In Class Exercise: GxE Harmonization

You continue to work with collaborators on the FAKE study. They decide to follow-up on their candidate gene study with a genome-wide association study (GWAS). They were only able to afford genome-wide genotyping on a subset of the subjects, so they decide to reach out to their collaborators in the Meta-Analysis of Diet and Environment for Understanding Phenotypes (MADE-UP) consortia. The next page has "table 1" for the 8 studies in this consortia. Brainstorm with your group about the following:

1. What are potential issues/challenges that you might encounter in analyzing this data?
2. What are solutions might you use for some of these challenges?
3. What additional information would be most helpful for you to have?

Table 1: Overview of Subject Characteristics

	Study 1: Cohort		**Study 2: Case-control**		**Study 3: Case-control**		**Study 4: Cohort**		**Study 5: Case-control**		**Study 6: Case-control**		**Study 7: Cohort**		**Study 8: Cohort**	
	Case	Control	Case	Control	Case	Control	Case	Control	Case	Control	Case	Control	Case	Control	Case	Control
N	931	1,435	1,410	1,666	2,031	2,044	69	238	465	465	5,450	5,475	1,064	1,202	1,381	1,303
% Female	32.0%	43.2%	32.1%	44.1%	19%	16.5%	34.8%	26.2%	26.7%	26.8%	56%	56%	60%	55%	0%	0%
Mean Age (yrs)	65.5	65.8	65.1	67.5	59.8	61.3	58.1	57.8	62.4	62.8	64.0	64.2	61.3	62.8	65.4	65.4
% Strawberry eaters	47.7%	45.8%	45%	40%	65.2%	56.2%	60.9%	65.2%	55.4%	55.6%	59.3%	52.1%	58.2%	59.0%	65.3%	66.4%
% Rhubarb eaters	21.6%	15.1%	25.6%	24.5%	36.7%	34.5%	12.1%	7.1%	14.1%	10.2%	NA	NA	28.4%	33.4%	14.9%	10.7%
Instrument for dietary assessment	FFQ	FFQ	FFQ	FFQ	5 Q survey	5 Q survey	FFQ	FFQ	24 hour recall	24 hour recall	5 Q survey	5 Q survey	FFQ	FFQ	24 hour recall	24 hour recall
Country	USA	USA	USA	USA	China	China	Japan	Japan	Germany	Germany	USA	USA	Canada	Canada	USA	USA
Genotyping Platform	Illumina 550K		Affymetrix 6.0		Illumina 550K		Illumina 1M		Illumina Omni Express		Illumina Omni Express		Affymetrix Axiom-CEU		Affymetrix Axiom-CEU	