

## Honolulu Heart Program Examination 4 Coding Manual

**DSN: CASI**

**SAS NAME: CASI**

**NUMBER OF RECORDS 3845**

**PROGRAM: LCA1MGH.SAS.HONOLULU.CASI.PROGRAM.MAY00**

Pg/Q#	Variable	Description	Freq	Codes
	IDPUBLIC	IDENTIFICATION NUMBER *		90009-99884
	CASI1	* MODIFIED TO PROTECT CONFIDENTIALITY  EXAM4: MODULE1 CASI SCORE		N=3734 Nmiss=111 Minimum=0.00 Maximum=100.00 Mean=82.24 Std Dev=16.37
33/	CASITECH	Interview er ID		2-digit staff ID number
33/	CASIEDU	EDUCATION (years of schooling completed)		n=3690 nmiss=155 min=0 max=24 mean=10.47 std=3.24
33/	CASISTHH CASISTM M	Testing start time (24 hour time)		hour minute
33/1	CASIBPL	WHERE WERE YOU BORN? City (Town/Village) [0 1] State/Prefecture [0 1]	142 347 1 205 27	. = missing/don't know 2 = Answered both correctly 1 = One of the answer was wrong 0 = Answered both wrong
33/2	CASIBYR	WHEN WERE YOU BORN? (Year)	143 362 1 13 68	. = missing/don't know 2 = Accurate 1 = Missed by 1 - 3 years 0 = Missed by > 3 years
33/2a	CASIBDAY	WHEN WERE YOU BORN? Month [0 1] Date [0 1]	143 359 7 41 64	. = missing/don't know 2 = Answered both correctly 1 = One of the answer was wrong 0 = Answered both wrong
33/3	CASIAGE	HOW OLD ARE YOU?	143 345 3 131 118	. = missing/don't know 2 = Accurate 1 = Missed by 1 - 3 years 0 = Missed by > 3 years
33/4	CASIMNT	HOW MANY MINUTES ARE THERE IN AN HOUR? or HOW MANY DAYS ARE THERE IN A YEAR?	142 359 2 111	. = missing/don't know 2 = Answered either question correctly 0 = Wrong answer

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Pg/Q#	Variable	Description	Freq	Codes
33/5	CASISUN	IN WHAT DIRECTION DOES THE SUN SET?	142 354 2 461	. = missing/don't know 2 = Correct answer 0 = Wrong answer
33/6	CASIVRS	SELECT VERSION #.	141 168 7 101 7 100 0	. = missing/don't know 1 = SHIRT, BROWN, HONESTY 2 = SHOES, BLACK, MODESTY 3 = SOCKS, BLUE, CHARITY
33/6a	CASIRGS1	I AM GOING TO SAY 3 WORDS FOR YOU TO REMEMBER. REPEAT THEM AFTER I HAVE SAID ALL THREE.	144 300 7 419 125 150	. = missing/don't know 3 = All correct 2 = One wrong 1 = Two wrong 0 = All wrong
33/6b	CASIRGS2	If participant can't answer the first time, elaborate and repeat up to a total of 3 times. Score last performance.	148 353 3 69 30 65	. = missing/don't know 3 = All correct 2 = One wrong 1 = Two wrong 0 = All wrong
33/7	CASIDBA	I SHALL SAY SOME NUMBERS, AND YOU REPEAT WHAT I SAY BACKWARDS. FOR EXAMPLE, IF I SAY 1-2, YOU REPEAT WHAT I SAY BACKWARDS	145 354 0 160	. = missing/don't know 1 = Correct 0 = Wrong
		1 - 2 - 3		
33/7a	CASIDBB	6 - 8 - 2	145 257 6 112 4	. = missing/don't know 2 = Correct 0 = Wrong
33/7b	CASIDBC	3 - 5 - 2 - 9	145 229 0 141 0	. = missing/don't know 2 = Correct 0 = Wrong
33/8	CASIRC1A	WHAT THREE WORDS DID I ASK YOU TO REMEMBER EARLIER?	146 186 5 838 518 478	. = missing/don't know 3 = Spontaneous recall 2 = After: "One word was something to wear" 1 = After: "Was it SHOES, SHIRT, or SOCKS?" 0 = Still incorrect

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Pg/Q#	Variable	Description	Freq	Codes
33/8a	CASIRC1B	WHAT THREE WORDS DID I ASK YOU TO REMEMBER EARLIER?	146 214 4 676 403 476	. = missing/don't know 3 = Spontaneous recall 2 = After: "One word was a color" 1 = After: "Was it BLUE, BLACK, or BROWN"? 0 = Still incorrect
33/8c	CASIRC1C	WHAT THREE WORDS DID I ASK YOU TO REMEMBER EARLIER?	146 117 6 249 138 1 893	. = missing/don't know 3 = Spontaneous recall 2 = After: "One word was a good personal quality" 1 = After: "Was it HONESTY, CHARITY, or MODESTY"? 0 = Still incorrect
34/9a	CASISB3A	FROM 100, TAKE AWAY 3, = HOW MANY?	146 350 6 193	. = missing/don't know 1 = Correct answer 0 = Wrong answer
34/9b	CASISB3B	AND TAKE AWAY 3 FORM THAT EQUALS?	147 307 7 621	. = missing/don't know 1 = Correct answer 0 = Wrong answer
34/9c	CASISB3C	AND TAKE AWAY 3 AGAIN EQUALS?	146 255 5 704 177 263	. = missing/don't know 3 = 3 correct answers 2 = 2 correct answers 1 = 1 correct answer 0 = no correct answer
34/10	CASIYR	WHAT IS TODAY'S DATE? [YEAR]	147 349 4 31 11 162	. = missing/don't know 4 = Accurate 2 = Missed by 1 year 1 = Missed by 2-5 years 0 = Missed >= 6 years
34/10a	CASIMO	WHAT IS TODAY'S DATE? [MONTH]	148 345 7 61 179	. = missing/don't know 2 = Accurate 1 = Missed by 1 month 0 = Missed >= 2 month
34/10b	CASIDATE	WHAT IS TODAY'S DATE? [DATE]	148 298 4 324 87 302	. = missing/don't know 3 = (of the month) Accurate 2 = Missed 1 or 2 days 1 = Missed 3-5 days 0 = Missed >=6 days

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Pg/Q#	Variable	Description	Freq	Codes
34/11	CASIDAY	WHAT DAY OF THE WEEK IS TODAY?	148 340 8 289	. = missing/don't know 1 = Accurate 0 = Missed by > 1 month
34/12	CASISSN	WHAT SEASON ARE WE IN?	148 336 1 336	. = missing/don't know 1 = Accurate within 1 month 0 = Missed by > 1 month
34/13a	CASISPA	WHAT _____ ARE WE IN? State [0 2] City/Town/Village [0 2]	148 350 9 133 55	. = missing/don't know 4 = Both correct 2 = Answered either one correctly 0 = Both wrong
34/13b	CASISPB	IS THIS PLACE A HOSPITAL (CLINIC), A STORE, OR HOME?	148 350 5 192	. = missing/don't know 1 = Correct 0 = Wrong
34/14	CASIANML	WHAT ANIMALS HAVE 4 LEGS? TELL ME AS MANY AS YOU CAN.	148 54 23 45 77 181 294 364 485 513 446 121 5	. = missing/don't know 0 correct answer 1 2 3 4 5 6 7 8 9 10

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Pg/Q#	Variable	Description	Freq	Codes
34/15	CASISIM	a. AN ARM AND A LEG ARE BOTH? Body parts, limbs, extremities 2 Long, bend, muscles, bones, etc 1 Incorrect; DK; tells difference 0	149 598 744 643	. = missing/don't know 6 (sum of a, b, c) 5 4
		b. LAUGHING AND CRYING ARE BOTH?  Expressions of feelings/emotions other correct answer 1 Incorrect; DK; tells difference 0	422 550 201 538	3 2 1 0
		c. WHAT WOULD YOU DO IF YOU FOUND AN ENVELOPE THAT WAS SEALED, ADDRESSED AND HAD A NEW STAMP?  <u>Necessary</u> bodily functions 2 Other correct answer 1 Incorrect; DK; tells difference 0		
34/16	CASIJGMT	a. WHAT ACTIONS WOULD YOU TAKE IF YOU SAW YOUR NEIGHBOR'S HOUSE CATCHING FIRE?  No. of appropriate actions: 0 1 2	150 634 207 2 651 197	. = missing/don't know 6 (sum of a, b, c) 5 4 3 2
		b. WHAT ACTIONS WOULD YOU TAKE IF YOU LOST A BORROWED UMBRELLA?  1 point for each category of actions: Inform/Apologize Replace/Compensate 0 1 2	68 32 41	1 0
		c. WHAT WOULD YOU DO IF YOU FOUND AN ENVELOPE THAT WAS SEALED, ADDRESSED AND HAD A NEW STAMP?  Mail 2 Try to locate the owner 1 Inappropriate action 0		
34/17a	CASIRPTA	REPEAT EXACTLY WHAT I SAY: "HE WOULD LIKE TO GO HOME"	150 324 8 312 135	. = missing/don't know 2 = Correct 1 = 1 or 2 missed or wrong words 0 = >= 3 missed or Wrong words

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Pg/Q#	Variable	Description	Freq	Codes
34/17b	CASIRPTB	"THIS YELLOW CIRCLE [0 1] IS HEAVIER THAN [0 1] BLUE SQUARE" [0 1]	150 103 9 123 1 670 755	. = missing/don't know 3 = number of correct answers 2 = " 1 = " 0 = "
35/18	CASIREAD	PLEASE DO THIS: (Point to statem ent "RAISE YOUR HAND")	150 332 5 249 60 61	. = missing/don't know 3 = Raises had without prompting 2 = Raises hand after prompting 1 = Reads correctly, but does not raise hand 0 = Neither reads nor obeys
35/19	CASIWRIT	LET ME HAVE A SAMPLE OF YOUR HANDWRITING. PLEASE WRITE: (HE) WOULD LIKE TO GO HOME.	152 110 21 143 292 658 246 9	. = missing/don't know 0 1 2 3 4 5
35/20	CASIDRA W	PLEASE COPY THIS: (show pentagons - 1 minute) Left Right Pentagon Pentagon 5 approx. equal sides 4 4 5 but un-equal (>2:1) sides 3 3 Any other enclosed figure 2 3 >=2 lines but without closure1 1 Less than 2 lines 0 0  Intersection: 4 cornered 2 Not 4-cornered enclosure 1 No enclosure 0	151 59 12 10 3 26 22 46 85 273 406 275 2	. = missing/don't know 0 1 2 3 4 5 6 7 8 9 10
35/21	CASICMD	TAKE THIS PAPER WITH YOUR  L (R) HAND [0 1] FOLD IT HALF, AND [0 1] HAND IT BACK TO ME [0 1]	149 61 110 551 297 4	. = missing/don't know 0 1 2 3 4

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Pg/Q#	Variable	Description	Freq	Codes
35/22a	CASIRC2A	WHAT THREE WORDS DID I ASK YOU TO REMEMBER EARLIER?	149 204 7 798 475 376	. = missing/don't know 3 = Spontaneous recall 2 = After: "One word was something to wear" 1 = After: "Was it SHOES, SHIRT, or SOCKS"? 0 = Still incorrect
35/22b	CASIRC2B	WHAT THREE WORDS DID I ASK YOU TO REMEMBER EARLIER?	149 249 8 559 279 360	. = missing/don't know 3 = Spontaneous recall 2 = After: "One word was a color" 1 = After: "Was it BLUE, BLACK, or BROWN"? 0 = Still incorrect
35/22c	CASIRC2C	WHAT THREE WORDS DID I ASK YOU TO REMEMBER EARLIER?	149 177 4 260 109 4 568	. = missing/don't know 3 = Spontaneous recall 2 = After: "One word was a good personal quality" 1 = After: "Was it HONESTY, CHARITY, or MODESTY"? 0 = Still incorrect
35/23	CASIBODY	WHAT DO WE CALL THIS PART OF THE FACE/BODY	149 294 4 472 169 55 28 28	. = missing/don't know 5 4 3 2 1 0
		FOREHEAD [0 1]		
		CHIN [0 1] [0 1]		
		SHOULDER [0 1]		
		ELBOW [0 1]		
		WRIST [0 1]		
35/24a	CASIOBJA	WHAT IS THIS?	149 362 9 37 30	. = missing/don't know 2 1 0
		SPOON [0 1]		
		COIN [0 1]		
35/24b	CASIOBJB	WHAT IS THIS?	149 361 7 35 12 32	. = missing/don't know 3 2 1 0
		TOOTHBRUSH [0 1]		
		KEY [0 1]		
		COMB [0 1]		

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Pg/Q#	Variable	Description	Freq	Codes
35/24c	CASIRPN M	Total number of objects either named spontaneously or repeated correctly after coaching.	150 19 4 8 15 38 361 1	. = missing/don't know 0 1 2 3 4 5
35/25	CASIRCO B	REMEMBER THESE 5 OBJECTS! (Wait for 5 sec.; cover, then ask:)  WHAT 5 OBJECTS DID I JUST SHOW YOU?	149 191 4 116 7 380 104 42 89	. = missing/don't know 5 4 3 2 1 0
35/	CASIFNHH CASIFNM M	Finish time		Hour Minute
35/	CASIDUR A	Duration minutes		n=3703 nmiss=142 min=3 max=46 (minutes) mean=13.08 std=4.79
35/	CASIVAL	VALIDITY OF SCORE	132 326 9 145 24 12 111 49 13 90	. = missing/don't know 1 = Valid 2 = Probably invalid: poor hearing 3 = Probably invalid: poor eyesight 4 = Probably invalid: impaired motor control 5 = Probably invalid: language barrier 6 = Probably invalid: impaired alertness or attentiveness 7 = Probably invalid: significant phys or mental discomfort 8 = Probably invalid: other reasons

Additional questions asked before the CASI



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Pg/Q#	Variable	Description	Freq	Codes
	CASIQ1	Is this a good day, a bad day, or any average day?	121 2 110 4 62 143 7 30	. = missing/don't know 1 = good 2 = bad 3 = average 9 = unable to answer
	CASIQ2A	Why does it seem like a bad day? - physical reasons	379 0 30 25	. = missing/don't know 0 = no 1 = yes
	CASIQ2B	Why does it seem like a bad day? - emotional reasons	379 3 44 8	. = missing/don't know 0 = no 1 = yes
	CASIQ2C	Why does it seem like a bad day? - other reasons	379 2 28 25	. = missing/don't know 0 = no 1 = yes
		<u>(not in questionnaire but saved in SAS file)</u>		
	CASISEL	Selected to participate Mod II	111 267 1 106	. = missing/don't know 0 = No 1 = Yes
	CASIDEC	Sampling probability	3	2-digit
	CASIRAN	Random Number used for Mod II selection		2-digit
	CASITAGE	True age at CASI exam		n=3734, nmiss=111 min=71 max=93 mean=77.83 std=4.67

36/

Page 36 is part of CASI form  
(no variable on this page)

### CASI (Cognitive Abilities Screening Instrument)

Most knowledgeable persons: Dr. Lon White, Dr. Kamal Masaki, Dr. Evelyn Teng(USC),  
Darryl Chiu

Evelyn L Teng, Ph.D.  
Department of Neurology  
USC- School of Medicine

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Pg/Q#	Variable	Description	Freq	Codes
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2025 Zonal Ave  
Los Angeles, CA 90033

Data Entry: Data was entered by the same lab tech twice while the participant was still in clinic. The first data entry program was written by Jim Hughes (University of Washington). This program was used until December 1991. Since then HHHP used another program written by Darryl Chiu.

- (1) Total number of CASI (n=3735), clinic interview, home visit, excluding long phone interview.
- (2) 63 participants had long phone interview CASI tests. Since the interviewers could not ask the participants to perform writing and drawing, etc, the tests are incomplete. These 63 CASI tests were not included in data file. They are stored in a separate file CASIPHON.ALL.

SAS input program was written by Darryl Chiu

ref paper:

TENGEN, et. al. The Cognitive Abilities Screening Instrument (CASI): A Practical Test for Cross-Cultural Epidemiological Studies of Dementia. International Psychogeriatrics, Vol 6, No 1, 1994

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Pg/Q#	Variable	Description	Freq	Codes
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CASI score is sum of the following 9 components (domain scores):

```
*---- CASI ----;
MEMLONG = SUM(BPL,BYR,BDAY,MNT,SUN);
MEMSHORT = SUM(.5*RC1A,.5*RC1B,.5*RC1C,.5*RC2A,.5*RC2B,.5*RC2C,.6*RCOBJ);
ATTENTN = SUM(RGS1,RPTA,RPTB);
MANIPCON = SUM(DBA,DBB,DBC,SUB3A,SUB3B,SUB3C);
ORIENTN = SUM(AGE,YR,MO,DATE,DAY,SSN,SPA,SPB);
DRAWING = DRAW;
JUDGABS = SUM(SIM,JGMT);
WORDFLUN = ANML;
LANGUAGE = SUM(.5*READ,.5*WRITE,.3*BODY,.3*OBJA,.3*OBJB,CMD);

CASI = SUM(MEMLONG,MEMSHORT,ATTENTN,MANIPCON,ORIENTN,DRAWING,
           JUDGABS,WORDFLUN,LANGUAGE);
```

Use the following program to compute MMSE, 3MSE and Hasegawa score.

```
*---- MMSE (Mini-Mental State Examination)----;
IF RC1A=3 THEN MMRC1A=1; ELSE MMRC1A=0;
IF RC1B=3 THEN MMRC1B=1; ELSE MMRC1B=0;
IF RC1C=3 THEN MMRC1C=1; ELSE MMRC1C=0;
IF YR=4 THEN MMYR=1; ELSE MMYR=0;
IF MO=2 THEN MMMO=1; ELSE MMMO=0;
IF DATE=3 THEN MMDATE=1; ELSE MMDATE=0;
IF RPTB=3 THEN MMRPTB=1; ELSE MMRPTB=0;
IF READ=3 THEN MMREAD=1; ELSE MMREAD=0;
IF WRITE=5 THEN MMWRITE=1; ELSE MMWRITE=0;
IF 8<=DRAW<=10 THEN MMDRAW=1; ELSE MMDRAW=0;

MMSE=SUM(RGS1,DBA,DBB,DBC,MMRC1A,MMRC1B,MMRC1C,MMYR,MMMO,MMDATE,
         DAY,SSN,SPA,SPB,MMRPTB,MMREAD,MMWRITE,MMDRAW,CMD,OBJA);
```

```
*---- 3MSE (Modified Mini-Mental State Examination) ----;
IF BYR=2 THEN THBYR=1; ELSE THBYR=0;
THREEMSE=SUM(BPL,THBYR,BDAY,RGS1,2*DBA,DBB,1.5*DBC,RC1A,RC1B,RC1C,
             2*YR,MO,DATE,DAY,SSN,SPA,SPB,ANML,SIM,RPTA,RPTB,
             READ,WRITE,DRAW,CMD,RC2A,RC2B,RC2C,BODY);
```

```
*---- HASEGAWA (Hasegawa Dementia Screening Scale) ----;
IF 1<=BPL<=2 THEN HBPL=2; ELSE HBPL=0;
IF BYR=2 THEN HBYR=1.5; ELSE HBYR=BYR;
IF 1<=AGE<=2 THEN HAGE=2; ELSE HAGE=0;
IF MNT=2 THEN HMNT=2.5; ELSE HMNT=0; IF SUN=2 THEN HSUN=3; ELSE HSUN=0;
IF YR=4 THEN HYR=1; ELSE HYR=0;
IF MO=2 THEN HMO=1; ELSE HMO=0;
IF DATE=3 THEN HDATE=1.5; ELSE HDATE=0;
IF 0<=RCOBJ<=1 THEN HRCOBJ=0; ELSE HRCOBJ = RCOBJ - 1.5;
```

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	HASEGAWA=SUM(HBPL,HBYS,BDAY,HAGE,HMNT,HSUN,DBB,DBC,2*SUB3A,2*SUB3B, HYR,HMO,HDATE,DAY,SSN2.5*SPB,HRCBJ);			

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Pg/Q#      Variable      Description      Freq      Codes

### Selection from Module I to Module II

Table 1. Sampling Probability

Age at Exam4	CASI score		
	< 74	74 - 81.9	82
70-74	100%	17%	3%
75-79	100%	21%	4%
80-84	100%	43%	14%
85	100%	100%	100%

Table 2. Exam4 Population, Module I  
(excluding phone interviews, N=3741)

Age at Exam4	CASI score		
	< 74	74 - 81.9	82
70-74	61	127	897
75-79	168	254	1107
80-84	151	148	408
85	214	87	119

Each participant was assigned a 2-digit random number. He was selected if the random number is less than the sampling probability (%) listed on Table 1. If the random number is greater than or equal to the sampling probability, he was not selected. The sampling probability was estimated before Exam4 started.

Note: Variable CASIDEC in SAS file is the sampling probability in Table 1.  
Variable CASISEL (1=yes, 0=No) is the indicator variable for selecting to Module II.

Table 2. is the Exam4 module I population, excluding long phone interviews.

Table 3. is the number of participants selected for Module II Examination.

Table 4. is the number of participants had returned for Module II Examination. The reason of discrepancies between Table 3 and Table 4 is some participants refused to return or died before they could have returned for Module II examination

Table 3. Number of men (N=1063) selected to participate Module II

Age at Exam4	CASI score		
	< 74	74 - 81.9	82
70-74	60	16	32
75-79	166	56	49
80-84	149	68	53
85	211	87	116

Table 4. Number of men (N=934) actually participated Module II

Age at Exam4	CASI score		
	< 74	74 - 81.9	82
70-74	52	13	28
75-79	142	52	45
80-84	129	61	51
85	181	78	

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Pg/Q#	Variable	Description	Freq	Codes
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