Westat

Improving lives through research™

Family Life, Activity, Sun, Health, and Eating (FLASHE) Study Methodology Report

July 2015

Prepared for:
National Cancer Institute
9609 Medical Center Drive
Bethesda, MD 20892-9760

Prepared by:
Westat
An Employee-Owned Research Corporation®
1600 Research Boulevard
Rockville, Maryland 20850-3129

Table of Contents

Chapter **Page**

Chapter **Page**

Tables **Page**

Tables (continued) **Page**

Figures

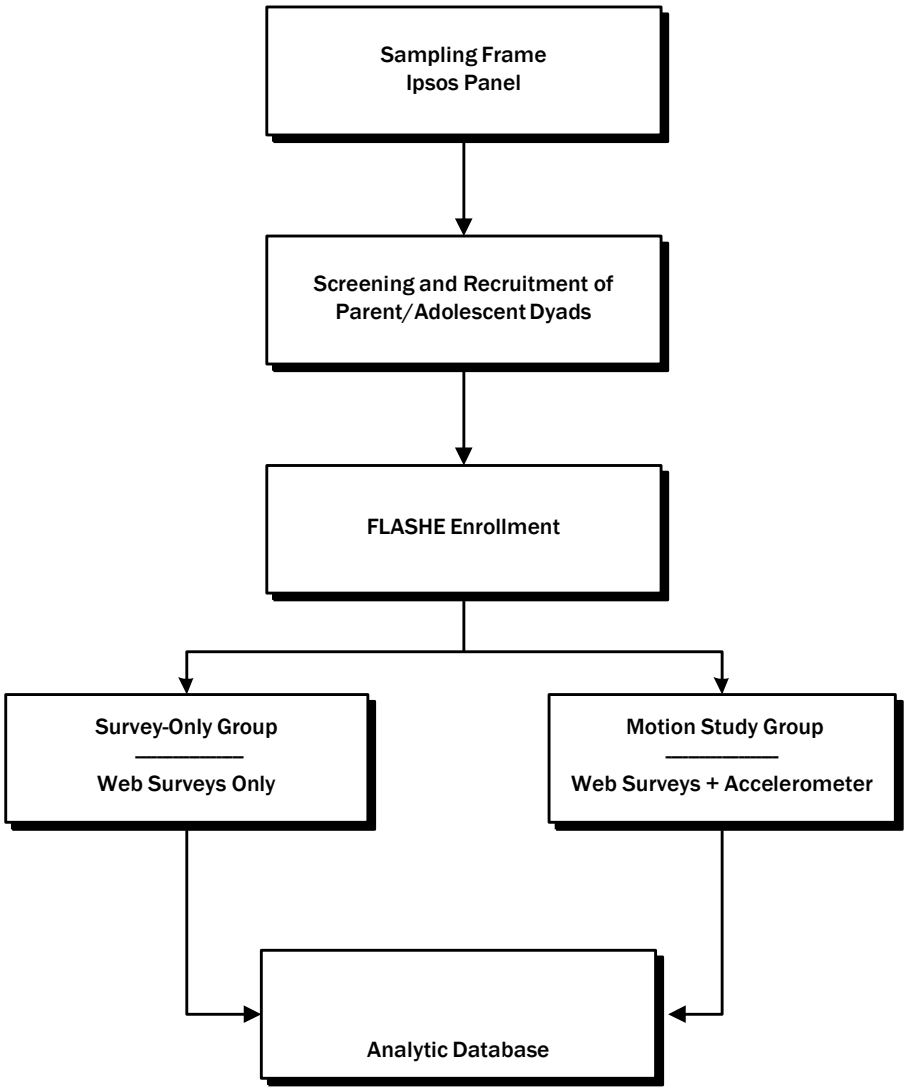
Page

Appendices

1 Executive Summary

The Family Life, Activity, Sun, Health and Eating (FLASHE) study was conducted by Westat under contract to the National Cancer Institute (NCI). Dyads made up of a parent and an adolescent were asked to complete surveys about their diet and physical activity and a subsample of adolescents were asked to wear an accelerometer. Study recruitment was conducted in February and March of 2014 and data were collected from April 1 through October 6, 2014. An overview of the study structure can be found in Figure 1-1.

Figure 1-1. FLASHE Study overview



FLASHE dyads were recruited for participation in FLASHE through the Ipsos Consumer Opinion Panel, which includes more than 700,000 active members. Ipsos invites people to join its panel through a variety of methods, including print advertising, Internet banner ads, recruitment during RDD omnibus surveys, and panelist referral. Ipsos selected a sample of its panelists for FLASHE screening. This sample was selected using balanced sampling, which means the sample was selected in such a way that the sample distributions match the U.S. populations as closely as possible on the following key demographic characteristics:

- Gender of the panel member;
- Census division;
- Household income;
- Household size; and
- Race/ethnicity.

A screening instrument based on the FLASHE eligibility criteria was administered via the Web to determine the panel member's eligibility for FLASHE. A panel member was deemed eligible for FLASHE if he/she:

- Was at least 18 years of age;
- Lived with at least one child between the ages of 12 and 17 for at least 50 percent of the time; and
- Agreed to be contacted for participation in FLASHE.

During the screening process, information on all the children in the household was collected via a full household roster and then one eligible adolescent was randomly selected. Eligible adolescents were between the ages of 12 and 17 and lived in that household for at least 50 percent of the time. Following screening, Ipsos provided the contact information for 5,088 adult/adolescent dyads that met the screening criteria. This group formed the set of dyads invited to participate in FLASHE.

1.2 Random Assignments

Prior to fielding, all dyads in the FLASHE sample were randomized to receive specific study treatments. Randomization included:

- Half of the dyads were randomly selected to receive the Diet survey first and the other half were selected to receive the Physical Activity survey first; and
- 1,690 dyads were randomly invited to participate in the Motion Study. Of these dyads, half were randomly selected for a $20 incentive and the other half were selected for a $40 incentive.

Following a de-duplication process, a total of 5,027 dyads were invited to enroll in FLASHE in April of 2014. The invitation was sent to the sampled parents by email. The invitation contained the URL for the study website and a personalized identification number. On the website, the parent was asked to complete the consent form for their participation, complete the consent form for their adolescent's participation, and to confirm contact information for each participant.
Parents could indicate whether they would accept text reminders from the study's researchers in addition to emails. If the parent decided not to consent for either his or her own participation or that of their adolescent, the adolescent was not invited to enroll in FLASHE.

Once the parent completed the enrollment process, an invitation email was sent to the adolescent using the email address provided by the parent. The adolescent was asked to complete an assent form for his or her participation. Once the adolescent completed the enrollment process, the dyad was officially enrolled and was able to begin the surveys. Consent and assent documents for those selected for the Motion Study included additional language about wearing the accelerometer.

Parents and adolescents who did not respond to the initial invitation were sent additional emails inviting them to participate. Households for which a mailing address could be obtained were sent a letter via the U.S. Postal Service. Households for which a telephone number could be obtained were called via IVR and asked to participate.

Dyads could enroll at any point during the data collection period, though 97 percent of enrollments were completed by the end of May, 2014. A total of 1,252 dyads enrolled in the Survey Only group and 693 dyads enrolled in the Motion Study. This represents a 38.7 percent enrollment rate.

1.4 Survey Only Group

Once fully enrolled, dyads were eligible to start FLASHE study activities. For dyads enrolled in the Survey Only group, study participation involved completion of four web surveys: two by the parent and two by the adolescent. The order of the surveys (either Physical Activity or Diet first) was determined by the random assignments made prior to enrollment. Both members of the dyad were invited by email to complete their first survey. Both members of the dyad were required to complete their first assigned survey before the second set of surveys was available. With the completion of all four web surveys, the Survey Only dyads were finished with FLASHE activities.

The standard incentive for each completed survey was $5, which was paid via the U.S. Postal Service in cash with a thank you letter in an envelope addressed to the participant. In order to encourage completions, "bonus" incentives were offered twice during the field period. During the weeklong "bonus" period, respondents were informed they would be paid $10 instead of $5 if they completed the surveys. Automated email reminders were sent to each participant with blank surveys every two weeks for six weeks after the survey became available. Text message reminders were also sent on the same schedule for anyone who had permitted text reminders.

Overall, 85.6 percent of enrolled dyads in the Survey Only group completed all four surveys. Only 2.8 percent of enrolled dyads did not complete any surveys and 11.6 percent of dyads completed between one and three surveys.

1.5 Motion Study Group

Dyads enrolled in the Motion Study completed the same four surveys as participants in the Survey Only group with the addition of the adolescent wearing an accelerometer for a one-week wear period and completing the activity log. Because there were only 300 accelerometers available for the study, dyads were randomly assigned to one of three groups with staggered start dates so that the devices could be used, returned, and then used again.

Each dyad received an automated email at enrollment with the approximate start month for the study. Motion Study groups 1 and 3 received the Physical Activity survey first and the Diet survey second, while Motion Study group 2 received the Diet survey first and the Physical Activity survey second.

Just before the start of their assigned week, the adolescent participant was sent a package by Federal Express that contained an Actigraph GT3X+ accelerometer and a wear log. The accelerometers were configured to collect raw tri-axial accelerometry data at 80 Hz for the duration of the programmed data collection period. The adolescent was instructed that the accelerometer was to be worn beginning at 8 p.m. on the Sunday of his or her wear week until 8 p.m. the following Sunday, with no need to remove the accelerometer at any time during the week, including bathing. The wear log was included so that participants could record information such as the hours they were sleeping and any times that they chose to remove the accelerometer during the week.

Participants in the Motion Study received the same $5 incentives for surveys as those in the Survey Only group. They also received "bonus" email invitations to complete surveys quickly for $10. Because there is no literature to indicate an appropriate incentive rate to return a mailed accelerometer, FLASHE included a substudy in which half of all adolescents were compensated $20 for returning the accelerometer and the other half were compensated $40 based on random assignment.

Upon the acclerometer's return from the adolescent, data were downloaded into the raw .gt3x files and 60-second .agd files using ActiLife software. The return rate of accelerometers (both worn and unworn) was 92 percent.

Among adolescents in the Motion Study, 72.7 percent wore the accelerometer, 71.6 percent completed all the surveys, and 63.4 percent both wore the meter and completed all surveys.

1.6 Data Management

FLASHE data underwent a review, edit and quality control process, including:

- Missing demographic information was reviewed and some information was extracted from the Ipsos sample files.
- Potential problem cases of people who completed the surveys in what might be

considered an unreasonably fast rate were flagged.
- Range checks and text reviews were conducted and edits made if needed.
- Missing values were coded as either "not applicable" or "not ascertained".
- A number of derived variables were created to facilitate analysis.
- Data from the Wear Log were keyed and reviewed.
- Accelerometer data were used to generate summary tables.
- Administrative data from the data collection were reviewed and finalized.

1.7 Weighting

Survey/Study weights were created for the FLASHE quota sample by raking the base weight (equal to 1) to population control totals that were derived from the 2013 American Community Survey (ACS) for the parent sample and the 2014 Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC) for the adolescent sample. The raking dimensions for the parent sample were gender, age, income, marital status, race/ethnicity, homeownership, work status, and census region. For the adolescent sample, the raking dimensions were gender, age, race/ethnicity, and census region. Detailed information about Weighting is provided in the Data User's Guide.

Three parent weights were created to facilitate the analysis of parent data:
- Weights for respondents to the parent Physical Activity survey,
- Weights for respondents to the parent Diet survey, and
- Weights for respondents to both surveys.

Four adolescent weights were created to facilitate the analysis of adolescent data:
- Weights for respondents to the adolescent Physical Activity survey,
- Weights for respondents to the adolescent Diet survey,
- Weights for respondents to both surveys, and
- Weights for respondents to the motion study.

1.8 Response Rates

Enrollment, study completion, and study response rates were all calculated. The dyad enrollment rate was 38.7 percent and the dyad completion rate was 76.0 percent (rate at which all surveys completed and meter worn, if applicable). This resulted in a dyad response rate of 29.4 percent.

Response rates were also calculated for each survey and for parent vs. adolescent surveys. The response rate for the parent surveys was 34 percent and the response rate for the adolescent surveys was 31.6 percent.

2 Sample Selection

2.1 Sample Plans

The FLASHE study consists of dyads made up of an adult (age 18+) and their adolescent child (age 12 to 17) living in the same household. Although FLASHE is not a probability sample, the identification of eligible dyads for the FLASHE study was carefully planned to accommodate governmental and operational restrictions while still meeting NCI's research objectives. The details of the identification of the adult-adolescent dyads invited to participate in FLASHE is detailed below.

2.1.1 Sample Source

FLASHE utilized an existing web-based panel to recruit a set of dyads for participation in FLASHE. Westat contracted with Ipsos to develop a sample from its Consumer Opinion Panel. The Ipsos panel includes more than 700,000 active members with potential access to individuals residing in panelists' households (e.g., adolescents). Ipsos invites people to join its panel through a variety of methods, including print advertising, internet banner ads, recruitment during RDD omnibus surveys, and panelist referral. For more information about Ipsos, see: www.ipsos-na.com/about-ipsos.

2.1.2 Eligibility Criterion

The eligibility criteria for adults in the study included:

- Being at least 18 years of age;
- Being parent or legal guardian of an eligible adolescent (see definition below). The parent/guardian could be a birth parent, an adoptive parent, step parent, foster parent or a legal guardian; and
- Living with the adolescent at least 50 percent of the time.

The eligibility criteria for the adolescents in the study included:

- Being between the ages of 12 and 17[1] years; and
- Living with the selected adult at least 50 percent of the time.

2.1.3 Sample Size and Oversampling

Based on a power analysis conducted by NCI, to achieve statistical power of at least 70 percent for the target analyses it was determined that NCI would need 2,500 dyads to complete the FLASHE study activities. Using an estimated response rate of 60 percent, the initial sampling plan called for recruiting 4,500 eligible dyads for participation in the FLASHE study.

NCI requested that the final sample selected for participation in FLASHE include an oversampling of non-Hispanic African Americans.[2] Although African Americans make up 13.5 percent of the U.S. population, they were oversampled to account for 25 percent of the overall sample. The quota sample size expected from the screening process for each adult quota cell is shown in Table 2-1.

Table 2-1. Sample size expected from Ipsos

Race	Target sample size	Percentage
African American	1,125	25%
All other	3,375	75%
Total	4,500	100%

2.2 Outgoing Sample Development

As noted above, Ipsos was contracted to recruit the FLASHE sample. The sample frame for this recruitment was the entire Ipsos Consumer Opinion Panel. From this frame, Ipsos developed a smaller and more specific sample of panel members to participate in screening. This sample of panel members was referred to as the "outgoing sample" because it was the sample of respondents who Ipsos sent an invitation to participate in the screener. The development of the

[1] The upper age limit for adolescents was capped at 17.5 years at the time of screening in order to avoid having adolescent participants turning 18 during the study period. Race and ethnicity categories for FLASHE followed OMB guidelines. However, to simplify the readability of this report, non-Hispanic African Americans will be called simply African Americans. Likewise, non-Hispanic white and "other" races will drop the "non-Hispanic" for readability.

outgoing sample took place in two steps: 1) filtering and 2) balancing. Each of these steps is described below.

2.2.1 Filtering

Ipsos was able to filter the full Consumer Opinion Panel based on criteria provided to it by panel members as part of its entry into the panel. This filtering process removed from the panel all cases of adult-only households since these panel members did not qualify for the dyadic structure of the FLASHE study. The FLASHE filtering restricted the outgoing sample to only those adults who reported having children between the ages of 0-17 in the household.

2.2.2 Balancing

NCI requested a FLASHE sample that demographically matched as closely as possible the U.S. population on key demographic characteristics. This demographic matching is known as "balancing." Taking the filtered sample described above, Ipsos was asked to use balancing techniques to ensure the outgoing sample of adults mirrored the distribution of the U.S. population for the cross-classification of the key demographic characteristics within the race/ethnicity strata shown below. Within the other race quota cells, the outgoing sample was to be balanced on the more detailed race/ethnicity categories of: Hispanic, White and Other.

- Gender of the panel member
  - Male; and
  - Female

- Census division
  - New England;
  - Middle Atlantic;
  - East North Central;
  - West North Central;
  - South Atlantic;
  - East South Central;
  - West South Central; and
  - Mountain/Pacific

- Household income[3]
  - $0-$19,999;
  - $20,000-$34,999;
  - $35,000-$49,999;
  - $50,000-$74,999; and
  - $75,000 or more

- Household size
  - 2-3 people; and
  - 4 or more people

- Race/ethnicity (for the quota cell of Others):
  - Hispanic;
  - White; and
  - Other

The target population for balancing was the U.S. population of adults in households with at least one adolescent between 12 to 17 years old. Ipsos estimated differential nonresponse rates for each balancing category and took this into account when constructing the balanced groups for the outgoing sample. As the nonresponse rate was unknown and could not be precisely estimated, especially for the dyad population of interest in this study, it was anticipated that though the outgoing sample was balanced to the target population, the distribution of the post-screening sample would include some differences from the distribution of the targeted U.S. population.

2.2.3 Resulting Outgoing Sample

Following the filtering and balancing activities, Table 2-2 shows the distribution of the outgoing sample of people who were invited by Ipsos to participate in the screener. The outgoing sample comprised adults living in households with children. The characteristics of the children in the household were unknown and thus not part of the outgoing sample. It should be noted that because during the course of the screening activities Ipsos used other panel companies for additional outgoing sample (discussed below), Table 2-2 only reflects the distribution of the outgoing sample from Ipsos. The distribution of the outgoing sample from the other companies was not available.

[2] Ipsos imputed the income variable for the 0.1% of the panel members for which the information was missing on its panel files. The imputed values were used for balancing and nonresponse adjustment in weighting.

Table 2-2. Outgoing sample from the Ipsos panel

	African American		All Other	
	Number	%	Number	%
Total	1,791	100	17,900	100
Gender				
Male	344	19.21	3,670	20.50
Female	1,447	80.79	14,230	79.50
Ethnicity				
Hispanic	0	0	1,667	9.31
Non-Hispanic	1,791	100.00	15,944	89.07
Unknown	0	0	289	1.62
Race				
White	0	0	16,001	89.39
African American	1,791	100.00	85	0.48
Asian	0	0	420	2.35
American Indian or Alaskan Native	0	0	182	1.02
Mixed racial background	0	0	384	2.15
Other	0	0	538	3.01
Prefer not to answer	0	0	285	1.59
Unknown	0	0	5	0.03
Census Division				
New England	28	1.56	835	4.66
Mid-Atlantic	190	10.61	2,532	14.15
South Atlantic	629	35.12	3,095	17.29
East South Central	167	9.32	1,088	6.08
West South Central	210	11.73	1,796	10.03
East North Central	324	18.09	3,648	20.38
West North Central	62	3.46	1,549	8.65
Mountain	52	2.90	1,312	7.33
Pacific	129	7.20	2,045	11.42
Household Size				
2-3 members	113	6.31	740	4.13
4+ members	1,678	93.69	17,160	95.87
Household income				
Under $2,500 – $19,999	460	25.68	1,793	10.02
$20,000 – $34,999	406	22.67	3,392	18.95
$35,000 – $49,999	284	15.86	2,691	15.03
$50,000 – $74,999	324	18.09	4,234	23.65
$75,000 – $200,000 and over	317	17.70	5,790	32.35

2.3 Screening Protocol

Because filtering and balancing only identified that the adult lived in a household with at least one child, screening was necessary to determine 1) if at least one of the children in the household was of the FLASHE target age of 12-17 and 2) to select an adolescent in this target age range for participation. A screening instrument was developed by Westat based on the FLASHE eligibility criteria.

Ipsos programmed this instrument into a web-based survey and administered it to the outgoing sample described above. Ipsos conducted the screening process from February 10 to March 17, 2014.

During the screening process, information on the eligible adolescents in the household was collected via a full household roster. Once the roster was done, one eligible adolescent from the household was selected as the FLASHE participant. This process continued until the quotas for each age range were met. The distribution of adolescents was guaranteed by the quota specified within each quota cell. Table 2-3 below shows the maximum sample size for each quota cell cross-classified by age group and gender by adult sampling quota cell. The quota by adolescent age was ideally one-third of the overall sample for each age group, then split evenly by gender in each category. To allow some flexibility in the recruitment process, the pre-set maximum limits for the quota cells defined by the cross-classification of adolescent age group and gender within the two strata (race categories of the panel member) were set: 35 percent for age groups (12-13, 14-15, 16-17) and 60 percent for gender. When the maximum limit was reached, Ipsos closed the recruitment of the quota cell and continued screening for the other cells. Note that Table 2-3 shows the maximum limit of the cells, but not the quota of cells, so that the cells in Table 2-3 do not add up to the total number of dyads eventually recruited. The maximum limit was identical within each adult quota cell.

Table 2-3. Maximum limits for each quota cell cross-classified by age and gender of adolescent and by adult sampling quota cell

Adolescent quota cells		Adult quota cells	
Adolescent age group	Adolescent gender	African American adults	Other adults
12-13	Male	223	668
	Female	223	668
14-15	Male	223	668
	Female	223	668
16-17	Male	223	668
	Female	223	668

2.4 Sample Recruitment Results

Ipsos intended to construct a balanced sample of 4,500 using only its panel. However, the size of the Ipsos panel unexpectedly did not provide an adequate number of respondents for the African American adult quota cell and the male adults in the balancing process. To try to obtain the target

sample size and meet study requirements, Ipsos requested additional samples from four other panel companies: Global Marketing Insite, Inc. (GMI); ROI Rocket; Clearvoice Research; and Toluna.

For the African American quota cell, the partner companies also exhausted their panels in the recruitment of these screener respondents. Thus, it was not possible to meet balancing goals for the African American quota cell. For the "Other" race quota cell, Ipsos was unable to balance the sample for some demographic categories (e.g., gender, Hispanic) and the partner panels were unable to fill in the gap between the Ipsos recruited sample and the expected balanced sample. Although it was not possible to recruit additional African American or Hispanic respondents, Ipsos agreed to provide 500 additional dyads with male parent respondents with the intention of improving the parent[4] gender balance of the entire sample. This raised the number of dyads expected to be delivered to Westat to 5,000 from 4,000. The quotas by adolescent's age group and gender for the cells were calculated using the same formula to achieve approximate equal allocation between cells.

Following screening, Ipsos delivered to Westat the contact information for 5,088 adult/adolescent dyads who had met the screening criteria. The extra 88 recruited dyads were included to account for duplicates and unusable records. As described above, the main sample and the additional male dyads were collected and delivered separately, which are referred to in this report as Wave 1 (main sample of 4,500 cases) and Wave 2 (additional 500 male cases).

Table 2-4 below shows the distribution by demographic variables for the adult FLASHE screener respondents that Ipsos delivered to Westat as compared to the estimated parent population from the American Community Survey (ACS)[5]. This comparison shows the effectiveness of the balancing procedure. The ACS counts include parents of households with adolescents 12 to 17 years old.

---

[3] The adult members of the dyads are generically referred to in this report as "parents." Although most adult members of the dyads were parents, there were also non-parent guardians such as step-parents, grandparents, aunts, uncles, and other guardians.

[4] American Community survey: http://www.census.gov/programs-surveys/acs/about/survey-is-legitimate.html

Table 2-4. FLASHE screener final respondents by parent characteristics compared to CPS

Sample size	African American		All other	
	ACS*	Final sample	ACS*	Final sample
		1,211		3,877
Gender				
Male	34.1%	23.7%	45.1%	32.2%
Female	65.9%	76.3%	54.9%	67.8%
Age				
18 – 24	0.4%	2.3%	0.2%	0.9%
25 – 29	2.2%	2.4%	1.1%	1.7%
30 – 34	13.5%	14.4%	7.8%	8.7%
35 – 44	45.3%	40.5%	42.9%	40.6%
45 – 54	29.4%	29.9%	39.7%	38.6%
55 – 64	7.3%	9.4%	7.3%	9.5%
65 – 100	1.9%	1.1%	1.0%	1.0%
Household Size				
2-3 members	33.7%	34.7%	25.6%	30.60%
4+ members	66.3%	64.8%	74.4%	68.80%
Household Income				
Under $2,500 – $19,999	20.4%	13.9%	8.5%	7.5%
$20,000 – $49,999	31.3%	36.6%	22.2%	28.4%
$50,000 – $74,999	17.5%	20.1%	18.3%	23.4%
$75,000 – $200,000 and over	30.8%	20.1%	51.0%	35.1%
Don't know/Missing/Prefer not to answer		9.4%		5.8%
Census Division				
New England	2.4%	1.9%	4.7%	5.0%
Middle Atlantic	13.9%	12.7%	12.5%	15.0%
East North Central	13.7%	17.9%	15.0%	19.4%
West North Central	3.5%	3.3%	7.1%	8.9%
South Atlantic	34.5%	34.2%	16.4%	18.2%
East South Central	10.2%	7.5%	5.4%	5.6%
West South Central	13.7%	12.5%	12.7%	8.9%
Mountain	1.9%	3.4%	8.3%	7.1%
Pacific	6.2%	6.6%	18.0%	12.0%
Race/Ethnicity				
Hispanics			23.2%	12.30%
White Non-Hispanic			67.9%	82.30%
Other Non-Hispanic			8.9%	5.40%

Table 2-5 below shows the distribution of the adolescents in the screened sample delivered by Ipsos. The screened sample of adolescents was successfully recruited under the maximum cell limits shown in Table 2-3. It should be noted that the ethnicity of the adolescents was unknown at the completion of screening, as this information was only collected during the survey phase of FLASHE. The ethnicity quotas during screening were for the parent members of the dyad only.

Table 2-5. FLASHE screener final respondents by adolescent characteristics

Adolescent characteristics		African American parents	All other parents
Age 12-13	Male	211 (17.4%)	650 (16.8%)
	Female	208 (17.2%)	641 (16.5%)
Age 14-15	Male	196 (16.2%)	663 (17.1%)
	Female	201 (16.6%)	640 (16.5%)
Age 16-17	Male	205 (16.9%)	650 (16.8%)
	Female	190 (15.7%)	633 (16.3%)
Overall		1,211 (100%)	3,877 (100%)

2.5 Sample Cleaning in Preparation for Data Collection

Upon receipt of the sample from Ipsos, Westat conducted quality control procedures to ensure the sample was ready for use by FLASHE.

Email Address Check. Because email addresses were critical for the study invitations, all the email addresses were checked for two validity characteristics: all addresses containing an @ sign and all addresses having known domains, such as .com, .org, .edu, .us, .net, and .gov. Any addresses with obvious issues (such as a .cm instead of .com) were corrected.

Name Check. Many of the names of study participants provided by Ipsos, particularly the adolescents, were fictitious names. Although it is understandable that parents would not want to give out their adolescents' names on the Internet, it was crucial that the parent understand which of their adolescents was selected to participate in the study. The adolescent's birth month and year were included in communications to participants so that the parent could easily identify the correct adolescent. To avoid sending communications to names such as "nunya business," Westat changed all fictitious names to "[name withheld]." Any parent who wished to change their adolescent's name to the correct name later was able to do this by contacting Westat at the study email address or toll-free number. Fictitious names were identified by searching the file for "no," "not," "bus," and "none". Names were also scanned for seemingly invalid names, such as "dghds."

Additional quality control checks:

- Checking commas in fields to make sure they would not cause errors;
- Checking to be sure addresses were in the correct format; and
- Reviewing for duplicate mailing addresses indicated when the same household was in the sample twice.

All the quality control procedures outlined above were conducted on Wave 1 and Wave 2 data. In the first wave, 54 duplicates were removed and an additional two cases were removed due to fictitious information for all fields: names, email address, and mailing address. In Wave 2, five duplicates were removed. The total number of dyads invited to participate in FLASHE totaled 5,027 (5,088 were delivered to Westat, minus 61 duplicates and unusable dyads).

All study participants were assigned an identifying number that was used to track them throughout the study. This number linked individuals to their dyadic partner, to the surveys, and to their accelerometer and wear log (if enrolled in the Motion Study).

2.6 Randomization Procedures

Prior to fielding, all dyads in the FLASHE sample were randomized to receive specific study treatments. Randomization included:

- Half of the dyads were randomly selected to receive the Diet survey first and half were selected to receive the Physical Activity survey first; and
- 1,690 dyads were randomly selected to participate in the Motion Study. Of these dyads, additional randomization included:
    - Half were randomly selected for a $20 incentive and the other half were selected for a $40 incentive; and
    - Dyads were randomly placed into one of six Motion Study groups.

3 Data Collection

Data collection for FLASHE began on April 1, 2014 and concluded on October 6, 2014. The surveys were conducted exclusively by web with a cash incentive paid via the U.S. Postal Service after completion. Details about enrollment, web-surveys and the Motion Study are included below.

3.1 Preparation for Data Collection

3.1.1 OMB and IRB Clearances

FLASHE data collection materials and procedures were reviewed and approved by the U.S. Government's Office of Management and Budget (OMB), NCI's Special Studies Institutional Review Board (SSIRB), and Westat's Institutional Review Board (IRB). Dates of these clearances are found in Table 3-1 below.

Table 3-1. Clearances

Institution	Clearance date	Clearance number
Westat IRB	March 14, 2013	6053.01.01
NCI SSIRB	May 30, 2013	iRIS No. 327123
OMB	December 13, 2013	0925-0686, exp. 12/31/2015

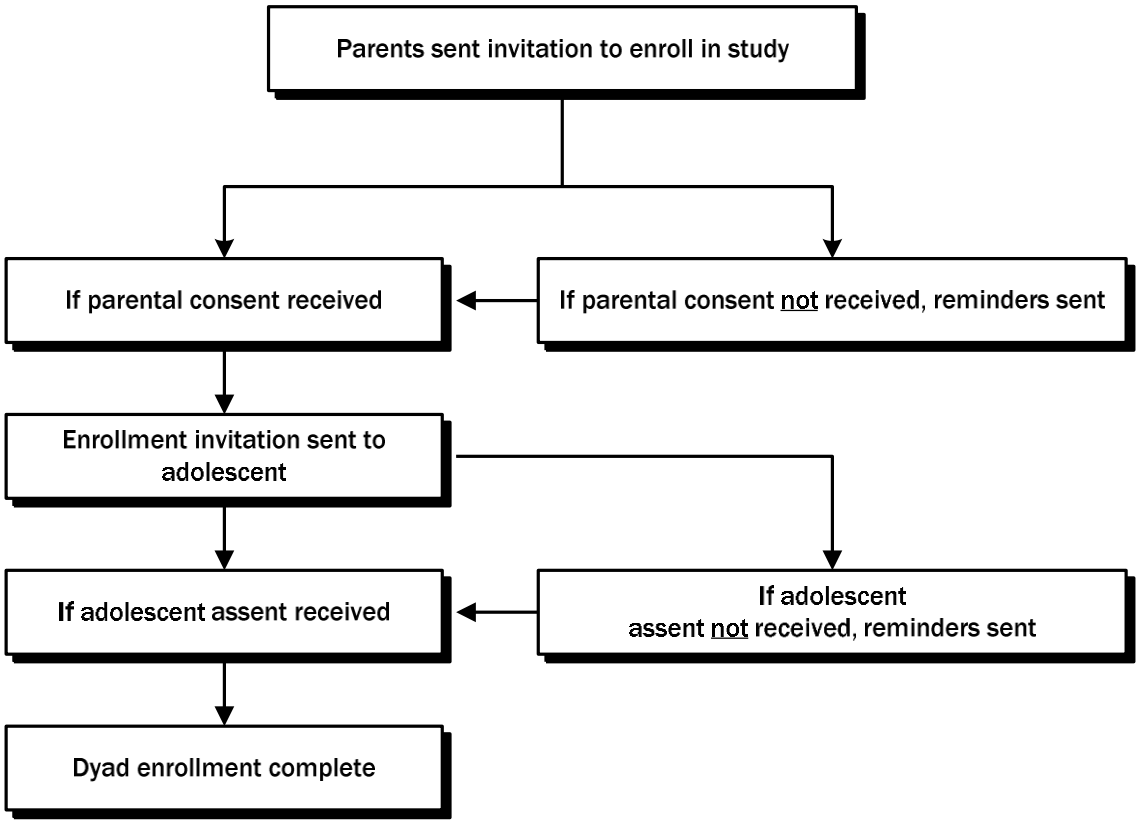
3.1.2 Web Survey Instrument Preparation

NCI provided Westat with hard copies of the FLASHE survey instruments, which were then programmed into web instruments using Vovici software. As part of the programming process, soft edit checks were included on many items. **Soft edit checks** mean that when a respondent enters an unexpected value, a pop-up box asks the respondent to confirm his/her response to make sure that what was entered was not a typo. If the respondent confirms the information, the web instrument accepts the unexpected value and the respondent moves on. The list of soft edit checks on the FLASHE instruments is included in **Appendix 1**.

3.2 Enrollment Protocol

A total of 5,027 dyads were invited to enroll in FLASHE. Enrollment for FLASHE dyads occurred in two waves: the first wave (n=4,514) was invited to participate in the study on April 1, 2014 and the second wave (n=513) was invited on April 23, 2014. Enrollment in FLASHE involved multiple steps, as illustrated in Figure 3-1 below.

Figure 3-1. Enrollment process



3.2.1 Parental Enrollment

The enrollment invitation was sent to the sampled parents via the email address provided by Ipsos. The invitation email contained the URL for the study's website and a personal identification number (PIN). The email asked parents to go to the website to enroll. Once on the website, parents were asked to enter their first and last name and PIN to log onto the site. They were then asked to complete the consent form for their participation, complete the consent form for their adolescent's participation, and to confirm contact information for themselves and their adolescent. On the contact information screen, parents were also asked whether they wished to receive study reminders via text message and whether the study had permission to send reminders to their adolescent via text message. If permission was granted for text messaging, the parent provided the needed cell phone numbers. Establishment of the parent's username and password was the final step in the enrollment process, which allowed the parent to login to their account at any time.

If the parent decided not to consent for either their own participation or that of their adolescent, the adolescent was not invited to enroll in FLASHE. These parents were informed that they were only eligible for FLASHE participation if their adolescent was allowed to participate.

3.2.2 Adolescent Enrollment

Once the parent completed the enrollment process, an invitation email was sent to the adolescent using the email address the parent provided on the contact information page during enrollment. Roughly half of all parents used their own email address for their adolescent, and the remainder entered a different address for their adolescent. The adolescent enrollment email also contained the URL for the study website and a PIN. On the website, the adolescents entered their first and last names and their PIN. The adolescents were asked to complete an assent form for their participation, and then they completed the enrollment process by setting up their username and password to facilitate logging on to the website in the future. Once the adolescent had completed the enrollment process, the dyad was officially enrolled and was able to begin the surveys.

3.2.3 Motion Study Enrollment

Consent and assent documents for those randomized to the Motion Study included additional language about wearing the accelerometer. Parents were permitted to consent for the survey and decline consent for the accelerometer. Likewise, adolescents could refuse to assent for the accelerometer but assent to the surveys. If either a parent or adolescent refused to consent to participation in the Motion Study, the dyad automatically switched to the survey-only group. There were 47 such cases.

3.2.4 Enrollment Reminders

Automated email reminders were sent to all nonresponding and partially-enrolled parents 7 and 14 days following the initial invitation. A parent who had partially enrolled had started enrollment, but had not completed it. Automated email reminders were sent to all nonresponding adolescents 7, 14, and 21 days following the initial invitation. Two additional reminder emails were sent to parents who had enrolled, but their adolescents had not. This email explicitly stated that enrollment was not complete until the adolescent had enrolled. Table 3-2 below catalogues by wave when all reminders were sent.

Table 3-2. Enrollment reminder contacts by wave

Stage of respondent	Wave 1 Initial invitation email: April 1	Wave 2 Initial invitation email: April 23
No response at all	Email sent April 8 Email sent April 15 Letter mailed via USPS April 28	Email sent April 30 Email sent May 7 Letter mailed via USPS May 16
Parent partially enrolled	Email sent April 8 Email sent April 15 Letter mailed via USPS April 28	Email sent April 30 Email sent May 7 Letter mailed via USPS May 16
Parent fully enrolled but adolescent not enrolled	Adolescent sent email 7 days after parent enrolled Parent and adolescent sent email 14 days after parent enrolled Adolescent sent email 21 days after parent enrolled Parent sent email May 15 IVR calls to those with phone numbers, started June 13 Parent sent email July 2	

3.2.5 Efforts to Increase Enrollment

The study was originally designed to use only email for enrollment communications. However, the enrollment rate was not as high as had been expected during the first month of the field period. The study team hypothesized that one reason for low enrollment was that email invitations may have gone to spam or junk email folders and thus were never seen by potential participants. To increase the enrollment rate, a hard copy invitation letter was mailed via the U.S. Postal Service to all parents who had not yet enrolled. The letter was sent to both waves, with 2,432 mailed for Wave 1 on April 28, 2014 and 286 mailed for Wave 2 on May 16, 2014.

In addition, Interactive Voice Response (IVR) phone calls (commonly referred to as "robocalls") were used to encourage enrollment. A script was prepared for parents whose adolescent had not completed enrollment. Because home phone numbers were not provided by Ipsos or collected as part of parental enrollment, tracing was employed to obtain phone numbers for all cases with incomplete enrollment. In total, 314 households were able to be traced for a home phone number.

IVR calls were conducted between June 13 and 17, 2014. As per standard IVR procedures, numbers were called up to three times in order to obtain a successful contact (message played to an answering machine or live voice). In all, 611 IVR calls were placed to 314 households, with 178 households resulting in a successful contact.

3.2.6 Enrollment Results

Enrollment status was automatically tracked by the FLASHE Study Management System (SMS). Respondents who contacted Westat to say that they did not want any further contact were coded in the SMS as refusals and were removed from future contacts.

Dyads could enroll at any point during the data collection period, though 97 percent of enrollments were completed by the end of May. The only cut-off was that no one could enroll in the Motion Study after July 14, 2014. Any dyad enrolled after this date was eligible only for the surveys. There were three such cases. A total of 1,252 dyads enrolled in the Survey Only group and

693 dyads enrolled in the Motion Study (see Table 3-3 below). This represents a 38.7 percent enrollment rate.

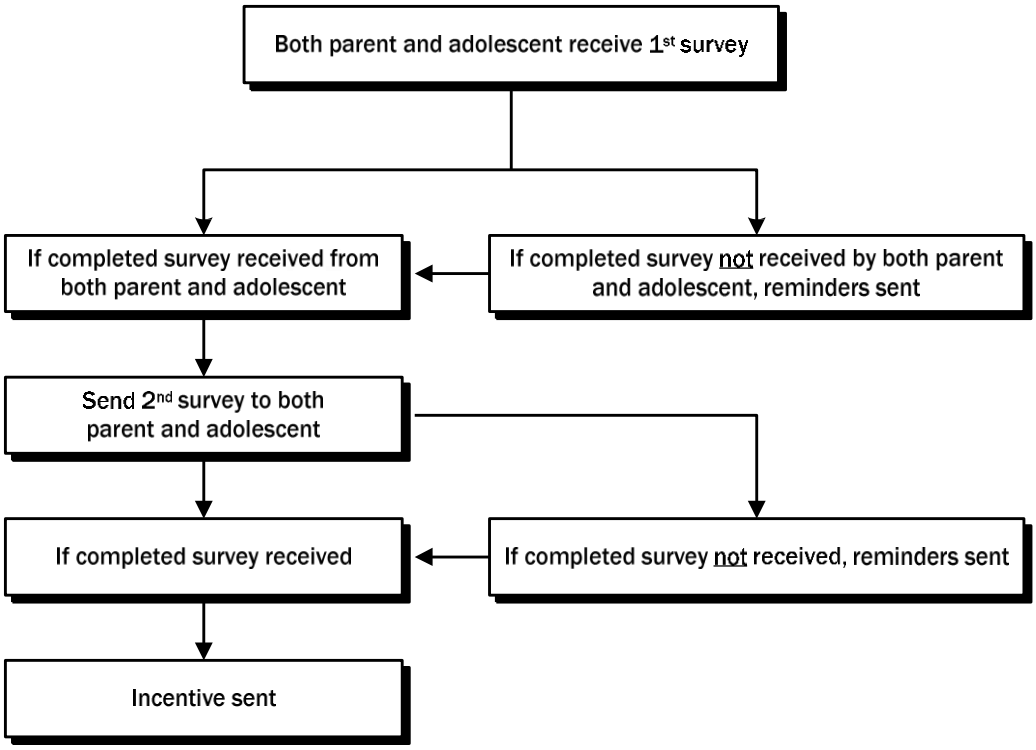
Table 3-3. Enrollment totals for FLASHE

Enrollment status	Number of dyads			
	Survey only	Motion study	Total	
			N	Percent
Dyad fully enrolled	1,252	693	1,945	38.7%
Dyad partially enrolled (parent only)	688	0	688	13.7%
Dyad refused to enroll	91	115	206	4.1%
No response to enrollment invitation	1,306	882	2,188	43.5%
Total	3,337	1,690	5,027	100%

3.3 Data Collection Protocol for Survey Only Group

Once fully enrolled, dyads were eligible to begin FLASHE study activities. For dyads enrolled in the Survey Only group, study participation involved completion of four web surveys: two by the parent and two by the adolescent. The order of the surveys (either Physical Activity or Diet first) was determined by the random assignments made prior to enrollment. The flow of activities for the Survey Only groups is illustrated in Figure 3-2 below.

Figure 3-2. Survey only activities



Both members of the dyad were invited by email to complete their first survey once enrollment was complete. The original protocol (used until June 13) required participants to log into their accounts on the study website in order to access surveys. Starting on June 13, participants were emailed direct links to their surveys in order to simplify the completion process.

Both members of the dyad were required to complete the first assigned survey before the second set of surveys was available. In other words, the timing and immediacy of the second survey was dependent on both the parent and adolescent completing the first survey. If both members of the dyad completed the first survey around the same time, the second survey was sent to them immediately. However, if one of the dyad members delayed completion of their survey, their corresponding dyad partner had to wait for their partner to complete before getting the second survey. Survey statuses were automatically updated in the SMS upon completion. With the completion of all surveys the dyad was complete.

3.3.1 Survey Reminders

Automated email reminders were sent to each participant with uncompleted surveys every two weeks for six weeks after the survey became available (see Table 3-4 below). Text message reminders were also sent on the same schedule for anyone who had requested text reminders. Additional email reminders were sent on June 13 when the direct link became available and then at two other times when bonus incentives were offered (discussed further in Section 3.5).

Table 3-4. Survey reminder contacts

Stage of respondent	Date of reminder email
Dyad fully enrolled but surveys not completed	Email sent 14 days after enrollment complete Email sent 28 days after enrollment complete Email sent 42 days after enrollment complete Email with direct survey link sent June 13 Extra incentive email sent June 30 Extra incentive email sent August 11

3.4 Data Collection Protocol for Motion Study Group

Dyads enrolled in the Motion Study were expected to complete the same four surveys as participants in the Survey Only group with the addition of the adolescent wearing an accelerometer (Actigraph GT3X+) for a one-week wear period and completing the activity log. Because there were only 300 accelerometers available for the study, dyads were randomly assigned to one of six

groups with staggered start dates so that the devices could be used, returned, and then used again. Although the group assignment was randomly determined before the start of the field period, the groups were consolidated part way through the field period to accommodate lower-than-expected enrollment numbers. Rather than having all six initial groups deploy at less than full capacity, dyads were shifted post-enrollment to accommodate three groups at full capacity.

Each dyad received an automated email at enrollment with the approximate start month for the study. Adolescents or parents who contacted Westat to indicate they were unable to participate that particular week were placed into a later Motion Study group whenever possible. Because of these requested changes and the group consolidation, each dyad received an additional email with a corrected start date once it was determined.

3.4.1 Order of Motion Study Activities

Motion Study groups 1 and 3 received the Physical Activity survey first and the Diet survey second, while Motion Study group 2 received the Diet survey first and the Physical Activity survey second. The Physical Activity survey was always timed so that it was available to the respondent the week after the accelerometer wear week. The order of study activities for each group and the dates of each activity are shown in Table 3-5.

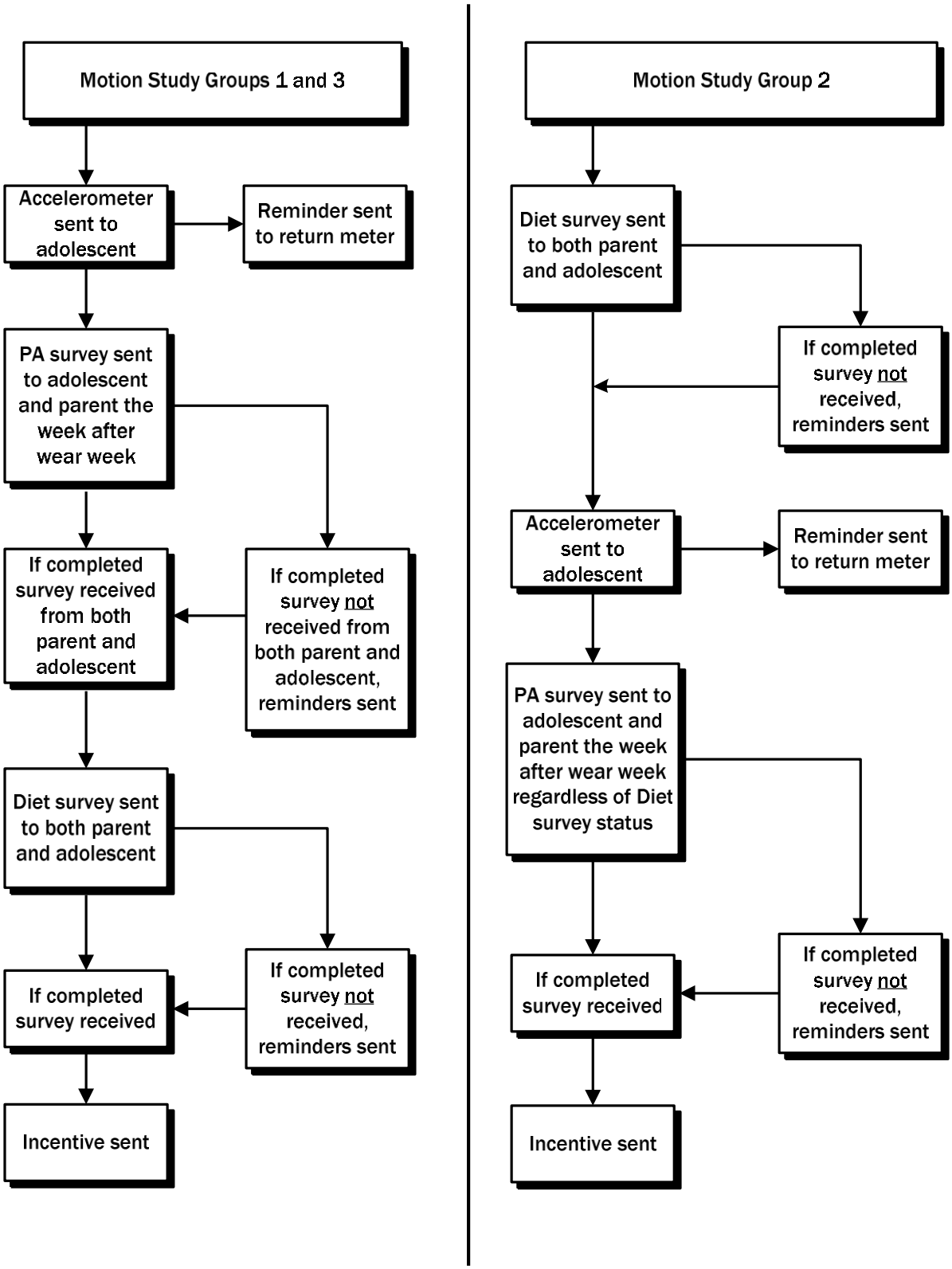
Table 3-5. Order of study activities and dates for each motion study group

Motion study group	Order and date of activities
1	1. Accelerometer wear week (May 4-11) 2. Physical Activity survey (available May 12) 3. Diet survey (available upon completion of PA survey)
2	1. Diet survey (available May 12) 2. Accelerometer Wear Week (June 15-22) 3. Physical Activity survey (available June 23)
3	1. Accelerometer wear week (August 3-10) 2. Physical Activity survey (available August 11) 3. Diet survey (available upon completion of PA survey)

Figure 3-3 below further illustrates the flow of activities for participants of the Motion Study portion of FLASHE. Each wear week ended on a Sunday at 8 p.m., thus for groups 1 and 3 the Physical Activity survey was available for both members of the dyad beginning that following Monday (Table 3-5). Sending the Physical Activity survey the week after the wear week allowed the accelerometer data to validate the survey responses, which asked about activity "in the past week". Once the Physical Activity survey was completed by the adolescent and the parent, the Diet survey was then available to both members of the dyad.

Motion Study Group 2 had a slightly different schedule since this group completed the Diet survey as its first study activity. This group was notified that its Diet surveys were available four weeks before their wear week. Each adolescent in this group then had the same wear week, regardless of whether he or she had completed the Diet survey. The procedures for deploying the accelerometers for this group were the same as described above for groups 1 and 3, as well as the release of the Physical Activity survey the Monday following the last day of the wear week. However, this group received the Physical Activity survey regardless of whether they had completed the Diet survey.

Figure 3-3. Motion study activities



3.4.2 Mailing of Accelerometers and Wear Logs

Accelerometers were each assigned an identifying number that was attached to the meter itself. In the SMS, this accelerometer number was connected to the study identification number of the respondent. This ensured that the correct meter was always associated with the correct respondent. Prior to deployment, each device was configured and tested for accurate performance. The accelerometers were configured to collect raw tri-axial accelerometry data at 80 Hz for the duration of the programmed data collection period.

Prior to mailing, the list of participants was reviewed by study staff. Any adolescents with P.O. Box addresses were contacted via email in order to obtain an address where a package could be shipped via Federal Express.

The Monday prior to the Sunday start time for the wear week, each adolescent participant was sent a package by Federal Express that contained:

- A personalized cover letter;
- The accelerometer and Velcro wrist strap;
- The Daily Activity Log (wear log);
- A pre-addressed postage-paid return envelope;
- A sheet of Frequently Asked Questions; and
- An information sheet with instructions for putting the accelerometer on correctly.

The letter specified that the accelerometer was to be worn beginning at 8 p.m. on the Sunday of the wear week until 8 p.m. the following Sunday, with no need to remove the accelerometer at any time during the week, including bathing. The wear log was included so that participants could record vital information, such as the hours they were sleeping and any times they chose to remove the accelerometer during the week.

All packages were tracked through the Federal Express Application Program Interface. Westat queried the tracking number status for each package several times a day until all packages were delivered. Adolescents whose packages were reported to be undeliverable were contacted via email in an effort to correct any address error issues.

Once Westat received the meters back from the respondents, data were downloaded into the raw .gt3x files and 60-second .agd files using ActiLife software. The devices were then cleaned and prepared for the next group.

3.4.3 Motion Study Reminders

Emails and text messages (if approved by parent at enrollment) were sent to remind participants about their wear week. Messages were sent to the adolescent 1) prior to the wear week, 2) during the wear week, and 3) after the wear week in order to remind the adolescent to return the accelerometer and the log as soon as possible. Until the accelerometer was returned, post-wear week reminders were sent each week for up to five weeks following the wear week. In addition, a special email was sent to parents at the end of the reminder period to let them know their adolescent still had an unreturned accelerometer. Automated email reminders were also sent to all participants about their surveys in the same manner they were sent for the Survey Only group participants. Additional email reminders were sent when "early bird" and extra incentives were offered (discussed in Section 3.5). The detailed schedule of reminders sent during the Motion Study is shown in Table 3-6 below.

Table 3-6. Motion study reminders

Motion study			
Stage of respondent	Group 1	Group 2	Group 3
	Wear week: May 4 – 11	Wear week: June 15 – 22	Wear week: August 3 – 10
Meter not returned	Text sent May 11 Email sent May 12 Email sent May 19 (7 days) Email sent May 16 (14 days) Email sent June 2 (21 days) Email sent June 9 (28 days) Email sent June 16 (35 days) Email sent to parent August 11	Text sent June 22 Email sent June 23 Email sent June 30 (7 days) Email sent July 7 (14 days) Email sent July 14 (21 days) Email sent July 21 (28 days) Email sent July 28 (35 days) Email sent to parent August 11	Text sent August 10 Email sent August 11 Email sent August 18 (7 days) Email sent August 25 (14 days) Email sent September 1 (21 days) Email sent September 8 (28 days) Email sent July 28 (35 days) Email sent to parent September 23
PA survey not complete	Survey invitation email sent May 12 Email sent May 2 14 days) Email sent June 9 (28 days) Email with direct survey link sent June 13 Email sent June 2 (42 days) Extra incentive email sent June 30 Extra incentive email sent August 11	"Early bird" email sent June 22 Survey invitation sent June 23 Email sent July 7 (14 days) Email sent July 21 (28 days) Email sent August 4 (42 days) Extra incentive email sent August 11	"Early bird" incentive email sent August 10 Survey invitation email sent August 11 Email sent August 25 (14 days) Email sent September 8 (28 days) Email with direct survey link sent June 13 Email sent September 22 (42 days) Extra incentive email sent September 24
Diet survey not complete	Survey invitation email sent when both members of dyad complete PA survey Email sent 14 days later Email sent 28 days later Email sent 42 days later Email with direct survey link sent June 13 Extra incentive email sent June 30 Extra incentive email sent August 11	Survey invitation email sent May 12 Email sent May 26 (14 days) Email sent June 9 (28 days) Email with direct survey link sent June 13 Email sent June 23 (42 days) Extra incentive email sent August 11	Survey invitation email sent when both members of dyad complete PA survey Email sent 14 days later Email sent 28 days later Email sent 42 days later Extra incentive email sent September 24

3.5 Incoming Contacts

On all communication for the study (printed materials and emails), the study email address and toll- free phone number were provided. The phone number had a FLASHE-specific voicemail message in case the call was not received live. These two contact methods were heavily used throughout the field period and every contact received a personalized response. Table 3-7 below shows the number

of inquiries that were received throughout the course of the study. Inquiries were made for a large variety of reasons, including:

- Questions about how we received the participants' contact information
- PIN requests;
- Account log-in issues/locking of account due to too many incorrect log-ins;
- Questions about the enrollment process;
- Refusals;
- Corrections to names that were pre-filled by the screener information;
- Updating contact information;
- Questions about whether a different adolescent could participate than the selected adolescent;
- Questions about whether a participant could recommend others to participate;
- Questions about the Motion Study schedule;
- Questions about how to wear the accelerometer properly;
- Questions about whether the accelerometer needed to be taken off during specific activities (such as a swim meet or while at summer camp);
- Questions about what to do if the adolescent forgot to put the accelerometer on at 8 p.m. on Sunday;
- Questions about how the incentives would be paid;
- Incentive status inquiries;
- Requests to complete the Motion Study at a different time; and
- Requests for a replacement postage-paid envelope so the accelerometer could be returned.

Table 3-7. Incoming contacts to the FLASHE study team

Time of contact	Contact method			Total contacts
	Email	Live phone call	Voice mail	
April	650	80	74	804
May	465	50	52	567
June	206	40	46	292
July	114	10	15	139
August	57	4	16	77
September	22	2	2	26
October	0	0	0	0
Total	1,514	186	205	1,905

3.6 Incentives

Each study activity garnered an incentive payment, which was made via the U.S. Postal Service in cash with a thank you letter in an envelope addressed to the participant. Participants whose envelopes were returned by the U.S. Postal Service as "undeliverable" were emailed in an effort to correct address errors. Once the errors were fixed, the incentive was re-mailed. Any participant who

reported that a payment was never received was also re-mailed the incentive.

The standard incentive for each completed survey was $5. A response rate substudy was conducted with the Motion Study dyads in which half of all adolescents were compensated $20 for returning the accelerometer and the other half were compensated $40. The amount of all promised payments was disclosed in the consent language that each participant saw during enrollment.

In order to encourage a greater number of survey completions at various times throughout the study, "bonus" and "early bird" incentives were given. During a weeklong time period, which was communicated to participants via email, surveys were worth $10 instead of $5. The "early bird" incentive was specifically implemented to encourage the Motion Study participants to complete their Physical Activity survey within seven days after their wear week.

Completed surveys resulted in an automated status update in the SMS that indicated the incentive was ready to be processed. The SMS was also updated when an accelerometer was returned, again indicating that the incentive was ready to be processed. Incentive files were produced through the SMS twice a week. The files indicated the name and address of the participant as well as the total money amount that was earned since the last time the file was produced.

All adolescents who returned the accelerometer were provided with the incentive, regardless of whether the device had been worn during the wear week.

3.7 Data Collection Completion and Compliance Rates

3.7.1 Completion by Survey Only Group

Overall, 85.6 percent of fully enrolled dyads in the Survey Only group completed all four surveys, as shown in Table 3-8 below. Only 2.8 percent of enrolled dyads did not complete any surveys and 11.6 percent of dyads completed between one and three surveys.

Table 3-8. Survey completion rate for dyads enrolled in the survey only group

Status	Number of dyads	Percent
All 4 surveys completed	1,072	85.6%
1-3 surveys completed	145	11.6%
No surveys completed	35	2.8%
Total	1,252	100.0%

3.7.2 Completion by Motion Study Group

With 73.6 percent, the survey completion rate for dyads in the Motion Study group was about 12 percentage points lower than for those dyads in the survey only group. In addition, the Motion Study had a higher number of dyads complete at least one survey but not complete all four surveys. Survey results for the Motion Study group are shown in Table 3-9 below.

Table 3-9. Survey completion rate for dyads enrolled in motion study group

Status	Number of dyads	Percent
All 4 surveys completed	510	73.6%
1-3 surveys completed	146	25.5%
No surveys completed	37	2.9%
Total	693	100.0%

The rate of return for the accelerometers was high for each of the groups in the Motion Study. Table 3-10 illustrates the return of the meters. This table does not address whether the meter was worn by the respondent before its return.

Table 3-10. Accelerometer return rate for dyads enrolled in the motion study

Motion study group	Number of devices deployed	Number of devices returned	Return rate
1	286	266	93.0%
2	256	241	94.1%
3	151	135	89.4%
Total	693	642	92.6%

Of the 300 meters at the start of the field period, 51 were never returned by respondents. Another three were returned damaged and deemed unusable in future studies.

As shown in Table 3-11, among the Motion Study respondents who returned an accelerometer, 88 percent also returned a Wear Log.

Table 3-11. Wear log return rate for respondents who returned a meter

	N	%
Returned a log	565	88.0%
Did not return a log	77	12.0%
Total	642	100%

Table 3-12 shows the wear rate for those respondents who returned an accelerometer. "Worn" is defined as having at least one day with greater than or equal to 18 hours of wear time. The overall wear rate was 73.5 percent

Table 3-12. Wear rate for dyads enrolled in the motion study

Accelerometers	Group 1		Group 2		Group 3		Total	
	N	%	N	%	N	%	N	%
Worn	208	72.7	197	77.0	104	68.9	509	73.5
Not worn	58	20.3	44	17.2	31	20.5	133	19.2
Total	286	100	256	100	151	100	693	100

Table 3-13 illustrates the level of compliance to the study protocol that asked adolescent respondents to wear the device 24 hours a day for 7 days in a row. The average number of Wear Complete days is based on the total number of Wear Complete days divided by the total number of participants in each Motion Study group. Average Daily Wear Time is the total number of Worn hours across all days divided by seven.

Table 3-13. Wear compliance by group

Motion study group	Start date	Number of wear complete persons	Average number of complete wear days	Average daily wear time
1	5/4/2014	208	4.64	17.26
2	6/15/2014	197	4.95	17.90
3	8/3/2014	104	4.43	16.22

As shown in table 3-14, 496 (63.4 percent) dyads who returned the meter also completed all four surveys. All dyads who returned a meter (either worn or not worn) completed at least one survey.

Table 3-14. Motion study completion rate for dyads who returned the meter (N=642)

	Meter status		Total
	Worn	Not Worn	
Returned All Surveys	407(63.4%)	89 (13.9%)	496
Returned Some Surveys	102 (15.9%)	44 (6.9%)	146
Total	509	133	642

Data Management 4

With the close of the field period at midnight on October 6, 2014, there were four primary sources of data to be reviewed, edited, quality checked and prepared for delivery. These data sources were:

- Web surveys;
- The wear log;
- The accelerometer data; and
- Metadata collected by the Study Management System.

4.1 Survey Data

The web survey data underwent a rigorous review, edit, and QC process. The review process is outlined below.

4.1.1 Definition of a Survey "Complete"

All partially complete surveys were reviewed to determine whether any were filled in enough to be considered a complete. A review of the partially completed surveys indicated that there were no cases where a respondent skipped sections in the middle of the survey and only completed the first and last sections. That means that the only partially completed surveys left to examine were ones where the respondent broke off during the course of the survey.

The criteria to determine whether a partially complete survey would be included in the final data set were developed with NCI and described in detail in **Appendix 4**. The rules indicate that a survey was considered complete when at least 80 percent of the questions were answered at the time the respondent stopped the survey. Having an 80 percent threshold allowed for minor skips of questions the respondent deliberately chose not to answer. After applying the completion rules, none of the 81 partially completed surveys met the criteria for inclusion. These 81 surveys were coded as "incomplete" and were not included in the delivery files.

4.1.2 Creation of Files

For each parent and adolescent, two surveys were available—a Diet survey and a Physical Activity survey. There were a number of questions (most related to demographics) that were common between the Diet and Physical Activity surveys for a parent or an adolescent. These common demographic and parenting style questions were presented only once to a respondent. If the demographic questions were answered on the Diet survey, they were not presented to the respondent on the Physical Activity survey and vice versa. When the FLASHE data collection period ended, demographic data was extracted from the survey on which it was collected—either the Diet or the Physical Activity survey—and a file was created containing only the demographic data. Thus, six files resulted from the web surveys: Parent Diet, Parent Physical Activity, Parent Demographics, Adolescent Diet, Adolescent Physical Activity, and Adolescent Demographics.

Table 4-1 below indicates the variable naming conventions.

Table 4-1. Variable naming conventions

Variables from…	…begin with
Parent Diet	PD
Parent Physical Activity	PP
Parent Demographics	P
Adolescent Diet	TD
Adolescent Physical Activity	TP
Adolescent Demographics	T
Derived Variables	X

4.1.3 Missing Demographic Data

Westat identified 97 survey respondents who did not have an opportunity to respond to the demographic section (see explanation below). Of the 97 cases without a completed demographics section, 53 were adolescents and 44 were parents. All these respondents completed only the Physical Activity (PA) survey or only the Diet survey, but not both. The survey that was finished was the one that did not contain the demographic section. These cases fell into two categories:

1. 49 of the cases were Motion Study participants who did not have a completed demographics section due to one of two procedures in the Motion Study:

- Two of the Motion Study groups got the PA survey first and one group got the Diet survey first. The group that got the Diet survey first was sent the PA survey the week after their device wear week even if that dyad had not yet completed the Diet survey. If the respondent never completed the Diet survey, then he or she never received the demographics section. There are 19 such cases.

- As described in Section 3.11, dyads were moved from one Motion Study group to another during the consolidation process. Because the surveys for each person were pre-loaded into the system, the demographics were already embedded in the surveys. However, with the change of groups some cases also then changed the order of the surveys. These dyads received their surveys in the same order as everyone else in their new Motion Study group, but there was a chance that the first survey they received did not include the demographics attached because that was not their original order assignment. There are 30 such cases.

For 48 of the cases, there was a problem with the system. A problem was identified with the survey administration system on the first day of the field period and was corrected immediately. However, due to this problem, for 48 cases the demographics section was not included in their first survey. Because these 48 cases then did not go on to complete the second survey, they never saw the demographics section.

To address this issue, Westat used demographic information that was collected as part of the screening conducted by Ipsos. Variables edited to include information from the screener were:

- For the adolescent respondents:
  - Age; and
  - Gender.

- For the adult respondents:
  - Age;
  - Gender;
  - Education;
  - Hispanic ethnicity;
  - Race; and
  - Number of children in the household.

Remaining variables in the demographic section that could not be obtained from the screener were coded as -9 (not ascertained). Because they were derived from the Ipsos screener rather than the surveys, these variables have the following names:

Variables	Variable name
Adolescent respondents	
Age	XTAGE
Gender	XTSEX
Adult respondents	
Age	XPAGE
Gender	XPSEX
Education	XPHIGHED
Hispanic Ethnicity	XPETHNICITY
Race	XPAMERINALSK
	XPASIAN
	XPAFRCNAMER
	XPHAWPAC
	XPWHITE
Number of children in household	XPKIDSINHOME

For all records in the file, the values for the variables above are either as collected in the survey or for the set of cases identified in which the respondent did not have the opportunity to respond to the demographics section, from the Ipsos screener.

4.1.4 "Fast" Completes

Concern was raised about a group of respondents who appeared to complete all the FLASHE surveys in a very short period of time at the start of the data collection field period. A total of 70 cases were identified as fast completers. Fast completion was defined as having completed all four surveys (2 for the parent and 2 for the adolescent) within the first 60 minutes of the study. These cases were flagged as fast completers to identify the data as slightly suspect (the flag is FASTCMPFL in the data files).

Westat conducted a preliminary analysis of the quality of the data from the fast completers as compared to the regular completers by looking for data patterns in the grid items. The patterns examined included:

- Sequential patterns: If respondents answered the questions in a diagonal pattern across the dyad;
- Straight lining: if respondents marked the same column all the way down a grid; and

Contradictory statements: if respondents answered selected questions in an unexpected way—where an agree response to one question might imply that another question should be a disagree response.

These patterns were examined for both the fast completers and the regular completers, with t- tests conducted to look for significant differences between the groups. There was no evidence of sequential patterns at all in any group. There were incidents of straight lining in both groups as well as contradictory statements in both groups. Some instances indicated a significant difference between the groups. However, there was no overall pattern of consistent differences between the fast completers and the rest of the completers.

With no evidence of a consistent problem of data falsification, it was decided that the fast completers would be kept in the data set. As noted above, these cases were flagged for easy identification in the future if needed.

4.1.5 Data Translation and Quality Checks

Some questions in the surveys required data value translation. In the Parent Physical Activity survey, for instance, responses to the question about the number of TVs in the home required translation. During the survey, if a respondent selected the first option (*0 TVs in the home*), a value of 1 was recorded in the database; if the second option was selected (*1 TV in the home*), a 2 was recorded, and so on. To render the data more intuitive, the value for each of these options was translated so that *0 TVs in the home* would have a value of 0 (rather than 1), *1 TV in the home* would have a value of 1 (rather than 2), and so on. The annotated surveys reflect this final coding scheme.

Once all data translations of this type were completed, programmatic data quality checks were run against each of the six survey files. These quality checks included a review of frequencies for variables involved in data value translation—comparing the values for each affected variable both before and after the data value translation—in order to confirm that translations had occurred correctly.

Other checks were performed to validate collected data. For instance, in the Adolescent Physical Activity survey, there were several questions that were asked only of adolescents who were not in school, another set of questions that were asked only of adolescent who were in elementary school,

and a third set of questions that were asked only of adolescents who were in middle or high school. These three sets of questions were mutually exclusive. Frequencies for these questions were evaluated to identify any errors. No data anomalies were identified.

Height and Weight

A review of frequencies was conducted to identify extreme values in height and weight. There were a total of 9 cases (4 Parent Demographics cases and 5 Adolescent Demographics cases) in which the reported height in feet was outside the acceptable range (feet needed to be a value of 4, 5, or 6). For these 9 cases, the value for height in feet was recoded to *-99: Respondent-provided value out of range.* None of the weight values reported were outside the acceptable range.

Age

In reviewing the frequencies of the age of the parent, eight cases were identified where the age of the parent was reported as under 18 years and another eight cases where the age of the parent was reported as between 18-25 years. For the eight cases that were recorded as between 18-25 years, the survey data was compared to the screener data. For all eight of these cases, the age of the parent reported on the survey and the screener was the same. It was decided that these data were accurate. For the eight cases where the age of the parent was reported as under 18, Westat compared the age reported on the survey to the age of the selected adolescent for the study and found that these ages matched. It was hypothesized that the question was misread and that the respondent accidentally put in the age of the adolescent rather than their own age. For these eight cases, the age of the parent on the survey data was edited and replaced with the age of the parent from the screener. These eight cases were flagged (PAGEEDFL = 1) for easy identification later.

Primary Language

In examining text responses related to the question that asked about the primary language spoken at home in the Parent and the Adolescent Demographic sections, data anomalies were identified where the text response was redundant or nonsensical. A text entry of English in addition to marking the checkbox indicating English was considered a redundancy in response. A response of Elvish (per Wikipedia, a language spoken by elves) was also deemed nonsensical. In 14 parent cases and 13 adolescent cases, such entries were deleted from the text response variable.

4.1.6 Coding of Missing Values

Once data were cleaned, any missing values were filled. With the exceptions noted in the previous section, all respondent-provided responses were retained in the data as collected. Questions for which a response was expected butt was left unanswered by the respondent were coded *-9: Not ascertained*. Some questions, however, were left unanswered because they weren't applicable to the particular respondent. For example, male respondents were not asked the question about being pregnant. When a value for a variable was missing because a response was not expected, the variable's value was set to *-1: Not applicable*.

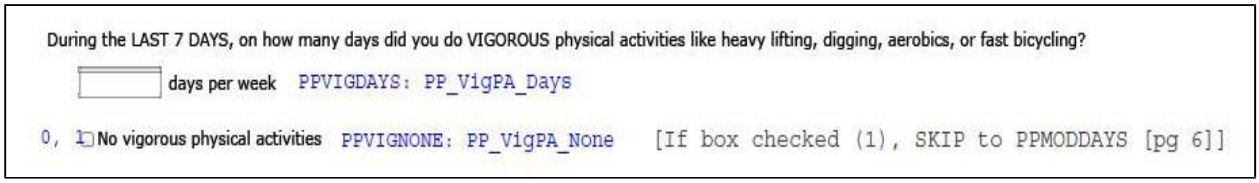
The "missing value" process operated as follows:

1. First, all "empty" values in the survey data were set to -9.
2. Next, any variable that was legitimately left blank under certain conditions was evaluated and set accordingly.

For example, in Figure 4-1 below, **when PPVIGDAYS was empty, it was set to -9** (step 1, above). PPVIGNONE (the check box) was then evaluated.

- If PPVIGNONE = 1, then PPVIGDAYS was set to -1 because it was expected that PPVIGDAYS would be missing when a respondent indicated "No vigorous physical activities."
- If PPVIGNONE = 0, then PPVIGNONE was set to -9 because the respondent essentially skipped the question in its entirety. (The respondent reported neither the number of days of vigorous physical activity nor indicated "No vigorous physical activities" by checking the box.)

Figure 4-1. Example of missing value recode process



The following data patterns resulted:

PPVIGDAYS	PPVIGNONE	Condition
n	0	Number of days per week reported, check box left unchecked.
-1	1	Number of days left blank, check box checked.
-9	-9	Number of days left blank, check box left unchecked.

Following the completion of this process, frequencies were again reviewed, comparing values prior to filling missing data to values after missing values were filled (with *-1* or *-9*) to ensure resulting data patterns were as expected.

4.1.7 Creation of Derived Variables

NCI provided Westat with a list of requested derived variables to be included in the initial data delivery. Westat developed specifications for calculating each of the derived variables. These specifications were shared with NCI to ensure the variables, once programmed, correctly reflected the intent. A Westat SAS systems analyst programmed each of the derived variables. Data management then performed quality assurance steps, confirming that each variable was programmed as specified and values were as expected. Derived variables were then added to the appropriate file. For example, the derived variable XPHEIGHTIN, which provides the parent height converted to inches, was added to the Parent Demographics file because questions about height were asked in the Parent Demographic section of the survey.

4.1.8 Identification of Error in Programming

After the close of data collection, a problem with the study system was identified. This programming error caused 950 respondents to be erroneously skipped out of the following 8 Parent Physical Activity variables: PPFEELLOVE, PPOTHBETTER, PPGEGTGDGRAD, PPATTRACTV, PPJOBPAYWL, PPHCPALIMIT, PPHCPASPORT, PPHCPAOUT. The cases affected were parents who were assigned to conduct the Physical Activity survey second. Parents assigned to receive the Physical Activity survey first were not affected by the programming error. Once the issue was identified, Westat provided NCI with frequency tables for the respondents who got the questions (were not in the accidentally skipped group) in order to examine the sample size impact of the error. Westat also developed crosstabs of the demographic variables by the skip status to see whether there was a difference between the groups that did and did not receive these questions. Chi-square tests were run to check the independence between the demographics and the skip status. The tests were not significant for any demographic variable except gender. Gender was significant because Wave 2 was all male and was assigned to receive the Physical Activity survey second. NCI is leading a multiple imputation analysis that will be provided to data users in the Data User's Guide.

4.2 Daily Activity Log Data

Returned wear logs were visually reviewed for content. Wear logs that had not been completed by respondents and had no data were not processed further.

4.2.1 Activity Log Data Entry

Data from the wear logs were entered into an Access database developed specifically for FLASHE wear log data. Any data discrepancies identified by data entry staff were reviewed by the project team. A Data Decision Log was used to record the issues and resolutions. Once data were entered, staff performed quality checks to ensure data were entered correctly. First, the database was queried to ensure that each DeviceID in the batch was in fact entered into the database. Next, QC staff reviewed 10 percent of the wear logs from each batch to ensure all entries were recorded correctly.

4.2.2 Activity Log Data Preparation

Following data entry, data management staff performed additional edits on the wear log data. All date ranges were checked to ensure reasonableness given the data collection period. Additionally, in several places in the wear log, respondents could enter text information. Data management reviewed the text that was entered to ensure personally identifiable information (PII) was not included. In cases where a proper name was discovered, for example, the proper name was replaced with "[Adolescent]" or "[Parent]" so that the meaning of the entry was retained, but PII was removed. When data management had completed its review, data were released to the data delivery team for translation to a SAS dataset.

4.3 Accelerometer Data

Data processing for the Motion Study is not yet complete at the time of writing this Methods report. As a first pass in data processing, Westat utilized the 60 second .agd files to generate a set of summary tables to serve as an interim dataset for analysis for NCI. The data summary tables delivered in an Access database include:

- A Participants Table containing a record for each participant. Each record includes the total number of hours worn on each day of data collection and other person-level summary data.
- A Minutes of Activity Table containing a record for each minute during the data collection period. Each record includes accelerometer attributes such as Physical Activity (PA) counts for the X, Y, and Z axes, Vector Sum Magnitude (VSM), worn/notworn, and school/notschool.
- A Not Worn Bouts Table containing a record for each time period identified when the accelerometer was not worn during the data collection period.Each record includes the start and end times as well as duration for each of these not worn periods.

Westat used the field Vector Sum Magnitude (VSM), which was calculated using the formula $\sqrt{(X^2+Y^2+Z^2)}$ where X, Y, and Z are the counts measured for each of the three axes. In addition, Westat updated the definition used for worn/not worn determination (stored in the worn/not worn field) based on a rule that defines any period of 60 or more minutes with a VSM value of 0 to be a period during when the accelerometer was not worn. The device was assumed to be worn again at the next occurrence of a minute with a VSM greater than 0. These calculations and rules were based on guidance from NCI.

Westat integrated the Adolescent Physical Activity Survey data for in-school and out-of-school times provided by the participants via self-report with the accelerometer data to allow for later analysis of PA levels during school hours versus non-school hours. Respondents provided a single school start and end time. All minutes between those two times were flagged as in-school minutes across all weekdays during the data collection period. This assignment is stored in the school field in the Minutes of Activity table. A weekday day variable was also added to facilitate analysis on PA levels on weekdays versus weekend days.

There are null values in the Participants and Minutes of Activity tables for the school variables ('school' in Minutes of Activity and 'day1_school', 'day2_school', etc. in participants) when:

- The respondent did not report whether they attended school that week (i.e., there was a null value for the NITE_SCHOOL variable captured from the wear log);
- The respondent reported they did not attend school that week (2 for NITE_SCHOOL);
- The respondent did not report their school start time and/or school end time in the adolescent PA survey data;

- There were no data for the participant in either the wear log or the adolescent PA survey; and
- The school start time or school end time data for the adolescent PA survey were misreported, i.e., the school time range was greater than 12 hours.

Due to the timing of the data collection cycles, a majority of the participants in Motion Study groups five (June participation) and five (August participation) responded, No to NITE_SCHOOL, a question from the wear log that asked whether they would be attending school during the week of data collection. There are many participants from these two groups with null values for the school variables.

Because all accelerometers were configured to begin collecting data at 8 p.m. EST, Westat adjusted the processing programs to account for the time difference between the participants' time zones and Eastern time.

The Summary Data Tables were reviewed for quality control to confirm that all definitions and logic were applied consistently and accurately.

4.4 Study Management System Data

As described earlier, the Study Management System (SMS) tracked all respondents throughout the study. The SMS dataset includes administrative data about participants at the individual-level and the dyad-level, such as dates of enrollment and activity completion.

At the close of data collection, a final status was assigned to each dyad based on whether all or some study tasks had been completed. Although all cases were given a final status, only the dyads determined to be complete or partially complete were included in the SMS dataset. Complete and partially complete dyads were defined as:

- Complete = Fully enrolled, all four surveys completed, and meter returned (if applicable); and
- Partially complete = Fully enrolled, one to three surveys completed or meter returned (some action taken).

Response Rate 5

5.1 Dyad Level Response Rates

In order to determine the overall study response rate, both the enrollment rate and the survey completion rate/monitor return were taken into account. As described in Chapter 3, enrollment required both parents and adolescents to complete consent/assent forms and to confirm their contact information. The dyad enrollment rate was 38.7 percent (Table 5-1).

Table 5-1. Dyad enrollment rate

	Starting sample of dyads	Enrollment completion	
		Number of dyads	Percent
Survey Only Group	3,337	1,252	37.5%
Motion Study Group	1,690	693	41.0%
Overall	5,027	1,945	38.7%

Once enrolled, the definition of FLASHE study completion varied slightly between the Survey Only and the Motion Study groups.

- For the Survey Only group: a dyad was coded as complete when all four surveys were completed.
- For the Motion Study group: a dyad was coded as complete when all four surveys were completed and the accelerometer was returned.

Table 5-2 below illustrates the completion rate by Group.

Table 5-2. Dyad completion rate

	Starting sample of dyads	Survey/meter completion	
		Number of dyads	Percent
Survey Only Group	1,252	1,072	85.6%
Motion Study Group	693	407	58.7%
Overall	1,945	1,479	76.0%

Taking both the enrollment rate and the completion rate into account, the overall study response rates are illustrated in Table 5-3.

Table 5-3. Dyad response rate

	Starting sample of dyads	Survey/meter completion	
		Number of dyads	Percent
Survey Only Group	3,337	1,072	32.1%
Motion Study Group	1,690	407	24.1%
Overall	5,027	1,479	29.4%

A summary of the completion and response rates by dyad are illustrated in Figure 5-1.

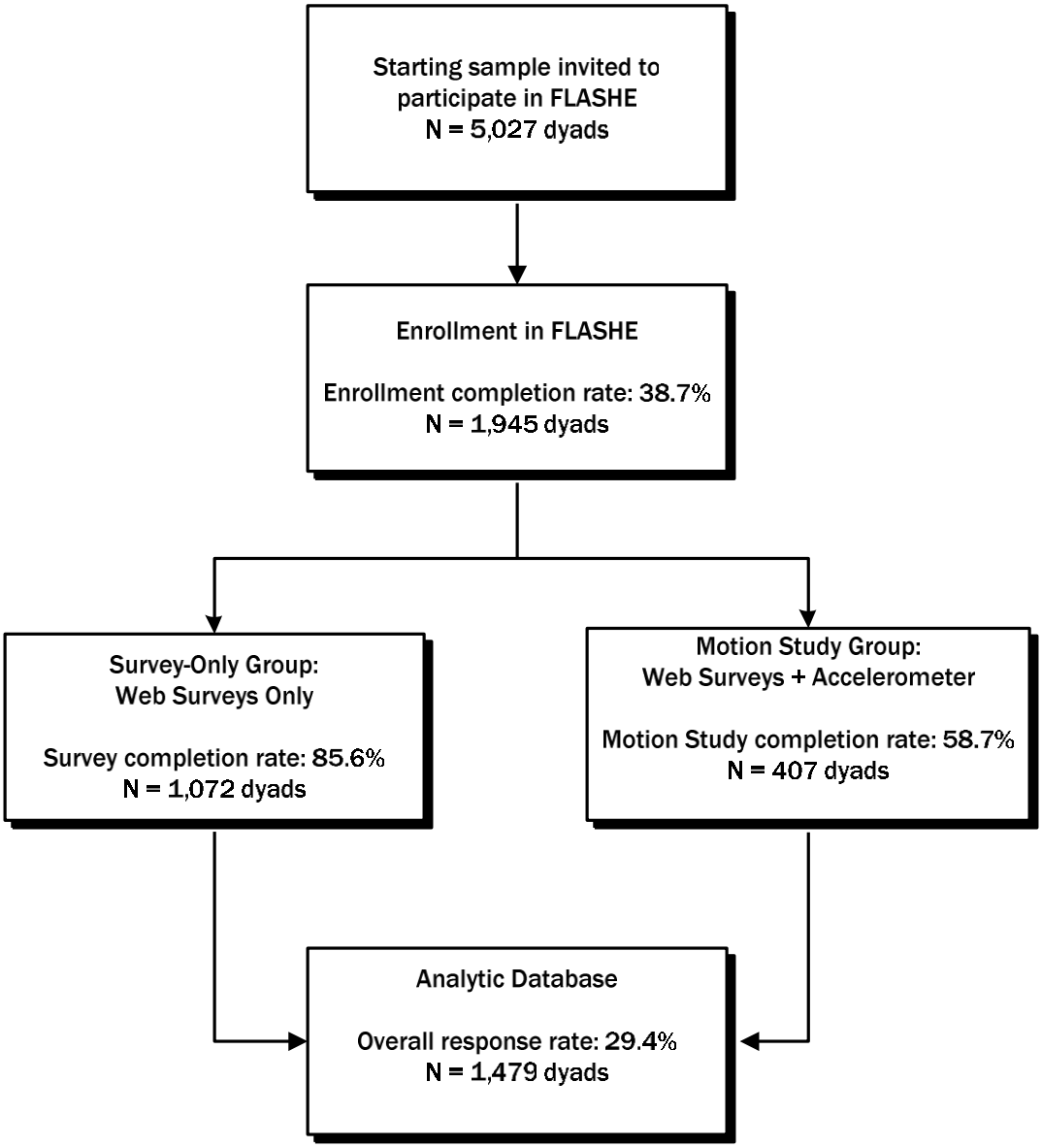
5.2 Response Rates by Survey

As noted in Chapter 4, there were no partially completed surveys identified. If a respondent started a survey, he/she completed it. Response rates by survey rather than by dyad are shown in Table 5-4.

Table 5-4. Survey-level response rates

	Number of completed surveys	Completion rate	Response rate
Parent PA Survey	1,802	92.6%	35.8%
Parent Diet Survey	1,754	90.2%	34.9%
Both Parent Surveys	1,708	87.8%	34.0%
Adolescent PA Survey	1,670	85.9%	33.2%
Adolescent Diet Survey	1,667	85.7%	33.2%
Both Adolescent surveys	1,590	81.7%	31.6%

Figure 5-1. Flowchart: Completion and response rates by dyad



5.3 Response Rates by Demographics

Table 5-5 illustrates the response rates in the context of respondent demographics.

Table 5-5. Dyad response rate by demographic variables[9]

	Starting sample of dyads	Survey/meter completion	
		Number of dyads	Percent
Parent Gender			
Male	1,514	354	23.4%
Female	3,513	1,125	32.0%
Parent Age			
18-39	1,513	449	29.7%
40-44	1,186	371	31.3%
45-49	1,096	333	30.4%
50+	1,232	326	26.5%
Education			
Less than high school graduate	73	14	19.2%
High school graduate—high school diploma or equivalent	876	256	29.2%
Some college but no degree	1,323	330	24.9%
Associate's degree in college	763	229	30.0%
Bachelor's degree in college	1,456	485	33.3%
Advanced or post-graduate degree	536	165	30.8%
Ethnicity			
Hispanic	475	134	28.2%
Non-Hispanic	4,552	1,345	29.5%
Race			
Non-Hispanic African American	1,183	254	21.5%
Other	3,844	1,225	31.9%
Adolescent Gender			
Male	2,548	738	29.0%
Female	2,479	741	29.9%
Adolescent Age			
12-13	1,655	454	27.4%
14-15	1,678	484	28.8%
16-17	1,694	541	31.9%
Overall	5,027	1,479	29.4%

[9] The demographic variables are from the screener survey.

References

Reg Baker, J. Michael Brick, Nancy A. Bates, Mike Battaglia, Mick P. Couper, Jill A. Dever, Krista J. Gile, Roger Tourangeau. Report of the AAPOR Task Force on Non-Probability Sampling. June 2013.

Hildebrand, M. 2014. Age-Group Comparability of Raw Accelerometer Output from Wrist- and Hip-Worn Monitors. Medicine & Sport in Sports & Exercise. 46(9):1816-1824.

Judkins, D., Krenzke, T., Piesse, A., Fan, Z., and Haung, W.C. (2007). Preservation of skip patterns and covariate structure through semi-parametric whole questionnaire imputation. *Proceedings of the Joint Statistical Meetings* [CD-ROM], pp. 3211-3218. Alexandria, VA: American Statistical Association.

Sergey Dorofeev and Peter Grant. Statistics for Real-Life Sample Surveys: Non-Simple-Random Samples and Weighted Data. Cambridge University Press, 2006.

Tourangeau, Roger, Frederick G. Conrad, and Mick P. Couper. (2013). *The Science of Web Surveys.* New York: Oxford University Press.

Appendix 1

Soft Edit Checks on FLASHE Web Surveys

There were no hard edits in FLASHE; all edits were soft. This means that warnings were displayed on the screen to notify the respondent of an out of range answer, which prompted the respondent to verify that his or her response was indeed correct. However, the soft nature meant that, despite the warning, the respondent could close out of the warning and click next in the survey to continue on and leave the improbable answer in place.

Survey	Variable	Edit
Adolescent Demographics	THEIGHTIN	Out of range = greater than 12
	THEIGHTFT + THEIGHTIN	Out of range = <3 or >7
	TWEIGHT	Out of range = <60 or >300
Parent Demographics	PHEIGHTIN	Out of range = greater than 12
	PHEIGHTFT + PHEIGHTIN	Out of range = <3 or >7
	PWEIGHT	Out of range = <70 or >400
Adolescent Diet	TDKNFV	Out of range = greater than 7
	TDKNFV + TDKNFVNS	Respondent could not enter a number and check the box
Parent Diet	PDKNFV	Out of range = greater than 7
	PDKNFV + PDKNFVNS	Respondent could not enter a number and check the box
Adolescent Physical Activity	TP30DAYSMOK + TP30DAYNOSM	Respondent could not enter a number and check the box
	TPAGESMOKE + TPNVRSMOKE	Respondent could not enter a number and check the box
Parent Physical Activity	PPVIGDAYS + PPVIGNONE	Respondent could not enter a number and check the box
	PPVIGHRS	Out of range = >24
	PPVIGMINS	Out of range = >1,440
	PPVIGHRS + PPVIGMINS + PPVIGDK	Respondent could not enter numbers and check the box
	PPVMODDAYS	Out of range = greater than 7
	PPMODDAYS + PPMODNONE	Respondent could not enter a number and check the box
	PPMODHRS	Out of range = >24
	PPMODMINS	Out of range = >1,440
	PPMODHRS + PPMODMINS + PPMODDK	Respondent could not enter numbers and check the box
	PPVWLKDAYS	Out of range = greater than 7
	PPWLKDAYS + PPWLKNONE	Respondent could not enter a number and check the box
	PPWLKHRS	Out of range = >24
	PPWLKMINS	Out of range = >1,440
	PPWLKHRS + PWLKMINS + PPWLKDK	Respondent could not enter numbers and check the box
	PPVSITDAYS	Out of range = greater than 7
	PPSITDAYS + PPSITNONE	Respondent could not enter a number and check the box

Survey	Variable	Edit
	PPSITHRS	Out of range = >24
	PPSITMINS	Out of range = >1,440
	PPSITHRS + PPSITMINS + PPSITDK	Respondent could not enter numbers and check the box
	PP30DAYSMOK + PP30DAYNOSM	Respondent could not enter a number and check the box
	PPAGESMOKE + PPNVRSMOKE	Respondent could not enter a number and check the box
	PPLASTCIG	Forced date format
	PPLASTCIG + PPNOTSMOKE	Respondent could not enter numbers and check the box

Appendix 2

Parent Enrollment Emails and Consent Forms

Initial Invitation Email to the Parent

Dear [ParentFirstName] [ParentLastName],

I am pleased to tell you about the Family Life, Activity, Sun, Health, and Eating (FLASHE) Study. This is an important study about daily lifestyle practices that may affect people's health. This study is sponsored by the US Department of Health and Human Services (HHS). The study will involve you and your teenager each completing two online surveys - one about eating and one about physical activity. We have hired a private research firm, Westat, to help us with this study. Westat will be sending you information regarding the FLASHE Study in all future communications.

The parent surveys are intended for you, [ParentFirstName] [ParentLastName], and only you should complete them. As a thank you, you will receive $5 for each survey you complete. Similarly, your teenager, [TeenFirstName] [TeenLastName], born [Persondob] will also complete two surveys. The teenager surveys are intended for [TeenFirstName] [TeenLastName] and only [TeenFirstName] [TeenLastName] should complete them. As a thank you, [TeenFirstName] [TeenLastName] will also receive $5 for each survey.

Before you can complete the surveys, we need to get consent for your participation, as well as permission for your teenager's participation.

To get started and let us know whether or not you will participate in the FLASHE Study, please use the information below to enroll at the study website. We ask that you enroll and get started within five days of receiving this email.

URL – http://FLASHEStudy.westat.com

PIN – (PersonPin)

Feel free to contact the Westat FLASHE Research Team at FLASHEStudy@Westat.com or toll free at 1-855-396-3074 if you have any questions.

If you choose to participate, your responses will help inform research and efforts at HHS to promote healthier lifestyles and behaviors among teenagers and their families in the US. Thank you for your consideration in participating in this important study!

Sincerely,

Linda Nebeling, PhD, MPH, RD, FADA
FLASHE Project Officer
National Institutes of Health
U.S. Department of Health and Human Services

Consent Form for Parent Participation

Before we can officially enroll you in the FLASHE study, we need to obtain your consent to participate. Please read the statements below, mark the appropriate selection, and then click "Next" at the bottom of the screen.

There are some things you should know about FLASHE:

- Your participation is voluntary.
- You may stop your participation in the study at any time.

The purpose of the FLASHE activities is to conduct research on daily lifestyle behaviors that may affect health. This study involves your completion of two online surveys. You are one of 2,500 adults who will be participating in the surveys. One survey will focus on your physical activity, and the other will focus on your eating habits. You will receive $5 for each survey you complete. There are no health benefits to you for participation in FLASHE.

To protect your privacy:

- Your responses will be private to the extent allowed under the law and will not be shared with anyone, including [teen name].
- A secure server is used for all surveys completed online so your responses cannot be seen or accessed by unauthorized third parties.
- All responses will be given a code that will not be linked to your name or other personal information.
- Your answers will be grouped with those of other people who complete the surveys and you will not be individually identified.
- Reports from the study will not include your name or other information that could identify you.

Before consenting, if you have any questions about any part of this study or your rights as a participant click the "Contact Us" link above (you will be able to begin again after obtaining feedback from the study). Else, please indicate your consent to participate in the surveys:

___ I consent to participate in the study surveys.

___ I do not consent to participate in the study surveys.

Parent Consent Form for Adolescent Participation

Before we can officially enroll your teenager, [teen name], into the FLASHE study, we need to obtain your permission for [him/her] to participate since [he/she] is under the age of 18. Please read the statements below, mark the appropriate boxes, and then click "Next" at the bottom of the screen.

The purpose of the FLASHE activities is to conduct research on daily lifestyle practices that may affect health. The first part of the study involves the completion of two online surveys by your teenager. Your teenager is one of 2,500 teenagers who will be included in this study. One survey will focus on your teenager's physical activity, and the other will focus on your teenager's eating habits. Your teenager will receive $5 for each completed survey. There are no health benefits to your teenager for participation in FLASHE.

To protect your teenager's privacy:

- [Teen's name]'s responses will be private to the extent allowed under the law and will not be shared with anyone, including you.
- A secure server is used for all surveys completed online so responses cannot be seen or accessed by unauthorized third parties.
- All responses will be given a code that will not be linked to your teenager's name or other personal information.
- [His/her] answers will be grouped with those of other people who complete the surveys.
- Reports from the study will not include your name or your teenager's name or other information that could individually identify your teenager.

Before consenting, if you have any questions about any part of this study or your teenager's rights as a participant, click the "Contact Us" link above (you will be able to begin again after obtaining feedback from the study). Also?, please indicate your permission for your teenager to participate in the survey portion of the study:

___ I permit my teenager to participate in the study surveys.

___ I do not permit my teenager to participate in the study surveys.

Please click the "Next" button below to officially record your permission. Your teenager will also be asked to provide his/her assent (approval) before any surveys are sent to [him/her].

Parent Consent Form for Adolescent Participation in the Motion Study

Your teenager has also been asked to participate in an additional portion of the study that will measure his/her physical activity and motion. Participation in this separate motion sensing study is completely voluntary and does not affect participation in the survey pieces of the study. A total of 900 teenagers will be participating in this part of the study. *If selected*, your teenager will be asked to wear a wrist accelerometer (a monitor that records body movement) for seven days in a row and to complete a log recording when he/she wore the accelerometer. After the seven-day wear period, your teenager will be asked to return the accelerometer and log in a pre-paid envelope that will be provided. Your teenager will receive [$20/$40] for participation in the motion sensing study. Although wearing the monitor may cause some minor discomfort, the device does not cause any pain or harm. Click here for additional information about the motion sensing device.

Please indicate your permission for your teenager to participate in the Motion Study portion of FLASHE:

___ I permit my teenager to participate in the motion study.

___ I do not permit my teenager to participate in the motion study.

Please click the "Next" button below to officially record your permission. Your teenager will also be asked to provide his/her assent (approval) before any surveys or motion sensing device are sent to [him/her].

Appendix 3

Adolescent Enrollment Emails and Consent Forms

Adolescent Enrollment Emails and Consent Forms

Initial Invitation Email to the Adolescent

Dear [TeenFirstName] [TeenLastName],

I am pleased to tell you about the Family Life, Activity, Sun, Health, and Eating (FLASHE) Study, for which your [parentRelation], [ParentFirstName] [ParentLastName], has given permission for you to participate. This is an important study about daily lifestyle practices that may affect your health, and this study is sponsored by the US Department of Health and Human Services (HHS). The study will involve you and your [parentRelation] each completing two surveys – one focused on diet and one focused on physical activity. We are working with a private company, Westat, to help us with this study. Westat will be sending you information about the FLASHE Study in all future communications.

The teen surveys are intended for you and only you should fill them out. As a thank you, you will receive $5 for each survey you complete.

Even though your [parentRelation] has already given permission for you to participate, we need to obtain your permission as well.

To get started and let us know whether or not you will participate in the FLASHE Study, please use the information below to log in to the study website. We ask that you log in and get started within five days of receiving this email.

URL – http://FLASHEStudy.westat.com

PIN – (PersonPin)

Feel free to contact the Westat FLASHE Research Team at FLASHEStudy@Westat.com or at 1-855-396-3074 if you have any questions.

If you choose to participate, your responses will help inform research and efforts at HHS to promote healthier lifestyles and behaviors among teenagers and their families in the US. Thank you for your consideration in participating in this important study!

Sincerely,

Linda Nebeling, PhD, MPH, RD, FADA
FLASHE Project Officer
National Institutes of Health
U.S. Department of Health and Human Services

Assent Form for Adolescent Participation

Before we can officially sign you up for the Family Life, Activity, Sun, Health, and Eating (FLASHE) study, we want to make sure you agree to participate. Your [RELATIONSHIP], [PARENT NAME] has already given permission for you to participate but that does not mean that you have to participate in the study if you do not want to. Please read the statements below, mark the appropriate boxes, and click "Next" at the bottom of the screen.

There are some things you should know about FLASHE:

- Your participation is voluntary. You don't have to do any of the study activities if you don't want to.
- You may stop your participation in the study at any time. Even if you have already started the study, you can stop if you want to.

The purpose of the FLASHE activities is to conduct research on daily lifestyle practices that may affect health. The first part of this study involves doing two online surveys. You are one of 2,500 teenagers who will be participating in the surveys. One survey will be about your physical activity, and the other will be about your eating habits. You will receive $5 for each survey you complete. Your [RELATIONSHIP], is participating in the FLASHE study and will also be completing two surveys. There are no health benefits to you for participation in FLASHE.

To protect your privacy:

- Your responses will not be shared with anyone, including your [relationship], and will be kept private to the extent allowed under the law.
- A secure server is used for all surveys completed online so your responses cannot be seen or accessed by anyone who should not have access.
- All responses will be given a code that will not be linked to your name or other personal information.
- Your answers will be grouped with those of other people who complete the surveys.
- Reports from the study will not include your name or other information that could identify you.

Before consenting, if you have any questions about any part of this study or your rights as a participant, click the "Contact Us" link above (you will be able to begin again after obtaining feedback from the study). Else, please indicate your agreement to participate in the surveys:

___ I agree to participate in the study surveys.

___ I do not agree to participate in the study surveys.

If you turn 18 during the course of the FLASHE study, this form will be considered equivalent to an adult consent form. Please click the "Next" button at the bottom of the screen to officially record your agreement.

Adolescent Assent Language for Participation in the Motion Study

You have also been asked to participate in an additional part of the study that will measure physical activity levels. A total of 900 teenagers will be participating in this part of the study. *If selected*, you will be asked to wear a wrist accelerometer (a monitor that records body movement) for seven days in a row and to fill in a log recording when you wore the accelerometer. After the seven-day wear period, you will be asked to return the accelerometer and log in a pre-paid envelope that will be provided. You will be given [$20/$40] for participation in the motion sensing study. Although wearing the monitor may be a little uncomfortable for some people, it does not hurt. Click here for additional information about the motion sensing device.

Please indicate your agreement to participate in the Motion Study portion of FLASHE:

___ I agree to participate in the motion study.

___ I do not agree to participate in the motion study.

If you turn 18 during the course of the FLASHE study, this form will be considered equivalent to an adult consent form. Please click the "Next" button at the bottom of the screen to officially record your agreement.

Appendix 4

Rules for Survey Partial Completes

Because first and second surveys were slightly different (with the demographics section included in the first survey only), two sets of rules were developed:

- **Break Off Rule for First Surveys.** If the first survey was a partial complete (break off somewhere before demographics), it **was not** counted as a "complete" because the demographics were missing. If the breakoff occurred within the demographic section, the survey **was** counted as a "complete" as long as the first two screens of the demographics were completed.

- **Break Off Rules for Second Surveys:**

  - **Parent Physical Activity survey.** The survey was counted as a "complete" if 80 percent was completed through page 13. This break off point means that all of the physical activity section was completed along with the short sections on "your neighborhood" and "using electronic devices." These sections provide the critical data on the parental behaviors of physical activity and use of electronics.

  - **Adolescent Physical Activity survey.** The survey was counted as a "complete" if 80 percent was completed through page 30. This break off point means that all of the Youth Activity Profile questions were completed along with the short section on "using electronic devices." These sections provide the critical data on the adolescent behaviors of physical activity and use of electronics.

  - **Parent Diet survey.** The survey was counted as a "complete" if 80 percent was completed through page 15. This break off point means that the entire weekly recall in "what you eat and drink" has been completed.

  - **Adolescent Diet survey.** The survey was counted as a "complete" if 80 percent was completed through page 14. This break off point means that the entire weekly recall in "what you eat and drink" was completed.