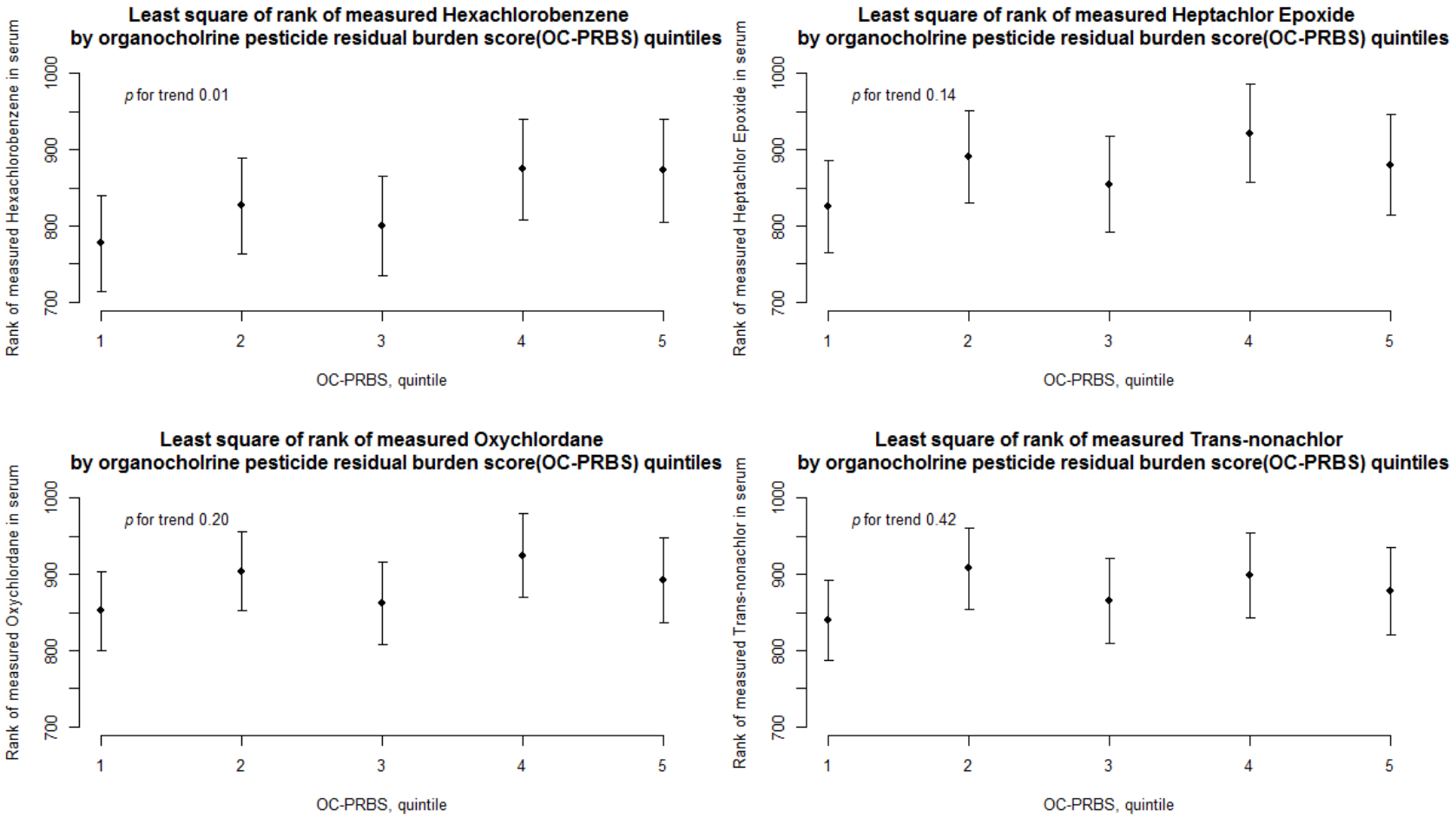
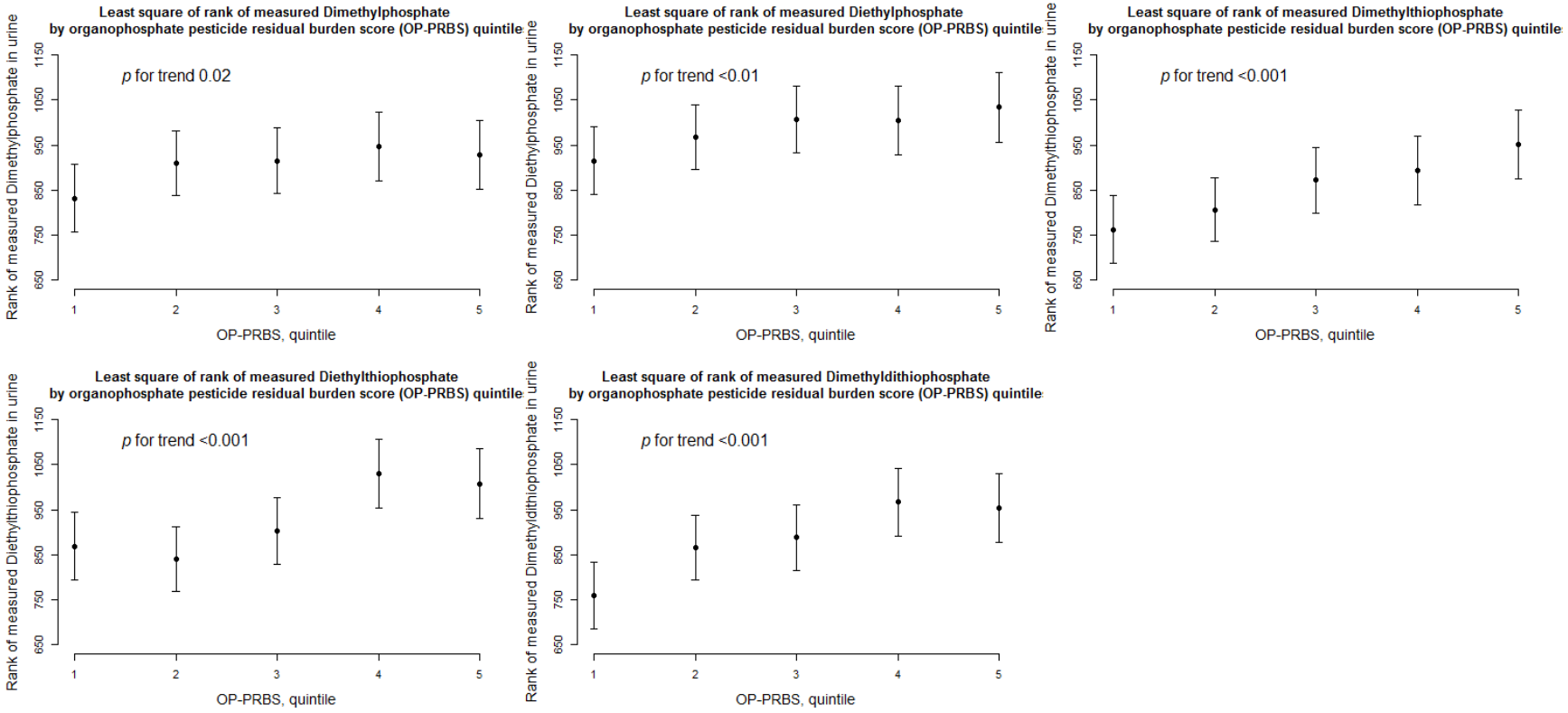


Supplemental Fig. 1. The ability of OC-PRBS to differentiate high versus low level of individual organochlorine pesticides intake. The general linear models adjusted for age (< 20 years, 20-40 years, 40-60 years and over 60 years), gender (male/female), race (white/non-white), smoking status (never smoker, past smoker, current 1-10 cigarettes/day, current 11-20 cigarettes/day and current 21 more cigarettes/day), body mass index (<25kg/m^2, 25-29.9kg/m^2, ≥30kg/m^2), physical activity (vigorous or moderate activity over past 30 days, yes/no) and pest control in past month (yes/no).



Supplemental Fig. 2. The ability of OP-PRBS to differentiate high versus low level of individual organophosphate pesticides intake. The general linear models adjusted for age (< 20 years, 20-40 years, 40-60 years and over 60 years), gender (male/female), race (white/non-white), smoking status (never smoker, past smoker, current 1-10 cigarettes/day, current 11-20 cigarettes/day and current 21 more cigarettes/day), body mass index (<25kg/m^2, 25-29.9kg/m^2, ≥30kg/m^2), physical activity (vigorous or moderate activity over past 30 days, yes/no) and pest control in past month (yes/no).

Supplemental table 1

Distribution of pesticide rank score among 29 included fruits and vegetables.

	Commodity	Pesticide Rank Score
1	onions	3
2	orange juice	3
3	sweet corn, frozen	3
4	bananas	4
5	grapefruit	4
6	peaches	4
7	tomatoes	4
8	beans	5
9	cauliflower	5
10	sweet potatoes	5
11	watermelon	5
12	broccoli	6
13	cantaloupe	6
14	oranges	6
15	pears	6
16	raisins	6
17	summer squash	6
18	applesauce	7
19	apples	7
20	carrots	7
21	cucumbers	7
22	lettuce	7
23	plums	7
24	grapes	8
25	collard	8
26	kale	8
27	spinach	8

28	sweet bell peppers	8
29	strawberries	9

Supplemental table 2

Pesticides included in calculating OC-PRBS and OP-PRBS. [a]

Pesticide used in deriving OC-PRBS	Pesticide used in deriving OP-PRBS
Aldrin	Diazinon
Captan	Azinphos methyl
Dieldrin	Malathion
Diuron	Parathion methyl
Anilazine	Parathion methyl
Endrin	Mevinphos Total
Heptachlor	TEPP
Monuron	Ethion
Lindane(BHC gamma)	Disulfoton
Methoxychlor Total	Coumaphos
Neburon	Phorate
Tetradifon	Chlorpyrifos
Folpet	Fonofos
Linuron	Phosmet
DCPA	Phosalone
Heptachlor epoxide	Methamidophos
Dicloran	Dimethoate
Tecnazene	Ethoprop
Trifluralin	Tetrachlorvinphos
Terbacil	Fenthion
Chlorothalonil	Omethoate
Chlordane trans	Phorate sulfone
Chlordane cis	Phorate sulfoxide
Captafol	Methidathion
Benfluralin	Carbophenothion
Dicofol o,p'	Phosphamidon
Dicofol p,p'	Acephate

Fenarimol
Methoxychlor p,p'
Methoxychlor olefin
Metolachlor
Pentachlorophenol
Hexachlorobenzene (HCB)
Propanil
Oxychlordane
Pentachloroaniline (PCA)
Pentachlorobenzene (PCB)
Pentachlorophenyl methyl sulfide
Vinclozolin
Pronamide
Procymidone
Norflurazon
Tetrahydrophthalimide (THPI)
Oxadiazon
Iprodione
Diflubenzuron
Propachlor
Clofentezine
Fluometuron
Oxyfluorfen
Clomazone
Norflurazon desmethyl
Ethalfluralin
Etridiazole
Nitrapyrin
Acifluorfen
Fluridone

Terbufos
Malathion oxygen analog
Dicrotophos
Disulfoton sulfone
DEF (Tribufos)
Oxydemeton methyl
Chlorpyrifos methyl
Fenamiphos
Oxydemeton methyl sulfone
Isofenphos
Sulfotep
Dichlorvos (DDVP)
Monocrotophos
Parathion oxygen analog
Fenitrothion
Diazinon oxygen analog
Ethion di oxon
Pirimiphos methyl
Mevinphos
Sulprofos
Coumaphos oxygen analog
Chlorfenvinphos beta
Propetamphos
Fenamiphos sulfone
Fenamiphos sulfoxide
Chlorpyrifos oxygen analog
Parathion methyl oxygen analog
Phorate oxygen analog
Phosalone oxygen analog
Cadusafos

Butachlor
Acetochlor
Endosulfan I
Endosulfan II
Endosulfan sulfate
BHC alpha
BHC beta
DDT p,p'
DDT o,p'
DDD p,p'
DDD o,p'
DDE p,p'
DDE o,p'
Triforine
Chloramben
Imidacloprid
Lactofen
Fipronil
Flumetsulam
3,5-Dichloroaniline
Acetochlor ethanesulfonic acid (ESA)
Acetochlor oxanilic acid (OA)
Alachlor ethanesulfonic acid (ESA)
Alachlor oxanilic acid (OA)
DCPA monoacid
Metolachlor ethanesulfonic acid (ESA)
Metolachlor oxanilic acid (OA)
Niclosamide
Chlorfenapyr
Terbufos sulfone
Phorate oxygen analog sulfone
Chlorethoxyfos
Tebupirimfos
Terbufos-O analog
Chlorfenvinphos total
Ethion mono oxon
Chlorpyrifos methyl O-analog
Sulprofos oxygen analog
Tebupirimfos oxygen analog

Isoxaflutole
Carfentrazone ethyl
Fludioxonil
Flufenacet
Forchlorfenuron
Thiamethoxam
Zoxamide
Pyridaben
Flutolanil
Tolclofos methyl

[a] Not every pesticides included were detected in commodity samples.

Supplemental table 3

Comparison of three studies that aimed to derive pesticide exposure instruments that could predict health outcome.

Leading author	Types of pesticides evaluated	Features	Limitations
Chiu, et al	Overall pesticide exposures	Fruits and vegetables were categorized into highly-contaminated and less-contaminated classes. The score was associated with low-semen quality for participants consuming highly-contaminated fruits and vegetables, and no association was found for less-contaminated fruits and vegetables	The heterogeneous effects of pesticides residues on fruits and vegetables were not considered and the variations of detectable pesticides residues may be underestimated
Curl, et al	Organophosphate pesticide	Food consumption-chemical residual (FCCR) approach was used to calculating the OP pesticide exposure from diet and the score was associated with urinary DAP concentrations in a dose-response fashion	Lack of assessment of other classes of pesticides exposure
Hu, et al (current study)	Overall pesticide exposure, organochlorine and organophosphate pesticide	Rank-based score method was used to derive PRBS, OC-PRBS and OP-PRBS. All three scores were significantly correlated with serum and urinary pesticide metabolite levels	The scores were rank-based and thus could not reflect absolute exposure levels