that were begun in the survey year and turn the 0=no job month to a 1=job
// month for the period in the year when the job was had
quietly{
global wife_bm_auxjob "waddjob_w1_bm waddjob_w2_bm waddjob_w3_bm waddjob_w4_bm"
foreach bmj in $wife_bm_auxjob {
 gen cond_bw_m_`bmj'= `bmj'
 }
rename (cond_bw_m_waddjob_w1_bm cond_bw_m_waddjob_w2_bm ///
cond_bw_m_waddjob_w3_bm cond_bw_m_waddjob_w4_bm) ///
 (cond_bw_m_waddjob1 cond_bw_m_waddjob2 cond_bw_m_waddjob3 cond_bw_m_wextrajob)
 // b.
foreach njob in $keepwauxjobs {
 foreach m in $months {
// note this looks at each month in the year of the survey and corrects for a job that was terminated
// during the year.
 display "`njob'_`m'"
 if "`m'" == "jan" {
  replace `njob'_`m'=0 if cond_bw_`njob' == 1 & cond_bw_m_`njob'>1
 }
  if "`m'" == "feb" {
  replace `njob'_`m'=0 if cond_bw_`njob' == 1 & cond_bw_m_`njob'>2
 }
   if "`m'" == "mar" {
  replace `njob'_`m'=0 if cond_bw_`njob' == 1 & cond_bw_m_`njob'>3
 }
    if "`m'" == "apr" {
  replace `njob'_`m'=0 if cond_bw_`njob' == 1 & cond_bw_m_`njob'>4
 }
   if "`m'" == "may" {
  replace `njob'_`m'=0 if cond_bw_`njob' == 1 & cond_bw_m_`njob'>5
 }
   if "`m'" == "jun" {
  replace `njob'_`m'=0 if cond_bw_`njob' == 1 & cond_bw_m_`njob'>6
 }
    if "`m'" == "jul" {
  replace `njob'_`m'=0 if cond_bw_`njob' == 1 & cond_bw_m_`njob'>7
 }
    if "`m'" == "aug" {
  replace `njob'_`m'=0 if cond_bw_`njob' == 1 & cond_bw_m_`njob'>8
 }
    if "`m'" == "sept" {
  replace `njob'_`m'=0 if cond_bw_`njob' == 1 & cond_bw_m_`njob'>9
 }
    if "`m'" == "oct" {
  replace `njob'_`m'=0 if cond_bw_`njob' == 1 & cond_bw_m_`njob'>10
 }
    if "`m'" == "nov" {
  replace `njob'_`m'=0 if cond_bw_`njob' == 1 & cond_bw_m_`njob'>11
 }
     if "`m'" == "dec" {
  replace `njob'_`m'=0 if cond_bw_`njob' == 1 & cond_bw_`njob'>12
```

```
 }
}
}
}
// now we need to check for the seasonal recollection not just the monthly
// here's the problem:  a recollection may remember a season but not a month of either beginning or ///
ending a job
// the seasons are winter spring summer and fall.  If winter, I will assume that FEB is the transition month
// this limits the censoring issue...Jan would be the preferred month for spring - APR == 1 , Summer July
//== 1, and fall OCT == 1


/// using the code from step 3 a:
//// first check to zero out months AFTER the job is quit in the survey period
// c.
quietly{
foreach njob in $keepwauxjobs {
 foreach m in $months { // note this looks at each month in the year of the
 //survey and corrects for a job that was terminated during the year.
  display "`njob'_`m'"
   if "`m'" == "feb" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' > 20 & cond_ew_m_`njob'<=21
   replace `njob'_mar=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' > 20 & cond_ew_m_`njob'<=21
   }
   if "`m'" == "apr" {
   replace `njob'_`m' =0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' > 20 & cond_ew_m_`njob'<=22
   replace `njob'_may =0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' > 20 & cond_ew_m_`njob'<=22
   replace `njob'_jun =0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' > 20 & cond_ew_m_`njob'<=22
   }
   if "`m'" == "jul" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' > 20 & cond_ew_m_`njob'<=23
   replace `njob'_aug=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' > 20 & cond_ew_m_`njob'<=23
   replace `njob'_sept=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' > 20 & cond_ew_m_`njob'<=23
   }
   if "`m'" == "oct" {
   replace `njob'_`m'=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' > 20 & cond_ew_m_`njob'<=24
   replace `njob'_nov=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' > 20 & cond_ew_m_`njob'<=24
   replace `njob'_dec=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' > 20 & cond_ew_m_`njob'<=24
   }
 }
}
}
//// second check to zero out months AFTER the job is quit in the survey period
// d.
quietly{
foreach njob in $keepwauxjobs {
 foreach m in $months {
// note this looks at each month in the year of the survey and corrects for a job that was gained during
//the year.
  display "`njob'_`m'"
   if "`m'" == "feb" {
   replace `njob'_jan=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'==21
   }
   if "`m'" == "apr" {
```

```
  replace `njob'_mar =0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'==22
  replace `njob'_feb =0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'==22
  replace `njob'_jan =0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'==22
  }
 if "`m'" == "jul" {
 replace `njob'_jun=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'==23
 replace `njob'_may=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'==23
 replace `njob'_apr=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'==23
 replace `njob'_mar =0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'==23
 replace `njob'_feb =0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'==23
 replace `njob'_jan =0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'==23
  }
 if "`m'" == "oct" {
 replace `njob'_sept=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob'==24
 replace `njob'_aug=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' ==24
 replace `njob'_jul=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' ==24
 replace `njob'_jun=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' ==24
 replace `njob'_may=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' ==24
 replace `njob'_apr=0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' ==24
 replace `njob'_mar =0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' ==24
 replace `njob'_feb =0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' ==24
 replace `njob'_jan =0 if cond_ew_`njob' == 1 & cond_ew_m_`njob' ==24
  }
 }
}
}
// end beginning stages - collect and correlate information identify job transitions
// notes:
/*simple count of job switches (job ended =1 job began =1 => 2 transitions
per job change
 periods may be contemporaneous of separated by time (unemployed spell).
data is censored front and back (each interview begins with January and ends
with December
and conducted every other year, during the "offyear" the survey is administered
 the survey asks about current employment (weather or not)..at time of survey.
 the survey date is one observation during the black period.*/
  quietly{
 rename (EMP01M EMP02M EMP03M EMP04M EMP05M EMP06M EMP07M EMP08M ///
EMP09M EMP10M EMP11M EMP12M ) ///
 (hMEMP_jan hMEMP_feb hMEMP_mar hMEMP_apr hMEMP_may hMEMP_jun ///
hMEMP_jul hMEMP_aug hMEMP_sept hMEMP_oct hMEMP_nov hMEMP_dec)
 rename (wEMP01M wEMP02M wEMP03M wEMP04M wEMP05M wEMP06M wEMP07M ///
wEMP08M wEMP09M wEMP10M wEMP11M wEMP12M ) ///
 (wMEMP_jan wMEMP_feb wMEMP_mar wMEMP_apr wMEMP_may wMEMP_jun ///
wMEMP_jul wMEMP_aug wMEMP_sept wMEMP_oct wMEMP_nov wMEMP_dec)
 global hmainjobcount "hMEMP"
 foreach njob in $hmainjobcount {
 foreach m in $months {
  display "`njob'_`m'"
  gen count_`njob'_`m'=0
  if "`m'"=="jan" {
   bysort uniqueid (time): gen count_dcheck = 1 if EMP1S[_n-1] == 1
     replace count_dcheck=0 if EMP1S[_n-1]>1
```

```
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==10 & count_dcheck == 0 & `njob'_`m'==1 ///
       | head==10 & count_dcheck == 1 & `njob'_`m'==0
    drop count_dcheck
     }
   if "`m'"=="feb" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==10 & `njob'_jan == 0 & `njob'_`m'==1 ///
       | head==10 & `njob'_jan == 1 & `njob'_`m'==0
    }
   if "`m'"=="mar" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==10 & `njob'_feb == 0 & `njob'_`m'==1 ///
       | head==10 & `njob'_feb == 1 & `njob'_`m'==0
    }
   if "`m'"=="apr" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==10 & `njob'_mar == 0 & `njob'_`m'==1 ///
       | head==10 & `njob'_mar == 1 & `njob'_`m'==0
    }
   if "`m'"=="may" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==10 & `njob'_apr == 0 & `njob'_`m'==1 ///
       | head==10 & `njob'_apr == 1 & `njob'_`m'==0
    }
   if "`m'"=="jun" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==10 & `njob'_may == 0 & `njob'_`m'==1 ///
       | head==10 & `njob'_may == 1 & `njob'_`m'==0
    }
   if "`m'"=="jul" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==10 & `njob'_jun == 0 & `njob'_`m'==1 ///
       | head==10 & `njob'_jun == 1 & `njob'_`m'==0
    }
   if "`m'"=="aug" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==10 & `njob'_jul == 0 & `njob'_`m'==1 ///
       | head==10 & `njob'_jul == 1 & `njob'_`m'==0
    }
   if "`m'"=="sept" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==10 & `njob'_aug == 0 & `njob'_`m'==1 ///
       | head==10 & `njob'_aug == 1 & `njob'_`m'==0
    }
   if "`m'"=="oct" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==10 & `njob'_sept == 0 & `njob'_`m'==1 ///
       | head==10 & `njob'_sept == 1 & `njob'_`m'==0
    }
   if "`m'"=="nov" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==10 & `njob'_oct == 0 & `njob'_`m'==1 ///
       | head==10 & `njob'_oct == 1 & `njob'_`m'==0
    }
   if "`m'"=="dec" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==10 & `njob'_nov == 0 & `njob'_`m'==1 ///
       | head==10 & `njob'_nov == 1 & `njob'_`m'==0
}
}
}
}
//-------------------------------------------------- now for wife ---------------------------------------------
quietly{
```

```
global wmainjobcount "wMEMP"
foreach njob in $wmainjobcount {
 foreach m in $months {
  display "`njob'_`m'"
  gen count_`njob'_`m'=0
   if "`m'"=="jan" {
    bysort uniqueid (time): gen count_dcheck = 1 if wEMP1S[_n-1] == 1
      replace count_dcheck=0 if wEMP1S[_n-1]>1
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==20 & count_dcheck == 0 & `njob'_`m'==1 ///
       | head==20 & count_dcheck == 1 & `njob'_`m'==0
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==22 & count_dcheck == 0 & `njob'_`m'==1 ///
       | head==22 & count_dcheck == 1 & `njob'_`m'==0
    drop count_dcheck
    }
   if "`m'"=="feb" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==20 & `njob'_jan == 0 & `njob'_`m'==1 ///
       | head==20 & `njob'_jan == 1 & `njob'_`m'==0
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==22 & `njob'_jan == 0 & `njob'_`m'==1 ///
       | head==22 & `njob'_jan == 1 & `njob'_`m'==0
    }
   if "`m'"=="mar" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==20 & `njob'_feb == 0 & `njob'_`m'==1 ///
       | head==20 & `njob'_feb == 1 & `njob'_`m'==0
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==22 & `njob'_feb == 0 & `njob'_`m'==1 ///
       | head==22 & `njob'_feb == 1 & `njob'_`m'==0
    }
   if "`m'"=="apr" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==20 & `njob'_mar == 0 & `njob'_`m'==1 ///
       | head==20 & `njob'_mar == 1 & `njob'_`m'==0
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==22 & `njob'_mar == 0 & `njob'_`m'==1 ///
       | head==22 & `njob'_mar == 1 & `njob'_`m'==0
    }
   if "`m'"=="may" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==20 & `njob'_apr == 0 & `njob'_`m'==1 ///
       | head==20 & `njob'_apr == 1 & `njob'_`m'==0
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==22 & `njob'_apr == 0 & `njob'_`m'==1 ///
       | head==22 & `njob'_apr == 1 & `njob'_`m'==0
    }
   if "`m'"=="jun" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==20 & `njob'_may == 0 & `njob'_`m'==1 ///
       | head==20 & `njob'_may == 1 & `njob'_`m'==0
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==22 & `njob'_may == 0 & `njob'_`m'==1 ///
       | head==22 & `njob'_may == 1 & `njob'_`m'==0
    }
   if "`m'"=="jul" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==20 & `njob'_jun == 0 & `njob'_`m'==1 ///
       | head==20 & `njob'_jun == 1 & `njob'_`m'==0
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==22 & `njob'_jun == 0 & `njob'_`m'==1 ///
       | head==22 & `njob'_jun == 1 & `njob'_`m'==0
    }
   if "`m'"=="aug" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==20 & `njob'_jul == 0 & `njob'_`m'==1 ///
       | head==20 & `njob'_jul == 1 & `njob'_`m'==0
```

```
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==22 & `njob'_jul == 0 & `njob'_`m'==1 ///
        | head==22 & `njob'_jul == 1 & `njob'_`m'==0
    }
    if "`m'"=="sept" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==20 & `njob'_aug == 0 & `njob'_`m'==1 ///
        | head==20 & `njob'_aug == 1 & `njob'_`m'==0
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==22 & `njob'_aug == 0 & `njob'_`m'==1 ///
        | head==22 & `njob'_aug == 1 & `njob'_`m'==0
    }
    if "`m'"=="oct" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==20 & `njob'_sept == 0 & `njob'_`m'==1 ///
        | head==20 & `njob'_sept == 1 & `njob'_`m'==0
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==22 & `njob'_sept == 0 & `njob'_`m'==1 ///
        | head==22 & `njob'_sept == 1 & `njob'_`m'==0
    }
    if "`m'"=="nov" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==20 & `njob'_oct == 0 & `njob'_`m'==1 ///
        | head==20 & `njob'_oct == 1 & `njob'_`m'==0
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==22 & `njob'_oct == 0 & `njob'_`m'==1 ///
        | head==22 & `njob'_oct == 1 & `njob'_`m'==0
    }
    if "`m'"=="dec" {
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==20 & `njob'_nov == 0 & `njob'_`m'==1 ///
        | head==20 & `njob'_nov == 1 & `njob'_`m'==0
    replace count_`njob'_`m'= count_`njob'_`m'+1 if head==22 & `njob'_nov == 0 & `njob'_`m'==1 ///
        | head==22 & `njob'_nov == 1 & `njob'_`m'==0
    }
}
}
}
// now look backward from interview employment status to employment status at end of prior year
// and check for changes
quietly{
foreach njob in $hmainjobcount {
    bysort uniqueid (time): gen count_dcheck =1 if `njob'_dec[_n-1]==1
    replace count_dcheck=0 if `njob'_dec[_n-1]==0
    gen count_backcheck_`njob'=0
    replace count_backcheck_`njob'= count_backcheck_`njob'+1 ///
    if head==10 & count_dcheck == 0 & EMP1S ==1 ///
        | head==10 & count_dcheck == 1 & EMP1S == 0
    drop count_dcheck
    }
 foreach njob in $wmainjobcount {
    bysort uniqueid (time): gen count_dcheck =1 if `njob'_dec[_n-1]==1
    replace count_dcheck=0 if `njob'_dec[_n-1]==0
    gen count_backcheck_`njob'=0
    replace count_backcheck_`njob'= count_backcheck_`njob'+1 ///
    if head==20 & count_dcheck == 0 & wEMP1S ==1 ///
        | head==20 & count_dcheck == 1 & wEMP1S == 0
    replace count_backcheck_`njob'= count_backcheck_`njob'+1 if ///
    head==22 & count_dcheck == 0 & wEMP1S ==1 ///
        | head==22 & count_dcheck == 1 & wEMP1S == 0
    drop count_dcheck
```

```
    }
gen cond_head_mjob_switching =
count_backcheck_hMEMP+count_hMEMP_jan+count_hMEMP_feb+count_hMEMP_mar+ ///
count_hMEMP_apr+count_hMEMP_may+count_hMEMP_jun+count_hMEMP_jul+ ///
count_hMEMP_aug+count_hMEMP_sept+count_hMEMP_oct+count_hMEMP_nov+count_hMEMP_dec
gen cond_wife_mjob_switching = count_backcheck_wMEMP+ count_wMEMP_jan+ ///
count_wMEMP_feb+count_wMEMP_mar+count_wMEMP_apr+count_wMEMP_may+ ///
count_wMEMP_jun+count_wMEMP_jul+count_wMEMP_aug+count_wMEMP_sept+ ///
count_wMEMP_oct+count_wMEMP_nov+count_wMEMP_dec
gen cor_jobswitching=cond_head_mjob_switching if head==10
replace cor_jobswitching=cond_wife_mjob_switching if head==20 | head==22
}
//----------------------------------- done main job summary -------------------------------------------------
drop count_*
drop cond_*
*----------------------------------- Generate Pseudo Charlson Index -----------------------------------------
*                   CREATE the key variables. COR_PSEUDOCH = pseudo charlson index
* CREATE LHS OUTCOME VARIABLES WEIGHTS: all chronic conditions = 1 except: dwc, hemi,
* renal, and maliganant cancers = 2 while metasticized cancers = 4, since no there are no distinguishing
* variables in the dataset to diagnose malignant from metasticized, I have weighted cancer a 4 covering
* both malignant and metasticized cancers
quietly{
 global b "COR_n_arth COR_n_asthma COR_n_hbloodp COR_n_cancer COR_n_diab COR_n_hattack
COR_n_hdse COR_n_ldse COR_n_stroke_h"
foreach x in $b {
 bysort uniqueid: gen t_`x' = sum(`x')
}
foreach x in $b {
 gen tt_`x'=0
 replace tt_`x'=1 if t_`x'>=1
 }
gen n_COR_PSEUDOCH= tt_COR_n_stroke_h+tt_COR_n_arth+tt_COR_n_hdse+ //
tt_COR_n_hbloodp+tt_COR_n_asthma+tt_COR_n_ldse+tt_COR_n_diab*2+ //
tt_COR_n_cancer*4+tt_COR_n_hattack
//                        one more test of the n_COR_PSEUDOCH
 replace tt_COR_n_hdse=0 if PCHCRHeart ==1
 replace tt_COR_n_hbloodp=0 if PCHCRHighBloodp==1
 replace tt_COR_n_asthma=0 if PCHCRAsthma==1
 replace tt_COR_n_diab=0 if PCHCRDiabetes==1
gen nb_COR_PSEUDOCH=tt_COR_n_stroke_h+tt_COR_n_arth+tt_COR_n_hdse+ //
tt_COR_n_hbloodp+tt_COR_n_asthma+tt_COR_n_ldse+tt_COR_n_diab*2+ //
tt_COR_n_cancer*4+tt_COR_n_hattack
}
*---------------------------------Save BASE DATASET CONSTRUCTION -----------------------------------
 save .\Dis_Dataset\Dis_Longform_411aaaaadg.dta, replace
*---------------------------------END BASE DATASET CONSTRUCTION -----------------------------------
```

///
14.5.   PSID Compiler Modifications for Chapter 4
In the data construction for Chapter 4, we used the CHAPTER 1 PSID Data Compilation Program Above.
To that program, the section "Begin CRCS Modifications" to "End CRCS Modifications has been replaced
with the following code.

```
*-------------------------------------BEGIN CRCS MODIFICATIONS --------------------------------------*
*          Rename and transform Non-Responses to missing data form "."
                                                                    *
*----------------RENAMING-------------------------------------------------------------------------*
quietly {
//////// Prefixes: Fam=Family, Sta=Stability
//        ER30001
//        ER30002
//        ER34201
//        ER34202
//        ER34203
rename   CS14V9 Fam_ManWhoRaised
tab Fam_ManWhoRaised, g(F_ManRaised)
/*
CS14V9 "A1B MAN WHO RAISED R "
A1b. Before you were age 17, what man spent the most time raising you?
Codes
1 Biological father
2 Adoptive father
3 Stepfather
4 Other male relative
5 Other male non-relative
7 No man raised me
9 NA; not answered
*/
rename   CS14V10          Fam_WomanWhoRaised
tab Fam_WomanWhoRaised, g(F_ManRaised)
/*
CS14V10 "A1A WOMAN WHO RAISED R "
A1a. Before you were age 17, what woman spent the most time raising you?
Codes
1 Biological mother
2 Adoptive mother
3 Stepmother
4 Other female relative
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5 Other female non-relative
7 No woman raised me
9 NA; not answered
*/
rename   CS14V11          Fam_ParMarried
replace Fam_ParMarried=. if Fam_ParMarried==0 |Fam_ParMarried==9
replace Fam_ParMarried=0 if Fam_ParMarried==5
/*
CS14V11 "A2A WTR PARENTS MARRIED COUPLE "
A2a. Now think about (your mother/your stepmother/the woman who raised you) and (your father/your
stepfather/the man who raised you). Were they ever married to each other or in a marriage-like
relationship when you were growing up?
Codes
1 Yes
5 No
9 NA; not answered
```

0 Inap.: not raised by two parents (CS14V9=7 or CS14V10=7); raised by two parents
and at least one was a stepparent (CS14V9=3 and CS14V10=1-5 or CS14V9=1-5 and
*/
rename   CS14V12   Fam_ParRelationSatisfac
local x "Fam_ParRelationSatisfac"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V12 "A2A1 PARENTS RELATIONSHIP SATISFACTION "
A2a1. (Now think about [your mother/your stepmother/the woman who raised you] and [your father/your
stepfather/the man who raised you]). How satisfied would you say they were with their relationship
(when you were growing up)?
Codes
1 Very satisfied
2 Satisfied
3 Somewhat satisfied
4 Not at all satisfied
9 NA; not answered
0 Inap.: not raised by two parents (CS14V9=7 or CS14V10=7); NA man who raised R
(CS14V9=9); NA woman who raised R (CS14V10=9); parents not in a marriage-like
relationship (CS14V11=5); NA whether parents in marriage-like relationship
(CS14V11=9)
*/
rename   CS14V13   Fam_WomanWhoRaisedNMar
local x "Fam_WomanWhoRaisedNMar"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V13 "A2A2 WTR WOMAN WHO RAISED R MARRIED "
A2a2. When you were growing up, was (your mother/your stepmother/the woman who raised you) ever
married
or in a marriage-like relationship with someone (other than [your father/your stepfather/the man who
raised you])?
Codes
1 Yes
5 No
9 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); raised by a man only
(CS14V9=1-5 and CS14V10=7); raised by two parents and at least one was a
stepparent (CS14V9=3 and CS14V10=1-5 or CS14V9=1-5 and CS14V10=3); NA woman who
raised R (CS14V10=9); parents in a marriage-like relationship (CS14V11=1); NA
whether parents in marriage-like relationship (CS14V11=9)
*/
rename   CS14V14   Fam_MomRelSatisfaction
local x "Fam_MomRelSatisfaction"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V14 "A2A3 MOM RELATIONSHIP SATISFACTION "
A2a3. How satisfied would you say she was with her relationship? If she had more than one, think about
her most significant relationship.

Codes
1 Very satisfied
2 Satisfied
3 Somewhat satisfied
4 Not at all satisfied
9 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); raised by a man only
(CS14V9=1-5 and CS14V10=7); raised by two parents and at least one was a
stepparent (CS14V9=3 and CS14V10=1-5 or CS14V9=1-5 and CS14V10=3); NA woman who
raised R (CS14V10=9); parents in a marriage-like relationship (CS14V11=1); NA
whether parents in marriage-like relationship (CS14V11=9); woman who raised R not
in marriage-like relationship (CS14V13=5); NA whether woman who raised R in
marriage-like relationship (CS14V13=9)
*/
rename   CS14V15   Fam_ManWhoRaisedNMar
local x "Fam_ManWhoRaisedNMar"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V15 "A2A4 WTR MAN WHO RAISED R MARRIED "
A2a4. When you were growing up, was (your father/your stepfather/the man who raised you) ever married
or in a marriage-like relationship with someone (other than [your mother/your stepmother/the woman who
raised you])?
Codes
1 Yes
5 No
9 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); raised by a woman only
(CS14V9=7 and CS14V10=1-5); raised by two parents and at least one was a
stepparent (CS14V9=3 and CS14V10=1-5 or CS14V9=1-5 and CS14V10=3); NA man who
raised R (CS14V9=9); parents in a marriage-like relationship (CS14V11=1); NA
whether parents in marriage-like relationship (CS14V11=9)
*/
rename   CS14V16   Fam_DadRelSatisfaction
local x "Fam_DadRelSatisfaction"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V16 "A2A5 DAD RELATIONSHIP SATISFACTION "
A2a5. How satisfied would you say he was with his relationship? If he had more than one, think about
his most significant relationship.
Codes
1 Very satisfied
2 Satisfied
3 Somewhat satisfied
4 Not at all satisfied
9 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); raised by a woman only
(CS14V9=7 and CS14V10=1-5); raised by two parents and at least one was a
stepparent (CS14V9=3 and CS14V10=1-5 or CS14V9=1-5 and CS14V10=3); NA man who
raised R (CS14V9=9); parents in a marriage-like relationship (CS14V11=1); NA
whether parents in marriage-like relationship (CS14V11=9); man who raised R not

in marriage-like relationship (CS14V13=5); NA whether man who raised R in
marriage-like relationship (CS14V13=9)
*/
rename   CS14V286 Fam_MomParentEffort
local x "Fam_MomParentEffort"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V286 "J9A HOW MUCH PARENTING EFFORT BY MOM "
J9a. Before you were age 17: How much effort did (your mother/your stepmother/the woman who raised
you)
put into watching over you and making sure you had a good upbringing?
Codes
1 A lot
2 Some
3 A little
4 None at all
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9)
*/
rename   CS14V291 Sta_CommWithDad
local x "Sta_CommWithDad"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+6 if `x'>=1
/*
CS14V291 "J1B COMMUNICATION STATUS W/ DAD "
J1b. Before you were age 17, how would you rate the communication between you and (your father/your
stepfather/the man who raised you)?
Codes
1 Excellent
2 Very good
3 Good
4 Fair
5 Poor
9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9)
*/
rename   CS14V292 Sta_DadUnderstood
local x "Sta_DadUnderstood"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V292 "J2B HOW MUCH DAD UNDERSTOOD R PROBS "
J2b. Before you were age 17: How much did (your father/your stepfather/the man who raised you)
understand your problems and worries?
Codes
1 A lot
2 Some
3 A little
4 Not at all

9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9)
*/
rename   CS14V293 Sta_ConfideDad
local x "Sta_ConfideDad"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V293 "J3B HOW MUCH COULD CONFIDE IN DAD "
J3b. Before you were age 17: How much could you confide in him about things that were bothering you?
Codes
1 A lot
2 Some
3 A little
4 Not at all
9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9)
*/
rename   CS14V17   Sta_ParDivorce
local x "Sta_ParDivorce"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V17 "A2B WTR PARENTS SEP/DIVORCED "
A2b. Still thinking about (your mother/your stepmother/the woman who raised you) and (your father/your
stepfather/the man who raised you), did they separate or divorce during your childhood, that is, before
you were 17?
Codes
1 Yes
5 No
9 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R
(CS14V9=9); NA woman who raised R (CS14V10=9); parents not in a marriage-like
relationship (CS14V11=5)
*/
rename   CS14V18   Sta_AgeParDivorce1
local x "Sta_AgeParDivorce1"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V18 "A3A AGE PARENTS SEP/DIVORCED 1ST TIME "
A3a. What was your age when your parents or guardians first separated?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R
(CS14V9=9); NA woman who raised R (CS14V10=9); parents not in a marriage-like
relationship (CS14V11=5); parents did not separate or divorce during childhood
(CS14V17=5); NA whether parents separated or divorced during childhood
*/
rename   CS14V19   Sta_AgeParDivorce2
local x "Sta_AgeParDivorce2"
replace `x'=. if `x'==0 |`x'==99

```
/*
CS14V19 "A3B AGE PARENTS SEP/DIVORCED 2ND TIME "
A3b. What was your age when your parents or guardians next separated?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R
(CS14V9=9); NA woman who raised R (CS14V10=9); parents not in a marriage-like
relationship (CS14V11=5); parents did not separate or divorce during childhood
(CS14V17=5); only one separation or divorce during childhood; NA whether parents
separated or divorced during childhood (CS14V17=9); NA age parents separated
(CS14V18=99)
*/
rename   CS14V20        Sta_AgeParDivorce3
local x "Sta_AgeParDivorce3"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V20 "A3C AGE PARENTS SEP/DIVORCED 3RD TIME "
A3c. What was your age when your parents or guardians next separated?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R
(CS14V9=9); NA woman who raised R (CS14V10=9); parents not in a marriage-like
relationship (CS14V11=5); parents did not separate or divorce during childhood
(CS14V17=5); NA whether parents separated or divorced during childhood
(CS14V17=9); less than three separations or divorces during childhood; NA age
parents separated
*/
rename   CS14V21        Sta_AgeParDivorce4
local x "Sta_AgeParDivorce4"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V21 "A3D AGE PARENTS SEP/DIVORCED 4TH TIME "
A3d. What was your age when your parents or guardians next separated?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R
(CS14V9=9); NA woman who raised R (CS14V10=9); parents not in a marriage-like
relationship (CS14V11=5); parents did not separate or divorce during childhood
(CS14V17=5); NA whether parents separated or divorced during childhood
(CS14V17=9); less than four separations or divorces during childhood; NA age
parents separated
*/
rename   CS14V22        Sta_AgeParDivorce5
local x "Sta_AgeParDivorce5"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V22 "A3E AGE PARENTS SEP/DIVORCED 5TH TIME "
A3e. What was your age when your parents or guardians next separated?
Codes
1 - 16 Age 1 to 16
```

99 NA; not answered

0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R (CS14V9=9); NA woman who raised R (CS14V10=9); parents not in a marriage-like relationship (CS14V11=5); parents did not separate or divorce during childhood (CS14V17=5); NA whether parents separated or divorced during childhood (CS14V17=9); less than five separations or divorces during childhood; NA age parents separated

```
*/
rename   CS14V23        Sta_AgeParDivorce6
local x "Sta_AgeParDivorce6"
replace `x'=. if `x'==0 |`x'==99
/*
```

CS14V23 "A3F AGE PARENTS SEP/DIVORCED 6TH TIME "

A3f. What was your age when your parents or guardians next separated?

Codes

1 - 16 Age 1 to 16

99 NA; not answered

0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R (CS14V9=9); NA woman who raised R (CS14V10=9); parents not in a marriage-like relationship (CS14V11=5); parents did not separate or divorce during childhood (CS14V17=5); NA whether parents separated or divorced during childhood (CS14V17=9); less than six separations or divorces during childhood; NA age parents separated

```
*/
rename   CS14V24        Sta_AgeParDivorce7
local x "Sta_AgeParDivorce7"
replace `x'=. if `x'==0 |`x'==99
/*
```

CS14V24 "A3G AGE PARENTS SEP/DIVORCED 7TH TIME "

A3g. What was your age when your parents or guardians next separated?

Codes

1 - 16 Age 1 to 16

0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R (CS14V9=9); NA woman who raised R (CS14V10=9); parents not in a marriage-like relationship (CS14V11=5); parents did not separate or divorce during childhood (CS14V17=5); NA whether parents separated or divorced during childhood (CS14V17=9); less than seven separations or divorces during childhood; NA age parents separated

```
*/
rename   CS14V25        Sta_AgeParDivorce8
local x "Sta_AgeParDivorce8"
replace `x'=. if `x'==0 |`x'==99
/*
```

CS14V25 "A3H AGE PARENTS SEP/DIVORCED 8TH TIME "

A3h. What was your age when your parents or guardians next separated?

Codes

1 - 16 Age 1 to 16

0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R (CS14V9=9); NA woman who raised R (CS14V10=9); parents not in a marriage-like relationship (CS14V11=5); parents did not separate or divorce during childhood (CS14V17=5); NA whether parents separated or divorced during childhood (CS14V17=9); less than eight separations or divorces during childhood; NA age parents separated

```
*/
rename   CS14V26          Sta_AgeParDivorce9
local x "Sta_AgeParDivorce9"
replace `x'=. if `x'==0
/*
CS14V26 "A3I AGE PARENTS SEP/DIVORCED 9TH TIME "
A3i. What was your age when your parents or guardians next separated?
Codes
1 - 16 Age 1 to 16
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R
(CS14V9=9); NA woman who raised R (CS14V10=9); parents not in a marriage-like
relationship (CS14V11=5); parents did not separate or divorce during childhood
(CS14V17=5); NA whether parents separated or divorced during childhood
(CS14V17=9); less than nine separations or divorces during childhood; NA age
parents separated
*/
rename   CS14V27          Sta_AgeParDivorce10
local x "Sta_AgeParDivorce10"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V27 "A3J AGE PARENTS SEP/DIVORCED 10TH TIME "
A3j. What was your age when your parents or guardians next separated?
Codes
1 - 16 Age 1 to 16
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R
(CS14V9=9); NA woman who raised R (CS14V10=9); parents not in a marriage-like
relationship (CS14V11=5); parents did not separate or divorce during childhood
(CS14V17=5); NA whether parents separated or divorced during childhood
(CS14V17=9); less than ten separations or divorces during childhood; NA age
parents separated
*/
rename   CS14V30          Sta_MovedInChildhood
local x "Sta_MovedInChildhood"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V30 "A5 WTR MOVED IN CHILDHOOD "
A5. The next questions are about residential moves in your childhood. Did you move during your
childhood, that is, before you were 17?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V31          Sta_AgeMove1
local x "Sta_AgeMove1"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V31 "A7A AGE 1ST CHILDHOOD MOVE "
A7a. At what age did you first move?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
```

0 Inap.: did not move during childhood (CS14V30=5); NA whether moved during childhood (CS14V31=9)
*/
rename   CS14V32   Sta_AgeMove2
local x "Sta_AgeMove2"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V32 "A7B AGE 2ND CHILDHOOD MOVE "
A7b. At what age did you next move?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: did not move during childhood (CS14V30=5); NA whether moved during childhood (CS14V31=9); only moved one time during childhood; NA age first moved (CS14V31=99)
*/
rename   CS14V33   Sta_AgeMove3
local x "Sta_AgeMove3"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V33 "A7C AGE 3RD CHILDHOOD MOVE "
A7c. At what age did you next move?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: did not move during childhood (CS14V30=5); NA whether moved during childhood (CS14V31=9); moved less than three times during childhood; NA age moved
*/
rename   CS14V34 Sta_AgeMove4
local x "Sta_AgeMove4"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V34 "A7D AGE 4TH CHILDHOOD MOVE "
A7d. At what age did you next move?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: did not move during childhood (CS14V30=5); NA whether moved during childhood (CS14V31=9); moved less than four times during childhood; NA age moved
*/
rename   CS14V35 Sta_AgeMove5
local x "Sta_AgeMove5"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V35 "A7E AGE 5TH CHILDHOOD MOVE "
A7e. At what age did you next move?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: did not move during childhood (CS14V30=5); NA whether moved during childhood (CS14V31=9); moved less than five times during childhood; NA age moved
*/
rename   CS14V36   Sta_AgeMove6

local x "Sta_AgeMove6"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V36 "A7F AGE 6TH CHILDHOOD MOVE "
A7f. At what age did you next move?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: did not move during childhood (CS14V30=5); NA whether moved during
childhood (CS14V31=9); moved less than six times during childhood; NA age moved
*/
rename CS14V37 Sta_AgeMove7
local x "Sta_AgeMove7"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V37 "A7G AGE 7TH CHILDHOOD MOVE "
A7g. At what age did you next move?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: did not move during childhood (CS14V30=5); NA whether moved during
childhood (CS14V31=9); moved less than seven times during childhood; NA age moved
*/
rename   CS14V38   Sta_AgeMove8
local x "Sta_AgeMove8"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V38 "A7H AGE 8TH CHILDHOOD MOVE "
A7h. At what age did you next move?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: did not move during childhood (CS14V30=5); NA whether moved during
childhood (CS14V31=9); moved less than eight times during childhood; NA age moved
*/
rename   CS14V39   Sta_AgeMove9
local x "Sta_AgeMove9"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V39 "A7I AGE 9TH CHILDHOOD MOVE "
A7i. At what age did you next move?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: did not move during childhood (CS14V30=5); NA whether moved during
childhood (CS14V31=9); moved less than nine times during childhood; NA age moved
*/
rename   CS14V40   Sta_AgeMove10
local x "Sta_AgeMove10"
replace `x'=. if `x'==0 |`x'==99
/*
CS14V40 "A7J AGE 10TH CHILDHOOD MOVE "
A7j. At what age did you next move?

Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: did not move during childhood (CS14V30=5); NA whether moved during
childhood (CS14V31=9); moved less than ten times during childhood; NA age moved
*/
rename   CS14V160 Sta_DadWork05
local x "Sta_DadWork05"
replace `x'=. if `x'==9 |`x'==0 |`x'==7
// change to Higher=better
replace `x'=(-1*`x')+7 if `x'>=1
/*
CS14V160 "C1 HOW MUCH DAD WORKED R AGE 0-5 "
C1. How much of the time did (your father/your stepfather/the man who raised you) either work for pay
or work in a family business: From when you were born until age 5?
Work for pay includes self-employment; Farming counts as working in a family business.
Codes
1 All
2 Most
3 Some
4 A little
5 Seldom
6 None
7 Deceased / Not living with family
9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9)
*/
rename   CS14V161 Sta_DadWork612
local x "Sta_DadWork612"
replace `x'=. if `x'==9 |`x'==0 |`x'==7
// change to Higher=better
replace `x'=(-1*`x')+7 if `x'>=1
/*
CS14V161 "C2 HOW MUCH DAD WORKED R AGE 6-12 "
C2. How much of the time did (your father/your stepfather/the man who raised you) either work for pay
or work in a family business: When you were between age 6 and 12?
Work for pay includes self-employment; Farming counts as working in a family business.
Codes
1 All
2 Most
3 Some
4 A little
5 Seldom
6 None
7 Deceased / Not living with family
9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9)
*/
rename   CS14V162 Sta_DadWork1316
local x "Sta_DadWork1316"
replace `x'=. if `x'==9 |`x'==0 |`x'==7
// change to Higher=better
replace `x'=(-1*`x')+7 if `x'>=1

```
/*
CS14V162 "C3 HOW MUCH DAD WORKED R AGE 13-16 "
C3. How much of the time did (your father/your stepfather/the man who raised you) either work for pay
or work in a family business: When you were between age 13 and 16?
Work for pay includes self-employment; Farming counts as working in a family business.
Codes
1 All
2 Most
3 Some
4 A little
5 Seldom
6 None
7 Deceased / Not living with family
9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9)
*/
rename   CS14V163 Sta_DadUnemp05
local x "Sta_DadUnemp05"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V163 "C7A # TIMES DAD UNEMP R AGE 0-5 "
C7a. Before you were age 17, how often was (your father/your stepfather/the man who raised you)
unemployed and actively looking for a job: From when you were born until age 5?
Codes
1 0 times
2 1-2 times
3 3-5 times
4 More than 5 times
9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9); father
deceased or not living with family from R birth to age 5 (CS14V160=7)
*/
rename   CS14V164 Sta_DadUnmep612
local x "Sta_DadUnmep612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V164 "C8A # TIMES DAD UNEMP R AGE 6-12 "
C8a. Before you were age 17, how often was (your father/your stepfather/the man who raised you)
unemployed and actively looking for a job: When you were between age 6 and 12?
Codes
1 0 times
2 1-2 times
3 3-5 times
4 More than 5 times
9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9); father
deceased or not living with family when R age 6-12 (CS14V161=7)
*/
rename   CS14V165 Sta_DadUnmep1316
```

```
local x "Sta_DadUnmep1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
```

CS14V165 "C9A # TIMES DAD UNEMP R AGE 13-16 "
C9a. Before you were age 17, how often was (your father/your stepfather/the man who raised you)
unemployed and actively looking for a job: When you were between age 13 and 16?
Codes
1 0 times
2 1-2 times
3 3-5 times
4 More than 5 times
9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9); father
deceased or not living with family when R age 13-16 (CS14V162=7)
*/

```
rename   CS14V166 Sta_MomWork05
local x "Sta_MomWork05"
replace `x'=. if `x'==9 |`x'==0 |`x'==7
// change to Higher=better
replace `x'=(-1*`x')+7 if `x'>=1
/*
```

CS14V166 "C4 HOW MUCH MOM WORKED R AGE 0-5 "
C4. How much of the time did (your mother/your stepmother/the woman who raised you) either work for
pay
or work in a family business: From when you were born until age 5?
Work for pay includes self-employment; Farming counts as working in a family business.
Codes
1 All
2 Most
3 Some
4 A little
5 Seldom
6 None
7 Deceased / Not living with family
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9)
*/

```
rename   CS14V167 Sta_MomWork612
local x "Sta_MomWork612"
replace `x'=. if `x'==9 |`x'==0 |`x'==7
// change to Higher=better
replace `x'=(-1*`x')+7 if `x'>=1
/*
```

CS14V167 "C5 HOW MUCH MOM WORKED R AGE 6-12 "
C5. How much of the time did (your mother/your stepmother/the woman who raised you) either work for
pay
or work in a family business: When you were between age 6 and 12?
Work for pay includes self-employment; Farming counts as working in a family business.
Codes
1 All
2 Most

3 Some
4 A little
5 Seldom
6 None
7 Deceased / Not living with family
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9)
*/
rename   CS14V168 Sta_MomWork1316
local x "Sta_MomWork1316"
replace `x'=. if `x'==9 |`x'==0 |`x'==7
// change to Higher=better
replace `x'=(-1*`x')+7 if `x'>=1
/*
CS14V168 "C6 HOW MUCH MOM WORKED R AGE 13-16 "
C6. How much of the time did (your mother/your stepmother/the woman who raised you) either work for pay
or work in a family business: When you were between age 13 and 16?
Work for pay includes self-employment; Farming counts as working in a family business.
Codes
1 All
2 Most
3 Some
4 A little
5 Seldom
6 None
7 Deceased / Not living with family
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9)
*/
rename   CS14V169 Sta_MomUnemp05
local x "Sta_MomUnemp05"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V169 "C10A # TIMES MOM UNEMP R AGE 0-5 "
C10a. Before you were age 17, how often was (your mother/your stepmother/the woman who raised you)
unemployed and actively looking for a job: From when you were born until age 5?
Codes
1 0 times
2 1-2 times
3 3-5 times
4 More than 5 times
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9);
mother deceased or not living with family from R birth to age 5 (CS14V166=7)
*/
rename   CS14V170 Sta_MomUnmep612
local x "Sta_MomUnmep612"
replace `x'=. if `x'==9 |`x'==0

// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V170 "C11A # TIMES MOM UNEMP R AGE 6-12 "
C11a. Before you were age 17, how often was (your mother/your stepmother/the woman who raised you)
unemployed and actively looking for a job: When you were between age 6 and 12?
Codes
1 0 times
2 1-2 times
3 3-5 times
4 More than 5 times
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9);
mother deceased or not living with family when R age 6-12 (CS14V167=7)
*/
rename CS14V171 Sta_MomUnmep1316
local x "Sta_MomUnmep1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V171 "C12A # TIMES MOM UNEMP R AGE 13-16 "
C12a. Before you were age 17, how often was (your mother/your stepmother/the woman who raised you)
unemployed and actively looking for a job: When you were between age 13 and 16?
Codes
1 0 times
2 1-2 times
3 3-5 times
4 More than 5 times
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9);
mother deceased or not living with family when R age 13-16 (CS14V168=7)
*/
rename CS14V278 Sta_CommWithMom
local x "Sta_CommWithMom"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+6 if `x'>=1
/*
CS14V278 "J1A COMMUNICATION STATUS W/ MOM "
J1a. Before you were age 17, how would you rate the communication between you and (your mother/your
stepmother/the woman who raised you)?
Codes
1 Excellent
2 Very good
3 Good
4 Fair
5 Poor
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9)
*/
rename CS14V279 Sta_MomUnderstood
local x "Sta_MomUnderstood"

```
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V279 "J2A HOW MUCH MOM UNDERSTOOD R PROBS "
J2a. Before you were age 17: How much did (your mother/your stepmother/the woman who raised you)
understand your problems and worries?
Codes
1 A lot
2 Some
3 A little
4 Not at all
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9)
*/
rename  CS14V280 Sta_ConfideMom
local x "Sta_ConfideMom"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V280 "J3A HOW MUCH COULD CONFIDE IN MOM "
J3a. Before you were age 17: How much could you confide in her about things that were bothering you?
Codes
1 A lot
2 Some
3 A little
4 Not at all
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9)
*/
rename  CS14V281 Sta_TensionMom
local x "Sta_TensionMom"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V281 "J4A HOW MUCH TENSION WITH MOM "
J4a. Before you were age 17: How much tension did you have in your relationship with (your mother/your
stepmother/the woman who raised you)?
Codes
1 A lot
2 Some
3 A little
4 Not at all
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9)
*/
rename  CS14V282 Sta_RelationWMom
local x "Sta_RelationWMom"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+6 if `x'>=1
```

```
/*
CS14V282 "J5A RELATIONSHIP STATUS W/ MOM "
J5a. Before you were age 17, how would you rate your relationship with (your mother/your stepmother/the
woman who raised you)?
Codes
1 Excellent
2 Very good
3 Good
4 Fair
5 Poor
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9)
*/
rename   CS14V283 Sta_CloseMom
local x "Sta_CloseMom"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V283 "J6A HOW CLOSE WITH MOM "
J6a. Before you were age 17: How emotionally close were you with (your mother/your stepmother/the
woman
who raised you)?
Codes
1 Very
2 Somewhat
3 Not very
4 Not at all
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9)
*/
rename   CS14V284 Sta_StrictMom
local x "Sta_StrictMom"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V284 "J7A HOW STRICT WAS MOM "
J7a. Before you were age 17: How strict was (your mother/your stepmother/the woman who raised you)
with
her rules for you?
Codes
1 Very
2 Somewhat
3 Not very
4 Not at all
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9)
*/
rename   CS14V285 Sta_AffectionMom
local x "Sta_AffectionMom"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
```

```
replace `x'=(-1*`x')+5 if `x'>=1
/*
```
CS14V285 "J8A HOW MUCH AFFECTION MOM GAVE "
J8a. Before you were age 17: How much love and affection did (your mother/your stepmother/the woman who
raised you) give you?
Codes
1 A lot
2 Some
3 A little
4 None at all
9 NA; not answered
0 Inap.: not raised by a woman (CS14V10=7); NA woman who raised R (CS14V10=9)
```
*/
rename   CS14V294 Sta_TensionDad
local x "Sta_TensionDad"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
```
CS14V294 "J4B HOW MUCH TENSION WITH DAD "
J4b. Before you were age 17: How much tension did you have in your relationship with (your father/your
stepfather/the man who raised you)?
Codes
1 A lot
2 Some
3 A little
4 Not at all
9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9)
```
*/
rename   CS14V295 Sta_RelationWDad
local x "Sta_RelationWDad"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+6 if `x'>=1
/*
```
CS14V295 "J5B RELATIONSHIP STATUS W/ DAD "
J5b. Before you were age 17, how would you rate your relationship with (your father/your stepfather/the
man who raised you)?
Codes
1 Excellent
2 Very good
3 Good
4 Fair
5 Poor
9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9)
```
*/
rename   CS14V296 Sta_CloseDad
local x "Sta_CloseDad"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
```

```
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V296 "J6B HOW CLOSE WITH DAD "
```
J6b. Before you were age 17: How emotionally close were you with (your father/your stepfather/the man who raised you)?
Codes
1 Very
2 Somewhat
3 Not very
4 Not at all
9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9)
```
*/
rename  CS14V297 Sta_StrictDad
local x "Sta_StrictDad"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V297 "J7B HOW STRICT WAS DAD "
```
J7b. Before you were age 17: How strict was (your father/your stepfather/the man who raised you) with his rules for you?
Codes
1 Very
2 Somewhat
3 Not very
4 Not at all
9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9)
```
*/
rename  CS14V298 Sta_AffectionDad
local x "Sta_AffectionDad"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V298 "J8B HOW MUCH AFFECTION DAD GAVE "
```
J8b. Before you were age 17, how much love and affection did (your father/your stepfather/the man who raised you) give you?
Codes
1 A lot
2 Some
3 A little
4 None at all
9 NA; not answered
0 Inap.: not raised by a man (CS14V9=7); NA man who raised R (CS14V9=9)
```
*/
rename  CS14V311 Sta_RelMentorWork
local x "Sta_RelMentorWork"
replace `x'=. if `x'==0 |`x'==9 |`x'==7
replace `x'=0 if `x'==5
/*
CS14V311 "K1 WTR RELATIVE MENTORED WORK LIFE "
```

K1. When you were between age 17 and 30, was there a family member other than (your mother/your stepmother/the woman who raised you) (and) (your father/your stepfather/the man who raised you) who provided you with positive support or mentoring that helped you succeed in your work life?
Codes
1 Yes
5 No
7 I have never worked
9 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R
and NA woman who raised R (CS14V9=9 and CS14V10=9)
*/
rename   CS14V312 Sta_RelMentorMarriage
local x "Sta_RelMentorMarriage"
replace `x'=. if `x'==0 |`x'==9 |`x'==7
replace `x'=0 if `x'==5
/*
CS14V312 "K3 WTR RELATIVE MENTORED MARRIAGE "
K3. When you were between age 17 and 30, was there a family member other than (your mother/your stepmother/the woman who raised you) (and) (your father/your stepfather/the man who raised you) who provided you with positive support or mentoring that helped you succeed in your interpersonal relationships, such as marriage or a marriage-like relationship?
Codes
1 Yes
5 No
7 I've never been married/had a marriage-like relationship
9 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R
and NA woman who raised R (CS14V9=9 and CS14V10=9)
*/
rename   CS14V313 Sta_NonRelMentorWork
local x "Sta_NonRelMentorWork"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V313 "K2 WTR NONREL MENTORED WORK LIFE "
K2. When you were between age 17 and 30, was there an adult outside of your family who provided you with positive support or mentoring that helped you succeed in your work life?
Codes
1 Yes
5 No
9 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R
and NA woman who raised R (CS14V9=9 and CS14V10=9); has never worked (CS14V311=7)
*/
rename   CS14V314 Sta_NonRelMentorMarriage
local x "Sta_NonRelMentorMarriage"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V314 "K4 WTR NONREL MENTORED MARRIAGE "
K4. When you were between age 17 and 30, was there an adult outside of your family who provided you with positive support or mentoring that helped you succeed in your interpersonal relationships, such as marriage or a marriage-like relationship?

Codes
1 Yes
5 No
9 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R
and NA woman who raised R (CS14V9=9 and CS14V10=9); never been married or had a
marriage-like relationship (CS14V312=7)
*/
rename   CS14V186 Sta_SameNeigborhood616
local x "Sta_SameNeigborhood616"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==2
/*
CS14V186 "D1CA WTR SAME NBHD AGES 6-16 "
D1Ca.Now think back to the neighborhood where you lived the longest when you were between age 13 and
16. Is this the same neighborhood that you just described or a different neighborhood?
Codes
1 Same neighborhood
2 Different neighborhood
9 NA; not answered
*/
rename   CS14V41   Edu_NumSchAttend
local x "Edu_NumSchAttend"
replace `x'==. if `x'==99
/*
CS14V41 "A8 # SCHOOLS ATTENDED "
A8. How many schools did you attend before age 17, including home schooling?
IF LESS THAN 1 OR MORE THAN 10, THEN ASK: Please enter a number from 1 to 10.
Codes
1 - 10 Number of schools attended
99 NA; not answered
*/
rename   CS14V42   Edu_AgeSchool1
local x "Edu_AgeSchool1"
replace `x'==. if `x'==99 | `x'==0
/*
CS14V42 "A9A AGE START 1ST SCHOOL "
A9a. At what age did you go to this first school?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: NA number of schools attended (CS14V41=99)
*/
rename   CS14V43   Edu_AgeSchool2
local x "Edu_AgeSchool2"
replace `x'==. if `x'==99 | `x'==0
/*
CS14V43 "A9B AGE START 2ND SCHOOL "
A9b. At what age did you go to this next school?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: only one school attended (CS14V41=1); NA number of schools attended

(CS14V41=99); NA age attended first school (CS14V42=99); only one school attended
*/
rename   CS14V44   Edu_AgeSchool3
local x "Edu_AgeSchool3"
replace `x'==. if `x'==99 | `x'==0
/*
CS14V44 "A9C AGE START 3RD SCHOOL "
A9c. At what age did you go to this next school?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: less than three schools attended (CS14V41<3); NA number of schools
attended (CS14V41=99); NA age attended school
*/
rename   CS14V45   Edu_AgeSchool4
local x "Edu_AgeSchool4"
replace `x'==. if `x'==99 | `x'==0
/*
CS14V45 "A9D AGE START 4TH SCHOOL "
A9d. At what age did you go to this next school?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: less than four schools attended (CS14V41<4); NA number of schools
attended (CS14V41=99); NA age attended school
*/
rename   CS14V46   Edu_AgeSchool5
local x "Edu_AgeSchool5"
replace `x'==. if `x'==99 | `x'==0
/*
CS14V46 "A9E AGE START 5TH SCHOOL "
A9e. At what age did you go to this next school?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: less than five schools attended (CS14V41<5); NA number of schools
attended (CS14V41=99); NA age attended school
*/
rename   CS14V47   Edu_AgeSchool6
local x "Edu_AgeSchool6"
replace `x'==. if `x'==99 | `x'==0
/*
CS14V47 "A9F AGE START 6TH SCHOOL "
A9f. At what age did you go to this next school?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: less than six schools attended (CS14V41<6); NA number of schools attended
(CS14V41=99); NA age attended school
*/
rename   CS14V48   Edu_AgeSchool7
local x "Edu_AgeSchool7"
replace `x'==. if `x'==99 | `x'==0

```
/*
CS14V48 "A9G AGE START 7TH SCHOOL "
A9g. At what age did you go to this next school?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: less than seven schools attended (CS14V41<7); NA number of schools
attended (CS14V41=99); NA age attended school
*/
rename   CS14V49        Edu_AgeSchool8
local x "Edu_AgeSchool8"
replace `x'==. if `x'==99 | `x'==0
/*
CS14V49 "A9H AGE START 8TH SCHOOL "
A9h. At what age did you go to this next school?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: less than eight schools attended (CS14V41<8); NA number of schools
attended (CS14V41=99); NA age attended school
*/
rename   CS14V50        Edu_AgeSchool9
local x "Edu_AgeSchool9"
replace `x'==. if `x'==99 | `x'==0
/*
CS14V50 "A9I AGE START 9TH SCHOOL "
A9i. At what age did you go to this next school?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: less than nine schools attended (CS14V41<9); NA number of schools
attended (CS14V41=99); NA age attended school
*/
rename   CS14V51        Edu_AgeSchool10
local x "Edu_AgeSchool10"
replace `x'==. if `x'==99 | `x'==0
/*
CS14V51 "A9J AGE START 10TH SCHOOL "
A9j. At what age did you go to this next school?
Codes
1 - 16 Age 1 to 16
99 NA; not answered
0 Inap.: less than ten schools attended (CS14V41<10); NA number of schools
attended (CS14V41=99); NA age attended school
*/
rename   CS14V202 Edu_RepeatGrade
local x "Edu_RepeatGrade"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V202 "F1 WTR REPEAT SCHOOL GRADE "
F1. Before age 17, did you ever have to repeat a grade?
Codes
```

1 Yes
5 No
9 NA; not answered
*/
rename   CS14V203   Edu_TimesRepeatGrade
replace Edu_TimesRepeatGrade==. if Edu_TimesRepeatGrade==99
/*
CS14V203 "F1A # TIMES REPEAT SCHOOL GRADE "
F1a. How many times?
IF LESS THAN 1 OR MORE THAN 97, THEN ASK: Please enter a number from 1 to 97.
Codes
1 - 15 Number of grades repeated
99 NA; not answered
0 Inap.: did not repeat a grade in school before age 17 (CS14V202=5); NA whether
repeated a grade in school before age 17 (CS14V202=9)
*/
rename   CS14V204   Edu_GradeFirstRpt
replace Edu_GradeFirstRpt==. if Edu_GradeFirstRpt==99
/*
CS14V204 "F1B SCHOOL GRADE REPEATED 1ST "
F1b. What grade did you repeat (the first time you repeated a grade)?
Codes
1 First grade
2 Second grade
3 Third grade
4 Fourth grade
5 Fifth grade
6 Sixth grade
7 Seventh grade
8 Eighth grade
9 Ninth grade
10 Tenth grade
11 Eleventh grade
12 Twelfth grade
99 NA; not answered
0 Inap.: did not repeat a grade in school before age 17 (CS14V202=5); NA whether
repeated a grade in school before age 17 (CS14V202=9)
*/
rename   CS14V205   Edu_GradeLastRpt
replace Edu_GradeLastRpt==. if Edu_GradeLastRpt==99
/*
CS14V205 "F1C SCHOOL GRADE REPEATED LAST "
F1c. What grade did you repeat the last time you repeated a grade?
Codes
1 First grade
2 Second grade
3 Third grade
4 Fourth grade
5 Fifth grade
6 Sixth grade
7 Seventh grade
8 Eighth grade
9 Ninth grade

10 Tenth grade
11 Eleventh grade
12 Twelfth grade
99 NA; not answered
0 Inap.: did not repeat a grade in school before age 17 (CS14V202=5); NA whether
repeated a grade in school before age 17 (CS14V202=9); repeated one grade in
school before age 17 (CS14V203=1); NA how many grades repeated in school before
age 17 (CS14V203=99)
*/
rename   CS14V208   Edu_HappyAtSchool612
local x "Edu_HappyAtSchool612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V208 "F4 HAPPY AT SCHOOL AGE 6-12 "
F4. When you were between age 6 and 12: How often did you feel happy at school?
Codes
1 A lot
2 Sometimes
3 Rarely
4 Never
9 NA; not answered
*/
rename   CS14V214   Edu_HappyAtSchool1316
local x "Edu_HappyAtSchool1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V214 "F8 HAPPY AT SCHOOL AGE 13-16 "
F8. When you were between age 13 and 16: How often did you feel happy at school?
Codes
1 A lot
2 Sometimes
3 Rarely
4 Never
9 NA; not answered
*/
rename   CS14V52   Health_SAHS
local x "Health_SAHS"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+6 if `x'>=1
/*
CS14V52 "B1 CHILDHOOD HEALTH STATUS "
B1. These next questions ask about your health during childhood, that is, before age 17. Would you say
that your health during that time was excellent, very good, good, fair or poor?
Codes
1 Excellent
2 Very good
3 Good
4 Fair

5 Poor
9 NA; not answered
*/
rename CS14V53   Health_MonthMissSch
local x "Health_MonthMissSch"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V53 "B2 MISS MONTH+ SCHOOL HEALTH REASON "
B2. When you were growing up, before you were 17 years old, did you miss a month or more of school
because of a health problem?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename CS14V54   Health_Measles
local x "Health_Measles"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V54 "B3 WTR HAD MEASLES "
B3. Before you were 17 years old, did you have measles?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename CS14V55   Health_Mumps
local x "Health_Mumps"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V55 "B4 WTR HAD MUMPS "
B4. Before you were 17 years old, did you have mumps?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename CS14V56   Health_Chickenpox
local x "Health_Chickenpox"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V56 "B5 WTR HAD CHICKEN POX "
B5. Before you were 17 years old, did you have chicken pox?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename CS14V57   Health_Vision

```
local x "Health_Vision"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V57 "B6 WTR HAD TROUBLE SEEING "
B6. Before you were 17 years old, did you have difficulty seeing, even with eye glasses?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V58        Health_Hearing
local x "Health_Hearing"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V58 "B6A WTR HAD DIFFICULTY HEARING "
B6a. Before you were 17 years old, did you have difficulty hearing?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V61        Health_Asthma
local x "Health_Asthma"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V61 "B8 WTR CHILDHOOD ASTHMA "
B8. Before you were 17 years old, did you have asthma?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V65        Health_Diabetes
local x "Health_Diabetes"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V65 "B10 WTR CHILDHOOD DIABETES "
B10. Before you were 17 years old, did you have diabetes?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V69        Health_RespDisease
local x "Health_RespDisease"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V69 "B12 WTR CHILDHOOD RESP DIS "
```

B12. Before you were 17 years old, did you have a respiratory disorder such as bronchitis, wheezing, hay fever, shortness of breath, or sinus infection?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V73   Health_SpeechImpair
local x "Health_SpeechImpair"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V73 "B14 WTR CHILDHOOD SPCH IMPAIR "
B14. Before you were 17 years old, did you have a speech impairment?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V77   Health_Allergy
local x "Health_Allergy"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V77 "B16 WTR CHILDHOOD ALLERGY "
B16. Before you were 17 years old, did you have an allergic condition?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V81   Health_HeartTrouble
local x "Health_HeartTrouble"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V81 "B18 WTR CHILDHOOD HEART TRBL "
B18. Before you were 17 years old, did you have heart trouble?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V85   Health_EarProbs
local x "Health_EarProbs"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V85 "B20 WTR CHILDHOOD EAR PROBS "
B20. Before you were 17 years old, did you have chronic ear problems or infections?
Codes
1 Yes
5 No

```
9 NA; not answered
*/
rename   CS14V89         Health_Epilepsy
local x "Health_Epilepsy"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V89 "B22 WTR CHILDHOOD EPILEPSY "
B22. Before you were 17 years old, did you have epilepsy or seizures?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V93         Health_Headache
local x "Health_Headache"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V93 "B24 WTR CHILDHOOD HEADACHE "
B24. Before you were 17 years old, did you have severe headaches or migraines?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V97         Health_StomProb
local x "Health_StomProb"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V97 "B26 WTR CHILDHOOD STOM PROB "
B26. Before you were 17 years old, did you have stomach problems?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V101 Health_HighBloodPres
local x "Health_HighBloodPres"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V101 "B28 WTR CHILDHOOD HGH BLOOD PR "
B28. Before you were 17 years old, did you have high blood pressure?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V153 Health_HeightMtype
/*
CS14V153 "B54 HEIGHT UNIT OF MEASUREMENT "
```

B54. Thinking about when you were 13 years old, how tall were you at that age?
Codes
1 Enter height in feet and inches
2 Enter height in meters
9 NA; not answered
*/
rename   CS14V154 Health_HeightFt
local x "Health_HeightFt"
replace `x'=. if `x'==9 | `x'==0
/*
CS14V154 "B54FT HEIGHT AT AGE 13-FEET "
B54FT. ENTER height in feet and inches. If you don't know the exact height, please give us your best
guess.
IF LESS THAN 2 OR MORE THAN 7, THEN ASK: Please enter a number from 2 to 7.
Codes
2 - 7 Actual number of feet
9 NA; not answered
0 Inap.: reported height in meters (CS14V153=2); NA unit of height measurement
(CS14V153=9)
*/
rename   CS14V155 Health_HeightIn
local x "Health_HeightIn"
replace `x'=. if `x'==99
gen Health_HeightInTOT13=Health_HeightFt*12+`x' if Health_HeightMtype==1 // combine feet and
inches into one measurement ((grand height inch measurement))

/*
CS14V155 "B54INCH HEIGHT AT AGE 13-INCHES "
B54INCH. ENTER height in feet and inches. If you don't know the exact height, please give us your best
guess.
IF MORE THAN 11, THEN ASK: Please enter a number from 0 to 11.
Codes
0 - 11 Actual number of inches
99 NA; not answered
*/
rename   CS14V156 Health_HeightMtr
local x "Health_HeightMtr"
replace `x'=. if `x'==9.00 |`x'==0.00
replace Health_HeightInTOT13=Health_HeightMtr*39.3701 if Health_HeightMtype==2
/*
CS14V156 "B54METER HEIGHT AT AGE 13 IN METERS "
B54METER. ENTER height in meters. If you don't know the exact height, please give us your best guess.
IF LESS THAN 0.6 OR MORE THAN 2.1, THEN ASK: Please enter a number from 0.60 to 2.10.
Codes
0.60 - 2.10 Actual height in meters
9.00 NA; not answered
0.00 Inap.: reported height in feet and inches (CS14V153=1); NA unit of height
measurement (CS14V153=9)
*/
rename   CS14V157 Health_WeightMtype
/*
CS14V157 "B55 WEIGHT UNIT OF MEASUREMENT "
B55. Thinking about when you were 13 years old, how much did you weigh?

Codes
1 Enter weight in pounds
2 Enter weight in kilograms
9 NA; not answered
*/
rename   CS14V158 Health_WeightPounds
local x "Health_WeightPounds"
replace `x'=. if `x'==999 |`x'==0
gen Health_WeightPndsTOT13=`x'

/*
CS14V158 "B55POUND WEIGHT AGE 13 IN POUNDS "
B55POUND. ENTER weight in pounds. If you don't know the exact weight, please give us your best guess.
IF LESS THAN 50 OR MORE THAN 400, THEN ASK: Please enter a number from 50 to 400.
Codes
50 - 400 Actual number of pounds
999 NA; not answered
0 Inap.: reported weight in kilograms (CS14V157=2); NA unit of weight measurement
(CS14V157=9)
*/
rename   CS14V159 Health_WeightKG
replace Health_WeightKg=. if Health_WeightKg==999
replace Health_WeightPndsTOT13=Health_WeightKG*2.20462 if Health_WeightMtype==2 // combine
feet and inches into one measurement ((grand height inch measurement))
/*
CS14V159 "B55KILO WEIGHT AGE 13 IN KILOS "
B55KILO. ENTER weight in kilograms. If you don't know the exact weight, please give us your best
guess.
IF LESS THAN 36 OR MORE THAN 180.9, THEN ASK: Please enter a number from 36.0 to 180.0.
Codes
36.0 - 180.0 Actual number of kilos
999.0 NA; not answered
0.0 Inap.: reported weight in pounds (CS14V157=1); NA unit of weight measurement
(CS14V157=9)
*/
rename   CS14V60   Health_ParSmoked
local x "Health_ParSmoked"
replace `x'=. if `x'==0 |`x'==9 // remember higher is worse in this case, like disease
replace `x'=0 if `x'==5
/*
CS14V60 "B7 WTR PARENT SMOKED DURING CHILDHOOD "
B7. Did (your mother/your stepmother/the woman who raised you) (or) (your father/your stepfather/the
man who raised you) smoke during your childhood?
Codes
1 Yes (one of them)
2 Yes, both of them
5 No (none of them)
9 NA; not answered
0 Inap.: no man or woman raised R (CS14V9=7 and CS14V10=7); NA man who raised R
(CS14V9=9); NA woman who raised R (CS14V10=9)
*/
rename   CS14V210 Soc_BullyAtSchool612
local x "Soc_BullyAtSchool612"

```
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V210 "F5A R WAS BULLY AT SCHOOL AGE 6-12 "
```

F5a. When you were between age 6 and 12: How often did you pick on or bully kids at school?
Codes
1 A lot
2 Sometimes
3 Rarely
4 Never
9 NA; not answered

```
*/
rename  CS14V211 Soc_BullyOutSchool612
local x "Soc_BullyOutSchool612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V211 "F5B R WAS BULLY OUT OF SCHOOL AGE 6-12 "
```

F5b. When you were between age 6 and 12: How often did you pick on or bully kids outside of school?
Codes
1 A lot
2 Sometimes
3 Rarely
4 Never
9 NA; not answered

```
*/
rename  CS14V216 Soc_BullyAtSchool1316
local x "Soc_BullyAtSchool1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V216 "F9A R WAS BULLY AT SCHOOL AGE 13-16 "
```

F9a. When you were between age 13 and 16: How often did you pick on or bully kids at school?
Codes
1 A lot
2 Sometimes
3 Rarely
4 Never
9 NA; not answered

```
*/
rename  CS14V217 Soc_BullyOutSchool1316
local x "Soc_BullyOutSchool1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V217 "F9B R WAS BULLY OUT OF SCHOOL AGE 13-16 "
```

F9b. When you were between age 13 and 16: How often did you pick on or bully kids outside of school?
Codes
1 A lot

2 Sometimes
3 Rarely
4 Never
9 NA; not answered
*/
rename   CS14V182 Soc_NeighborHelp612
local x "Soc_NeighborHelp612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V182 "D4B NBHD AGE 6-12 HELP EACH OTHER "
D4b. (Think back to the neighborhood in which you lived the longest when you were between age 6 and 12.
How true is each of the following statements about this neighborhood:)
My neighbors were willing to help each other out.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered
*/
rename   CS14V183 Soc_NeighborCloseKnit612
local x "Soc_NeighborCloseKnit612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V183 "D5B NBHD AGE 6-12 CLOSE KNIT "
D5b. (Think back to the neighborhood in which you lived the longest when you were between age 6 and 12.
How true is each of the following statements about this neighborhood:)
My neighborhood was close-knit.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered
*/
rename   CS14V194 Soc_Lonely612
local x "Soc_Lonely612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V194 "E1 HOW OFTEN LONELY AGE 6-12 "
E1. When you were between age 6 and 12: How often were you lonely for friends?
Codes
1 Often
2 Sometimes
3 Not very often

4 Never
9 NA; not answered
*/
rename   CS14V195 Soc_ComfWithFriends612
local x "Soc_ComfWithFriends612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V195 "E2 HOW OFTEN COMF W/ FRIENDS AGE 6-12 "
E2. When you were between age 6 and 12: How often did you have a group of friends that you felt
comfortable spending time with?
Codes
1 Often
2 Sometimes
3 Not very often
4 Never
9 NA; not answered
*/
rename   CS14V196 Soc_HadBestFriend612
local x "Soc_HadBestFriend612"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V196 "E3 WTR HAD BEST FRIEND AGE 6-12 "
E3. When you were between age 6 and 12: Did you have a best friend?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V197 Soc_Lonely1316
local x "Soc_Lonely1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V197 "E4 HOW OFTEN LONELY AGE 13-16 "
E4. When you were between age 13 and 16: How often were you lonely for friends?
Codes
1 Often
2 Sometimes
3 Not very often
4 Never
9 NA; not answered
*/
rename   CS14V198 Soc_ComfWithFriends1316
local x "Soc_ComfWithFriends1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V198 "E5 HOW OFTEN COMF W/ FRIENDS AGE 13-16 "

E5. When you were between age 13 and 16: How often did you have a group of friends that you felt comfortable spending time with?
Codes
1 Often
2 Sometimes
3 Not very often
4 Never
9 NA; not answered
*/
rename   CS14V199 Soc_HadBestFriend1316
local x "Soc_HadBestFriend1316"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V199 "E6 WTR HAD BEST FRIEND AGE 13-16 "
E6. When you were between age 13 and 16: Did you have a best friend?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V200 Soc_HadBFGF1316
local x "Soc_HadBFGF1316"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V200 "E7 WTR HAD BF/GF AGE 13-16 "
E7. When you were between age 13 and 16: Did you have a romantic partner or someone that you dated for a while, like a boyfriend or girlfriend?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V201 Soc_BFGFRelPositive
local x "Soc_BFGFRelPositive"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==2
replace `x'=2 if `x'==1
replace `x'=1 if `x'==3
/*
CS14V201 "E8 RELATIONSHIP WITH BF/GF POSITIVE? "
E8. For the most important romantic relationship you had when you were between age 13 and 16, would you
say it was mostly positive, mostly negative, or neutral?
Codes
1 Mostly positive
2 Mostly negative
3 Neutral
9 NA; not answered
0 Inap.: did not have a romantic partner between ages 13-16 (CS14V200=5); NA
whether had a romantic partner between ages 13-16 (CS14V200=9)
*/

rename   CS14V190 Soc_NeighborHelp1316
local x "Soc_NeighborHelp1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V190 "D4C NBHD AGE 13-16 HELP EACH OTHER "
D4c. (Think back to the neighborhood in which you lived the longest when you were between age 13 and
16. How true is each of the following statements about this neighborhood:)
My neighbors were willing to help each other out.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered
0 Inap.: lived mostly in the same neighborhood from ages 6-16 (CS14V186=1)
*/
rename   CS14V191 Soc_NeighborCloseKnit1316
local x "Soc_NeighborCloseKnit1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V191 "D5C NBHD AGE 13-16 CLOSE KNIT "
D5c. (Think back to the neighborhood in which you lived the longest when you were between age 13 and
16. How true is each of the following statements about this neighborhood:)
My neighborhood was close-knit.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered
0 Inap.: lived mostly in the same neighborhood from ages 6-16 (CS14V186=1)
*/
rename   CS14V172 Fstrain_05
local x "Fstrain_05"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V172 "C13A WTR FINANCIAL STRUGGLE R AGE 0-5 "
C13a. Before you were age 17, was there ever a time when your family was struggling financially to make
ends meet: From when you were born until age 5?
Codes
1 Yes
5 No
9 NA; not answered
*/
rename   CS14V173 Fstrain_612
local x "Fstrain_612"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5

```
/*
CS14V173 "C13B WTR FINANCIAL STRUGGLE R AGE 6-12 "
```
C13b. Before you were age 17, was there ever a time when your family was struggling financially to make ends meet: When you were between age 6 and 12?
Codes
1 Yes
5 No
9 NA; not answered
```
*/
rename  CS14V174 Fstrain_1316
local x "Fstrain_1316"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V174 "C13C WTR FINANCIAL STRUGGLE R AGE 13-16 "
```
C13c. Before you were age 17, was there ever a time when your family was struggling financially to make ends meet: When you were between age 13 and 16?
Codes
1 Yes
5 No
9 NA; not answered
```
*/
rename  CS14V175 Fstrain_welfare05
local x "Fstrain_welfare05"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V175 "C14A WTR WELFARE 3+ MONTHS R AGE 0-5 "
```
C14a. Before you were age 17, was there ever a period of 3 months or more when your family was on welfare or received food stamps: From when you were born until age 5?
Welfare includes General Assistance and other programs for financial aid to people who are poor, or have a physical disability or mental health condition, but does not include government health insurance or any unemployment programs or benefits.
Codes
1 Yes
5 No
9 NA; not answered
```
*/
rename  CS14V176 Fstrain_welfare612
local x "Fstrain_welfare612"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
CS14V176 "C14B WTR WELFARE 3+ MONTHS R AGE 6-12 "
```
C14b. Before you were age 17, was there ever a period of 3 months or more when your family was on welfare or received food stamps: When you were between age 6 and 12?
Welfare includes General Assistance and other programs for financial aid to people who are poor, or have a physical disability or mental health condition, but does not include government health insurance or any unemployment programs or benefits.
Codes
1 Yes
5 No
9 NA; not answered

```
*/
rename   CS14V177 Fstrain_welfare1316
local x "Fstrain_welfare1316"
replace `x'=. if `x'==0 |`x'==9
replace `x'=0 if `x'==5
/*
```

CS14V177 "C14C WTR WELFARE 3+ MONTHS R AGE 13-16 "
C14c. Before you were age 17, was there ever a period of 3 months or more when your family was on welfare or received food stamps: When you were between age 13 and 16?
Welfare includes General Assistance and other programs for financial aid to people who are poor, or have a physical disability or mental health condition, but does not include government health insurance or any unemployment programs or benefits.
Codes
1 Yes
5 No
9 NA; not answered

```
*/
rename   CS14V178 Fstrain_FamFinComp
local x "Fstrain_FamFinComp"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+6 if `x'>=1
/*
```

CS14V178 "C15 R'S FAMILY FINANCE COMP TO AVERAGE "
C15. When you were a child before age 17, compared to the average family at that time, how was the financial situation of the family that you lived with? If your family lived separately and had different financial situations, answer for the family you lived with the longest time.
Codes
1 A lot better off than the average family
2 Somewhat better off than the average family
3 Same as the average family
4 Somewhat worse off than the average family
5 A lot worse off than the average family
9 NA; not answered

```
*/
rename   CS14V179 Sec_NhoodSafeNight612
local x "Sec_NhoodSafeNight612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
```

CS14V179 "D1B NBHD AGE 6-12 SAFE AT NIGHT ALONE "
D1b. Think back to the neighborhood in which you lived the longest when you were between age 6 and 12. How true is each of the following statements about this neighborhood:
It was safe being out alone in my neighborhood at night.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered

```
*/
rename   CS14V180 Sec_NhoodSafeDay612
```

```
local x "Sec_NhoodSafeDay612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V180 "D2B NBHD AGE 6-12 SAFE IN DAY "
D2b. (Think back to the neighborhood in which you lived the longest when you were between age 6 and
12.
How true is each of the following statements about this neighborhood:)
My neighborhood was safe for children during the daytime.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered
*/
rename  CS14V181 Sec_NhoodSafeNightKid612
local x "Sec_NhoodSafeNightKid612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V181 "D3B NBHD AGE 6-12 SAFE AT NIGHT KIDS "
D3b. (Think back to the neighborhood in which you lived the longest when you were between age 6 and
12.
How true is each of the following statements about this neighborhood:)
My neighborhood was safe for children during the nighttime.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered
*/
rename  CS14V187 Sec_NhoodSafeNight1316
local x "Sec_NhoodSafeNight1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V187 "D1C NBHD AGE 13-16 SAFE AT NIGHT ALONE "
D1c. Think back to the neighborhood in which you lived the longest when you were between age 13 and
16.
How true is each of the following statements about this neighborhood:
It was safe being out alone in my neighborhood at night.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered
0 Inap.: lived mostly in the same neighborhood from ages 6-16 (CS14V186=1)
```

```
*/
rename   CS14V188 Sec_NhoodSafeDay1316
local x "Sec_NhoodSafeDay1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V188 "D2C NBHD AGE 13-16 SAFE IN DAY "
D2c. (Think back to the neighborhood in which you lived the longest when you were between age 13 and
16. How true is each of the following statements about this neighborhood:)
My neighborhood was safe for children during the daytime.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered
0 Inap.: lived mostly in the same neighborhood from ages 6-16 (CS14V186=1)
*/
rename   CS14V189 Sec_HhoodSafeNightKid1316
local x "Sec_HhoodSafeNightKid1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V189 "D3C NBHD AGE 13-16 SAFE AT NIGHT KIDS "
D3c. (Think back to the neighborhood in which you lived the longest when you were between age 13 and
16. How true is each of the following statements about this neighborhood:)
My neighborhood was safe for children during the nighttime.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered
0 Inap.: lived mostly in the same neighborhood from ages 6-16 (CS14V186=1)
*/
rename   CS14V206 Sec_BulliedSch612
local x "Sec_BulliedSch612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V206 "F2 BULLIED AT SCHOOL AGE 6-12 "
F2. When you were between age 6 and 12: How often were you picked on or bullied by kids at school?
Codes
1 A lot
2 Sometimes
3 Rarely
4 Never
9 NA; not answered
*/
rename   CS14V207 Sec_BulliedNhood612
```

```
local x "Sec_BulliedNhood612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V207 "F3 BULLIED OUT OF SCHOOL AGE 6-12 "
F3. When you were between age 6 and 12: How often were you picked on or bullied by kids outside of
school?
Codes
1 A lot
2 Sometimes
3 Rarely
4 Never
9 NA; not answered
*/
rename   CS14V209 Sec_SafeAtSchool612
local x "Sec_SafeAtSchool612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V209 "F5 WORRY SAFE AT SCHOOL AGE 6-12 "
F5. When you were between age 6 and 12: How often did you feel worried about your physical safety at
school?
Codes
1 A lot
2 Sometimes
3 Rarely
4 Never
9 NA; not answered
*/
rename   CS14V212 Sec_BulliedSch1316
local x "Sec_BulliedSch1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V212 "F6 BULLIED AT SCHOOL AGE 13-16 "
F6. When you were between age 13 and 16: How often were you picked on or bullied by kids at school?
Codes
1 A lot
2 Sometimes
3 Rarely
4 Never
9 NA; not answered
*/
rename   CS14V213 Sec_BulliedNhood1316
local x "Sec_BulliedNhood1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V213 "F7 BULLIED OUT OF SCHOOL AGE 13-16 "
```

F7. When you were between age 13 and 16: How often were you picked on or bullied by kids outside of school?
Codes
1 A lot
2 Sometimes
3 Rarely
4 Never
9 NA; not answered
*/
rename   CS14V215 Sec_SafeAtSchool1316
local x "Sec_SafeAtSchool1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V215 "F9 WORRY SAFE AT SCHOOL AGE 13-16 "
F9. When you were between age 13 and 16: How often did you feel worried about your physical safety at school?
Codes
1 A lot
2 Sometimes
3 Rarely
4 Never
9 NA; not answered
*/
rename   CS14V184 Nhood_Clean612
local x "Nhood_Clean612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V184 "D6B NBHD AGE 6-12 CLEAN "
D6b. (Think back to the neighborhood in which you lived the longest when you were between age 6 and 12.
How true is each of the following statements about this neighborhood:)
My neighborhood was clean and attractive.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered
*/
rename   CS14V185 Nhood_carehomes612
local x "Nhood_carehomes612"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V185 "D7B NBHD AGE 6-12 TOOK CARE OF HOMES "
D7b. (Think back to the neighborhood in which you lived the longest when you were between age 6 and 12.
How true is each of the following statements about this neighborhood:)

People in my neighborhood took good care of their homes and property.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered
*/
rename   CS14V192 Nhood_Clean1316
local x "Nhood_Clean1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V192 "D6C NBHD AGE 13-16 CLEAN "
D6c. (Think back to the neighborhood in which you lived the longest when you were between age 13 and 16. How true is each of the following statements about this neighborhood:)
My neighborhood was clean and attractive.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered
0 Inap.: lived mostly in the same neighborhood from ages 6-16 (CS14V186=1)
*/
rename   CS14V193 Nhood_carehomes1316
local x "Nhood_carehomes1316"
replace `x'=. if `x'==9 |`x'==0
// change to Higher=better
replace `x'=(-1*`x')+5 if `x'>=1
/*
CS14V193 "D7C NBHD AGE 13-16 TOOK CARE OF HOMES "
D7c. (Think back to the neighborhood in which you lived the longest when you were between age 13 and 16. How true is each of the following statements about this neighborhood:)
People in my neighborhood took good care of their homes and property.
Codes
1 Very true
2 Somewhat true
3 Not very true
4 Not true at all
9 NA; not answered
0 Inap.: lived mostly in the same neighborhood from ages 6-16 (CS14V186=1)
*/
rename   CS14V315 CRCSWeight
/*
CS14V315 "CRCS CROSS-SECTIONAL WEIGHT "
CRCS Cross-Sectional Weight
Codes
0.000 - 73,000.000 Actual weight
*/

/// END CRCS MODIFICATIONS///