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Tuberculosis infection and hypertension: Prevalence estimates from the US National Health and Nutrition Examination Survey

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2 3	35	Summary:
4 5	36	The prevalence of hypertension was high (59%) among adults with tuberculosis infection in the
6	37	U.S. In addition, we found that the prevalence of hypertension was significantly higher among
7 8	38	adults with positive QFT without established hypertension risk factors.
9 10	39	
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48 ABSTRACT

49 Objectives: Latent Tuberculosis infection (LTBI) is marked by dynamic host-pathogen
50 interactions with persistent low-grade inflammation and is associated with increased risk of
51 cardiovascular diseases (CVD) including acute coronary syndrome, myocardial infarction, and
52 stroke. However, few studies assess the relationship between LTBI and hypertension, an
53 intermediate of CVD. We sought to determine the association between LTBI and hypertension
54 using data representative of the adult US population.

Methods: We performed cross-sectional analyses using data from the 2011–2012 US National Health and Nutrition Examination Survey (NHANES). Eligible participants included adults with valid QuantiFERON-TB Gold In-Tube (QFT-GIT) test results who also had blood pressure measures and no history of TB disease. LTBI was defined by a positive QFT-GIT. We defined hypertension by either elevated measured blood pressure levels (i.e., systolic ≥130mmHg or diastolic \geq 80mmHq) or known hypertension indications (i.e., self-reported previous diagnosis or use of antihypertensive medications). Analyses were performed using robust quasi-Poisson regressions and accounted for the stratified probability sampling design of NHANES. Results: The overall prevalence of LTBI was 5.7% (95%CI 4.7-6.7) and hypertension was present among 48.9% (95%CI 45.2–52.7) of participants. The prevalence of hypertension was higher among those with LTBI (58.5%, 95%CI 52.4–64.5) than those without LTBI (48.3%, 95%CI 44.5–52.1) (prevalence ratio [PR]=1.2, 95%CI 1.1–1.3). However, after adjusting for confounders, the prevalence of hypertension was similar for those with and without LTBI (adjusted PR=1.0, 95%CI 0.9 –1.1). Among individuals without CVD risk factors of elevated BMI (PR_{normal BMI}=1.6, 95%CI 1.2–2.0), hyperglycemia (PR_{euglycemia}=1.3, 95%CI 1.1–1.5), or cigarette smoking (PRnon-smokers=1.2, 95%CI 1.1–1.4), the unadjusted prevalence of hypertension was higher among those with LTBI vs. no LTBI (Figure 1).

1 2		
2 3 4	72	Conclusions: More than half of adults with LTBI in the US had hypertension. Importantly, we
5 6	73	observed a relationship between LTBI and hypertension among those without established CVD
7 8	74	risk factors.
9 10	75	
11 12	76	Strengths and limitations
13 14	77	Strengths:
15	78	- These analyses were conducted using data representative of civilian, non-
16 17	79	institutionalized US adults, and thus, provide a robust population estimate of the
18 19	80	prevalence of latent tuberculosis infection and hypertension in the US
20	81	- Comprehensive definitions and different cut-offs of hypertension were used (i.e.,
21 22	82	measured blood pressure level, previous diagnosis hypertension by healthcare
23	83	providers) to model the association between latent tuberculosis infection and
24 25	84	hypertension
26	85	Limitations:
27 28	86	Our findings may not be representative to other regions with higher burdens of
29 30	87	tuberculosis
31	88	- The cross-sectional study design of NHANES prevented us from assessing the
32 33	89	temporal relationship between latent tuberculosis infection and hypertension
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> INTRODUCTION

About one-guarter of the world's population (~2 billion) has been infected to Mycobacterium tuberculosis (Mtb). ¹ Among individuals infected with the bacteria, 5-10% are at risk of developing TB disease at some point in their life. ²³ Tuberculosis infection (TBI), or most commonly known as latent tuberculosis infection or LTBI, is increasingly recognized as a heterogenous clinical state in which some individuals have dynamic host-pathogen interactions with persistent low-grade inflammation. This immune dysregulation has been associated with an increased risk of cardiovascular diseases (CVD) including acute coronary syndromes, myocardial infarction, and stroke.¹⁴⁻¹² This convergence of TBI and CVD risk poses a particular challenge for low- and middle-income countries where TBI is most prevalent and incidence of chronic non-communicable diseases, including CVD, is increasing rapidly. ^{13 14} Improved understanding of the impact of TBI on CVD risk is vital in settings where TBI and CVD are highly co-prevalent in order to design public health intervention programs aiming to reduce the burden of two diseases. Epidemiologic data from observational cohort studies support an increased risk of CVD among people with TB disease.⁸⁻¹² Several studies also indicated that hypertension, an established intermediate of CVD, may be more common among patients with TB disease compared to non-TB controls ⁸ ¹¹ ¹⁵⁻¹⁷. Furthermore, CVD was the leading contributor to post-TB mortality, accounting for 15 – 26% of deaths among TB survivors in a recent systematic review and meta-analysis. ¹⁸ In addition to these associations between TB disease and CVD, recent observational studies have found an association between TBI and various CVDs including acute myocardial infarction and coronary artery disease. ^{9 19 20}. However, studies assessing the association between TBI and hypertension remain limited. To date, few studies have evaluated the relationship between TBI and hypertension. One cohort study from a large metropolitan healthcare system in the U.S. reported that

1 2		
2 3 4	116	individuals with TBI had greater incidence of hypertension compared to those without TBI and
5 6	117	that rates were highest among those untreated for TBI. ⁵ Furthermore, it is unknown whether the
7 8	118	quantitative measures of IGRA, which may indicate the underlying mycobaterial burden and has
9 10	119	been associated with increased risks of progression to TB disease ²¹⁻²⁴ , is associated with
11 12	120	hypertension. Improved understanding of the association between TBI, quantitative measures of
13 14	121	IGRA, and and hypertension may clarify the role that TB prevention efforts in reducing the
15 16	122	burden of CVD, both in the U.S. and globally.
17 18 19	123	Given existing knowledge gaps, we aimed to estimate the association between TBI and
20 21	124	hypertension prevalence. We also investigated whether the magnitude of host immune
22 23	125	responses to Mtb was associated with hypertension among those with positive IGRA test
24 25	126	results.
26 27	127	
28 29	128	METHODS
30 31	129	Study Design and Eligible Participants
32 33	130	We performed an analysis of cross-sectional data from the 2011 – 2012 US National
34 35	131	Health and Nutrition Examination Survey (NHANES), the most recent NHANES cycle released
36 37 38	132	that includes measures of TBI. NHANES is a study led by the US Centers for Disease Control
39 40	133	and Prevention (CDC) which aims to assess the health and nutritional status of non-
40 41 42	134	institutionalized civilians representative of the US population. NHANES collects demographic
43 44	135	and health information using questionnaires administered by trained interviewers and
45 46	136	standardized physical examinations performed in mobile examination centers. Eligible NHANES
47 48	137	participants for our analyses were adults (≥18 years) with valid TBI test results and blood
49 50	138	pressure measurements, and no history of TB disease (Figure 1).
51 52	139	
53 54	140	Study Measures and Definitions
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Our primary study outcome, any hypertension, was defined as having either (1) "measured hypertension," defined as an average systolic blood pressure level of ≥130 mmHg or diastolic blood pressure level of \geq 80 mmHg across three consecutive measurements, or (2) a self-reported previous hypertension diagnosis by a health care provider or current use of antihypertensive medications (i.e., known hypertension). We categorized measured blood pressure levels into "normal" (i.e., systolic <120mmHg and diastolic <80mmHg), "borderline hypertension" (i.e., systolic 120-129mmHg and diastolic <80mmHg), "stage 1 hypertension" (i.e., systolic 130 – 139mmHg or diastolic 80-89mmHg), and "stage 2 hypertension" (i.e., systolic ≥140mmHg or diastolic ≥90mmHg) according to American College of Cardiology/American Heart Association guidelines. ²⁵ Among participants with a prior diagnosis of hypertension, we classified blood pressure as "controlled" (systolic <130 mmHg and diastolic <80 mmHg) or "uncontrolled" (systolic \geq 130mmHg or diastolic \geq 80mmHg) with or without a self-reported use of antihypertensive medications. Our primary study exposure, TBI, was defined by a positive QuantiFERON-TB Gold In Tube or QFT test. Individuals with indeterminate test results were excluded from our analyses. For those with a positive QFT, we also extracted the quantitative results and defined the IFN- γ TB antigen response by subtracting TB NIL control values from TB antigen values (i.e., Aq-NIL values). To express IFN- γ TB antigen responses, instead of using the traditional manufacturer cut-off of ≥ 0.35 , we used the 4.00 cut-off as previous studies showed that individuals with Ag-NIL values \geq 4.00 are at greater risk from developing TB disease. ^{21 23 24} Thus, in our analyses, Ag-NIL values were categorized as "low" (<4 IU/mI) or "high" (≥4 IU/mI). For a sensitivity analysis, we performed a subgroup analysis of participants with both QFT and tuberculin skin test (TST) results. We defined "confirmed TB infection" when both TST and QFT results were positive and "no TB infection" if both TST and QFT results were negative. Participants with

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2 3 4	165	discordant TST and QFT results (i.e., TST negative and QFT positive, TST positive and QFT
5 6	166	negative) were classified as "any discordance."
7 8	167	Other important covariates, including age, sex, race, educational attainment, income to
9 10	168	poverty ratio, country of birth, body mass index (BMI), diabetes mellitus status, HIV status, lipid
11 12	169	profile, self-reported smoking behavior, alcohol consumption, statin prescription, and previous
13 14	170	diagnosis of coronary heart disease, myocardial infarction, or stroke were also abstracted. We
15 16	171	classified BMI as "underweight" (BMI <18.5 kg/m²), "normal" (BMI 18.5 – 24.9 kg/m²),
17 18 19	172	"overweight" (BMI 25 – 29.9 kg/m²), and obese (BMI ≥30kg/m²). ²⁶ As NHANES grouped
20 21	173	individuals aged \ge 80 years in one category, we divided age into quartile ranges and grouped as
22 23	174	"quartile 1 (18 – 31 years)", "quartile 2 (32 – 47 years)", "quartile 3 (48 – 62 years)", and
24 25	175	"quartile 4 (≥63 years)" to account for the non-linearity of age in sensitivity analyses.
26 27	176	
28 29	177	Statistical Analysis
30 31	178	We estimated weighted prevalence and 95% confidence intervals (CI) to determine the
32 33 34	179	burden of TBI and hypertension in the US adult population. Rao-Scott Chi-square tests were
35 36	180	used to assess the bivariate association between participants' demographic and clinical
37 38	181	characteristics, TBI, Ag-NIL values, and hypertension. Multivariable robust Poisson regression
39 40	182	with quasi-likelihood was used to estimate the association between TBI and hypertension,
41 42	183	expressed in prevalence ratios (PRs) and 95% CI. The same regression approach was used to
43 44	184	estimate the association between Ag-NIL responses and hypertension. In addition to prevalence
45 46	185	ratios, we also estimated prevalence differences (PDs) and their 95%CI. Covariates included in
47 48	186	the multivariable models were based on bivariate associations (Table S1 and S2), directed
49 50 51	187	acyclic graphs ²⁷ , and established risk factors reported in previously published studies. We also
52 53	188	assessed interaction between TBI and hypertension by participant characteristics (i.e., age,
54 55	189	BMI, glycemic status, smoking status) on the additive (prevalence difference) and multiplicative
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3 4	190	(prevalence ratio) scales. All analyses were performed using survey package in R and
5 6	191	accounted for the weighted stratified probability sample design of NHANES with a two-sided p-
7 8	192	value less than 0.05 considered statistically significant.
9 10	193	
11 12	194	Subgroup and Sensitivity Analyses
13 14	195	Subgroup analyses were performed among those with previously diagnosed
15 16 17	196	hypertension to determine the association between TBI (including Ag-NIL values) and controlled
17 18 19	197	hypertension. Sensitivity analyses were performed to quantify systematic errors due to a) TBI
20 21	198	misclassification, b) covariate misspecification in multivariable models, and c) the classification
22 23	199	of age as a confounder. To address error resulting from TBI misclassification, we ran additional
24 25	200	models with confirmed TB infection as the exposure. To quantify errors due to covariate
26 27	201	misspecification, we ran multiple robust Poisson models with different sets of covariates and
28 29	202	observed changes in prevalence ratios estimates across models. To account for the
30 31	203	confounding effect of age, we ran multiple iterations of robust Poisson models with different
32 33	204	forms of age measures (i.e., continuous and age quartiles).
34 35 26	205	
36 37 38	206	RESULTS
39 40	207	Study population
41 42	208	In NHANES 2011 – 2012, 9,338 participants were surveyed and examined, 60.1%
43 44	209	(5,615/9,338) of whom were ≥18 years old (Figure 1). Among included adults, 259 did not have
45 46	210	valid blood pressure measurements. Of those with valid blood pressure measurements, 32 had
47 48	211	a previous diagnosis of TB disease and 335 had a missing QFT, with 4,989 participants meeting
49 50	212	eligiblity for this analytic cohort. The weighted prevalence of TBI in the cohort was 5.7% (95%
51 52	213	confidence interval [CI] 4.7–6.7) and any hypertension was present for 48.9% (95%CI 45.2 –
53 54	214	52.7) of participants (Table 1).
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58 59		9

1 2		
2 3 4	216	Associations between tuberculosis infection and hypertension
5	217	The prevalence of any hypertension was higher among those with TBI (58.5%, 95% CI
7 8	218	52.4 – 64.5) than those without TBI (48.3%, 95%CI 44.5 – 52.1) (prevalence difference [PD]
9 10	219	10.2%, 95%CI 5.0 – 15.4) (Table 1). After adjusting for potential confounders including age
11 12	220	(continuous), sex, race, educational attainment level (as a proxy of socioeconomic status),
13 14	221	country of birth, diabetes mellitus status, BMI, and smoking status, the prevalence of any
15 16	222	hypertension was similar among those with and without TBI (adjusted prevalence ratio [aPR]
17 18	223	1.0, 95%Cl 1.0 – 1.1). The association between TBI and hypertension was similar when
19 20 21	224	examining the two components used to define our primary outcome (i.e., measured
22 23	225	hypertension and self-reported hypertension/use of antihypertensive medications) both in the
24 25	226	crude and adjusted models (Table 1).
26 27	227	
28 29	228	Association between Ag-NIL values and hypertension
30 31	229	The prevalence of any hypertension was highest among those with TBI and high Ag-NIL
32 33	230	values (60.4%, 95%CI 53.0 – 67.7) compared to those with TBI and low Ag-NIL values (57.6%,
34 35	231	95%Cl 48.7 – 66.6) or those without TBI (48.3%, 95%Cl 44.5 – 52.1) (Table S3). After adjusting
36 37	232	for age and gender, however, the prevalence of any hypertension was similar among the three
38 39 40	233	QFT groups being compared (Table S4). Similar trends were also observed for the associations
41 42	234	between Ag-NIL values and both measured hypertension and self-reported previous diagnosis
43 44	235	of hypertension (Figure 2).
45 46	236	
47 48	237	Interaction analyses: established hypertension risk factors and HIV
49 50	238	We observed relationships between TBI and hypertension among participants without
51 52	239	established hypertension risk factors who would be considered at lower risk for CVD. For
53 54	240	example, comparing individuals with with and without TBI, the prevalence of any hypertension
55 56 57	241	was substantially higher among those with normal BMI (prevalence difference [PD] 17.7, 95%CI
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6.3 – 29.2), euglycemia (PD 11.3, 95%Cl 3.0 – 18.9), and non-smoking (PD 14.4, 95%Cl 4.2 – 24.5) groups (Table 2). Product terms for BMI, glycemic level, and smoking status were nonsignificant on the prevalence ratio scale (p < 0.05).

We also found that the association between TBI and hypertension was significantly different across HIV status. For instance, the prevalence difference of any hypertension comparing those with TBI to those without TBI was 4.1 percentage points (95%Cl -4.3 – 12.5) among those without HIV infection and 81.6 percentage points (95%CI 61.0 - 100.0) among those with HIV infection. After adjusting for age and gender, the adjusted prevalence ratio was 0.9 (95%CI 0.8 – 1.1) among those without HIV infection and 6.2 (95%CI 1.8 – 21.7) among those with HIV infection (statistical interaction p<0.01) (Table S5).

Subgroup and sensitivity analyses

From subgroup analyses conducted among those with known hypertension, the prevalence of controlled hypertension without medications was significantly lower among those with positive QFT (5.2%, 95%CI 2.0 - 8.3) compared to those with negative QFT (11.8%, 95%Cl 9.5 - 14.0), although the association was no longer significant after adjusting for key confounders (aPR 0.6, 95%Cl 0.4 – 1.1) (Table 3). Conversely, the prevalence of uncontrolled hypertension with medications, the more severe form of hypertension, although non-significant, were slightly higher among those with positive QFT compared to those with negative QFT (Figure 2).

In models with confirmed TB infection (i.e., positive QFT and positive TST) as the study exposure, the prevalence of any hypertension was highest among those with confirmed TB infection (60.8%, 95%CI 51.4 – 70.3) compared to those with no TB infection (49.6%, 95%CI 45.7 – 53.5) or those with discordant TST and QFT results (52.7%, 95%CI 43.9 – 61.6) (p=0.12) (Table S6). We observed similar trends in the crude and adjusted associations between TBI and hypertension when we used both QFT and TST (Table S7) vs. QFT alone to define TBI. Results

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3 4 5 6 7 8 9 10 11 12 13 14 15 16	268	from sensitivity analyses to quantify bias due to covariate misspecification in the multivariable	
	269	models indicated that prevalence ratios of any hypertension comparing those with positive QFT	Г
	270	to those with negative QFT were similar when age was treated continuously or grouped in	
	271	quartiles (ranged from 1.0 – 1.1) (Table S8).	
	272		
	273	DISCUSSION	
	274	Using data representative of US adult population, we found a high prevalence of	
17 18 19	275	hypertension (i.e., nearly 1 out of 2) in the 2011 – 2012 NHANES cycle. We reported similar	
20 21	276	adjusted prevalence of hypertension among individuals with or without TBI. In our study,	
22 23	277	individuals with positive QFT and high Ag-NIL values were more likely to have any	
24 25	278	hypertension, but less likely to have the more severe form of hypertension (i.e., uncontrolled	
26 27	279	hypertension without medications). We also observed that the association between TBI and	
28 29	280	hypertension was more common among individuals without established hypertension risk	
30 31	281	factors. Collectively, our results provide preliminary epidemiologic evidence suggesting that	
32 33	282	hypertension, a well-established intermediate for CVD, was more common among individuals	
34 35	283	with TBI than those without TBI in the US populations.	
36 37	284	Our finding suggesting that hypertension is more common among individuals with TBI	
38 39 40	285	than those without TBI is consistent with previous studies. For example, a retrospective cohort	
40 41 42	286	study conducted among 5,185 individuals with TBI and healthy controls using data from a large	3
43 44	287	metropolitan healthcare system in the US reported a higher hazard rates of hypertension	
45 46	288	incidence (defined by ICD-9 codes) among those with TBI (defined by ICD-9 codes and	
47 48	289	tuberculin skin test/IFN- γ release assay) compared to healthy controls without TBI (HR 2.0,	
49 50 51 52 53 54	290	95%CI 1.6 – 2.5). 5 In addition, a cross-sectional study conducted among 2,351 TST-positive	
	291	individuals in South India reported a slightly higher prevalence of hypertension (defined as	
	292	systolic >130 mmHg) among those with confirmed TBI (defined as TST and QFT positive) (15%	%)
55 56	293	compared to those latent TB negative (12%) (aOR 1.18, 95%CI 1.0 – 1.56). ²⁸ Unlike the two	
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studies mentioned above, we used a more comprehensive definition of hypertension by
combining objectively measured blood pressure levels (systolic and diastolic) and known
hypertension indications (i.e., previous hypertension diagnosis or self-reported use of
antihypertensive medications) to avoid potential misclassification.

98 Furthermore, we also reported that the prevalence of hypertension was highest among individuals with positive QFT and high Ag-NIL values, but we observed no dose-response 99 00 relationship nor statistical significance after adjusting for key risk factors. TB infection has been associated with enhanced levels of systemic inflammation and immune activation, including 01 increased expression of tumor necrosis factor (TNF)- α , interferons, and interlukin-6 (IL-6) ⁴⁻⁷. 02 03 These chemokines and dysfunctional immune responses play an important role in the pathogenesis of hypertension and CVD ^{29 30}. Individuals with positive QFT and higher Ag-NIL 04 values are more likely to develop to active TB ^{23 31} as they may have higher mycobacterial 05 burden, ²¹ and thus, could potentially have higher degree of inflammation or immune responses 06 to the bacterial infection. 07

Our cross-sectional study design may not be the appropriate design to observe the 80 expected associations or dose-response relationship between TBI, IFN-γ TB antigen responses, 09 and hypertension. Furthermore, the time of TBI in the life-course may have different implications 10 on TBI and hypertension association. In this NHANES cohort, the majority (>90%) of foreign 11 12 born with positive QFT have stayed in the US for ≥5 years, and thus, we postulated that TBI happened before arriving in the US. It is plausible that these individuals are either in the latent 13 or incipient stage where there is no to minimum bacteria replication, and thus, minimum pro-14 15 inflammatory responses. ³² Prospective studies to follow individuals with recent TBI diagnosis are still warranted to determine the hypertension and CVD risk trajectories. 16

317 Interestingly, we observed associations between TBI and hypertension among those
 318 with normal BMI, euglycemic, and non-smokers. These groups may be considered at lower risk

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3 4	319	of CVD. This finding further reinforces the premise that there is likely to be differing effects of
5 6	320	TBI on hypertension risk within subgroups. Further investigations and modeling studies are
7 8	321	needed to determine whether targeted TB preventive treatment is effective to reduce the global
9 10	322	burden of CVD among these groups.
11 12	323	Last, we reported that HIV infection may modify the association between TBI and
13 14	324	hypertension. However, this finding needs to be interpreted with caution considering the low
15 16	325	prevalence of HIV infection in the 2011-2012 NHANES cycle. Previous studies demonstrated
17 18	326	that hypertension is more common among individuals with HIV infection on antiretroviral therapy
19 20 21	327	compared to those without HIV infection, ^{33 34} and that there are several plausible pathways
21 22 23	328	regarding how HIV infection could lead to hypertension. ³³ For example, the chronic
24 25	329	inflammation among people living with HIV (PLWH), even among those with undetectable viral
26 27	330	loads on stable antiretroviral therapy, would trigger host immune activation (e.g., upregulation of
28 29	331	IL-6) and could lead to stiff blood vessels and impact hypertension risk. ^{35 36} Further clinical
30 31	332	studies are warranted to fully assess the joint effect between HIV (including HIV clinical
32 33	333	characteristics) and TBI, and its association with hypertension.
34 35	334	Our study is subject to limitations. First, our TBI definition (i.e., according to QFT
36 37	335	positivity) may include a broad spectrum of individuals who may have cleared the infection,
38 39	336	have latent TB, incipient TB, or even subclinical TB since no further clinical assessment was
40 41 42	337	made (e.g., chest X-ray). ³⁷ Second, we could not determine the temporal relationship between
42 43 44	338	TBI and hypertension with the cross-sectional study design used in the present paper. Third,
45 46	339	hypertension is known to be multifactorial, and we did not account for other key variables that
47 48	340	could potentially affect blood pressure level including stress, family history, diet (e.g., sodium
49 50	341	intake), lifestyle (e.g., physical activity), geographical delineation (i.e., rural vs. urban), or illicit
51 52	342	drug use. If some of these variables are associated with TBI, it is plausible that our reported
53 54	343	estimates are slightly distorted due to residual confounding effects. Additionally, we did not
55 56	344	account for any record of hypertension prescription, or other commonly prescribed medications
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2 3 4	345	that could potentially affect blood pressure levels. Fourth, we defined some of our key variables
5 6	346	(including hypertension status and hypertension medication intake) with self-reported
7 8	347	information that may be prone to recall bias and likely included some misclassification.
9 10	348	However, if misclassification of hypertension was non-differential with respect to TBI, we expect
11 12	349	any misclassification in our results would likely biased towards the null ³⁸ . Fourth, we did not
13 14	350	take into consideration the CD4 count for the HIV-stratified analyses due to the small,
15 16	351	unweighted frequency of individuals with HIV infection. Last, this study was conducted using
17 18	352	survey data representative of US adult population but may not be generalizable to other regions
19 20 21	353	with higher TB burdens.
21 22 23	354	In conclusion, we reported a higher prevalence of hypertension among individuals with
24 25 26 27 28 29	355	positive QFT, although the association was non-significant after adjusting for key confounders,
	356	particularly age. To determine the direction of the association between TBI and hypertension, a
	357	prospective study following hypertension-free individuals at TBI diagnosis is warranted and
30 31	358	would help establish the biological pathways regarding how TBI might increase the risk of CVD.
32 33	359	Importantly, our results underscore the need to screen for hypertension and other metabolic
34 35 36	360	disorders among those with TBI, especially among those without traditional CVD risk factors;
37 38	361	doing so may help prevent premature deaths attributed to TB and CVD.
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DECLARATIONS AND ACKNOWLEDGMENTS

Competing interest

We have no conflict of interest to declare.

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Author contributions

MAH, MJM, and ADS conceived the study design. ADS performed the analyses. ADS, MAH, and MJM wrote the first draft of the manuscript. SCA, UPG, EMU, and JRA assisted with further drafting and revisions of manuscripts. All authors reviewed and approved the final version of the manuscript.

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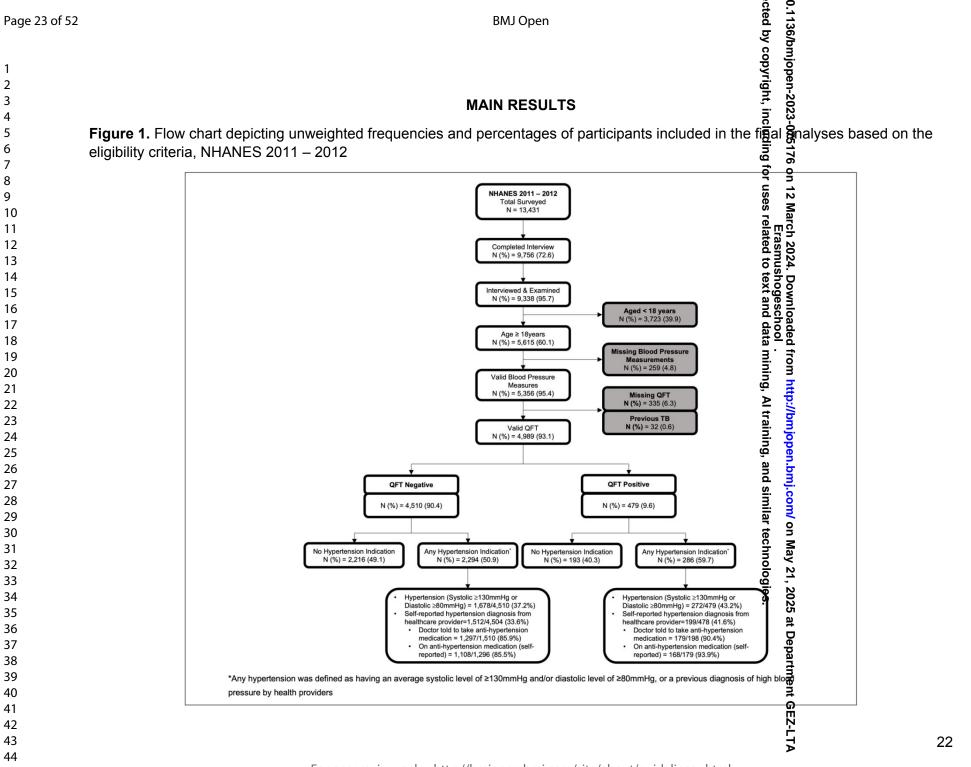
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4 5 6 7 8 9 10	Table 1	Weighted prevalence and adjusted prevalence ratios of hypertension measures by Quantie Ronn-TB Gold In-Tube status among US adults, NHANES 2011-2012 This table shows the prevalence of select hypertension measures in the overall adult cohome of the overall adult cohome overall adult cohome	Page(s) 23
11 12 13 14 15		NHANES 2011 – 2012 as well as stratified by their tuberculosis infection status. The crude massure of association was expressed as prevalence difference (PD), while the adjusted measure of association was expressed as prevalence ratio (PR).	05
16 17 18 19 20	Table 2	Relationship between positive QuantiFERON-TB result and hypertension: Stratified by derade applies and clinical characteristics among US adults, NHANES 2011 – 2012	25
21 22 23 24 25	Table 0	hypertension. We selected these "moderator" variables by identifying common risk factors for provide the second studies (e.g., age, race, body mass index, country of birth, smoking status, diabetes status, and HIV status.	00
26 27 28 29	Table 3	Weighted prevalence and adjusted prevalence ratios of controlled and uncontrolled hypertension by QuantiFERON-TB Gold In-Tube status among US adults with known hypertension, NHANES 2011- 2012	26
30 31 32 33 34 35		This table summarizes findings on whether latent tuberculosis infection is associated with severe clinical manifestation of hypertension, indicated by elevated measured blood pressure levers with the use of antihypertensive medications among individuals with known hypertension indications (ng 1,711)	
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Figure 1	BMJ Open 0.1136/bmjopen-2023-075 FIGURE LEGENDS FIGURE LEGENDS Flow chart depicting unweighted frequencies and percentages of participants included in the figal analyses based on the eligibility criteria, NHANES 2011 – 2012 of og	Page(s) 22	
	This study flow chart provides description of the stepwise exclusion of ineligible participants. From 9,338 individuals who completed NHANES interview and medical examination, we included A989 (53.4%) individuals in our primary analyses after excluding those who are <18 years old of the second of previous TB disease, or missing blood pressure data and QuantiFERON results of		
Figure 2	Crude and adjusted associations between QuantiFERON-TB Gold In-Tube results and selections and sele	24	
	Circles in this panel of figures indicate point estimates from the robust Poisson models, expressed as prevalence ratios with the colored bands indicating the accompanying 95% confidence integrals. The vertical dashed line on the x axis value of 1 marks the study null value (i.e., β estimates=0 or prevalence ratio=1.00), suggesting no association. The top panel figures were produced from analyses performed among eligible participants (n=4,989). The lower panel figures were produced from analyses performed among a subset of participants with known hypertension indication(n=1,711)		
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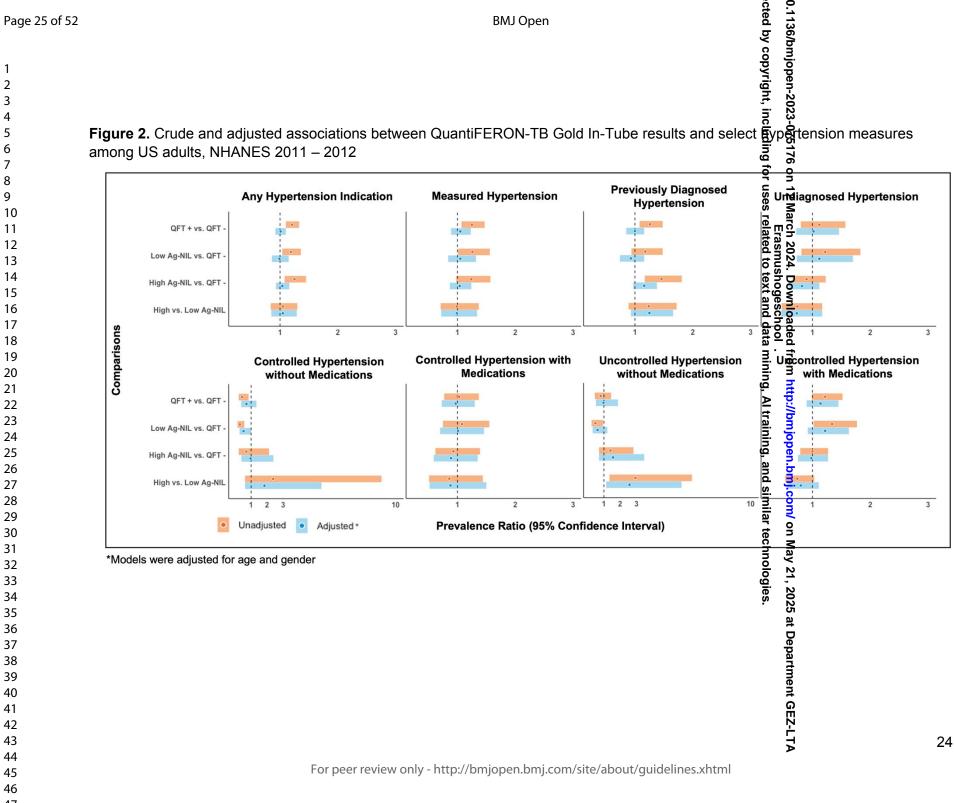


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 Table 1. Weighted prevalence and adjusted prevalence ratios of hypertension measures by QuantiFERON-BB Gold In-Tube status among US adults, NHANES 2011-2012
 Gold In-Tube status

	W	eighted Prevalenc	e of Hypertension		
Hypertension Measures	Total	among QFT (-)	among QFT (+)	Prevalence [*]	aPR† (95% CI)
	N=4,989	94.3 (93.3, 95.3)	5.7 (4.7, 6.7)	Percentage point (95%CI)	
Primary study outcome				. u	
Any hypertension indication ^a (n=2,580/4,989)	48.9 (45.2, 52.7)	48.3 (44.5, 52.1)	58.5 (52.4, 64.5)	10.8 (5.1 15.4)	1.01 (0.97 – 1.06
Measured blood pressure				lar ; re	
Hypertension ^b (n=1,885/4,989)	35.0 (32.3, 37.6)	34.5 (31.8, 37.2)	43.2 (36.4, 49.9)	8.巅(駅 \$,15.5)	1.04 (0.97 – 1.12
Stage 1 hypertension ^c (n=1273)	24.5 (22.4, 26.7)	24.2 (21.9, 26.5)	30.1 (22.4, 37.9)	5.9 ૡ૽ૼ-ૡૣ૿ .8 14.2)	1.13 (0.99 – 1.29
Stage 2 hypertension ^d (n=612)	10.4 (9.1, 11.8)	10.3 (8.9, 11.7)	13.0 (9.1, 17.0)	2.85(Ē1\$2,6.8)	0.88 (0.75 – 1.02
Hypertension Diagnosis				er sho 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0	
Previously diagnosed hypertension ^e (n=1,711)	30.8 (27.7, 33.9)	30.3 (27.1, 33.6)	38.3 (33.6, 43.1)	8.0 ((🖉 4 🖉 13.6)	0.97 (0.90 – 1.04
Current use of anti-hypertension medication ^f (n=1,276)	86.9 (83.7, 90.1)	86.3 (82.7, 89.9)	94.7 (90.9, 98.4)	8.45(2) 37 14.4) 2.2 (7 8, 8.9)	1.13 (1.02 – 1.09
Undiagnosed hypertension ^g (n=869)	18.1 (16.1, 20.2)	18.0 (15.8, 20.2)	20.2 (14.0, 26.4)	2.2 (7 8, 8.9)	1.08 (0.91 – 1.28
Abbreviations: CI – confidence interval; QFT – QuantiFERO	N-TB Gold In-Tube			ata	
^e Survey participants answered "yes" to the question "(Have y called high blood pressure?"	ou/has SP) ever bee	n told by a doctor o	r other health profes	ssional that (yous/s/he) had hyp	ertension, also
called high blood pressure?" ^f Among those who answered "yes" to "Because of (your/SP's survey participants also answered "yes" to the question "(Are ^g Elevated blood pressure levels (Systolic ≥130mmHg or diast) (high blood pressu you/Is SP) now takir	e/hypertension), (hang prescribed medic	ave you, has s/he) e ine (for high blood	ever been told to take prescribe pressure/hapertension)?" ealth care Providers	
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called high blood pressure?" ^f Among those who answered "yes" to "Because of (your/SP's survey participants also answered "yes" to the question "(Are ^g Elevated blood pressure levels (Systolic ≥130mmHg or diast) (high blood pressu you/Is SP) now takir	e/hypertension), (hang prescribed medic	ave you, has s/he) e ine (for high blood	ever been told to take prescribe pressure/hopertension)?" lealth care arrovoders technologies. 2025 at Depa	
called high blood pressure?" ^f Among those who answered "yes" to "Because of (your/SP's survey participants also answered "yes" to the question "(Are ^g Elevated blood pressure levels (Systolic ≥130mmHg or diast) (high blood pressu you/Is SP) now takir	e/hypertension), (hang prescribed medic	ave you, has s/he) e ine (for high blood	ever been told to take prescribe pressure/hopertension)?" lealth care a rovoers technologies. 2025 at Department	
called high blood pressure?" ^f Among those who answered "yes" to "Because of (your/SP's survey participants also answered "yes" to the question "(Are ^g Elevated blood pressure levels (Systolic ≥130mmHg or diast) (high blood pressu you/Is SP) now takir	e/hypertension), (hang prescribed medic	ave you, has s/he) e ine (for high blood	ever been told to take prescribe pressure/hopertension)?" lealth care a rovoers technologies. 2025 at Department	
called high blood pressure?" ^f Among those who answered "yes" to "Because of (your/SP's survey participants also answered "yes" to the question "(Are ^g Elevated blood pressure levels (Systolic ≥130mmHg or diast) (high blood pressu you/Is SP) now takir	e/hypertension), (hang prescribed medic	ave you, has s/he) e ine (for high blood	ever been told to take prescribe pressure/hopertension)?" lealth care a rovoers technologies. 2025 at Department	ed medicine?",
called high blood pressure?" ^f Among those who answered "yes" to "Because of (your/SP's survey participants also answered "yes" to the question "(Are ^g Elevated blood pressure levels (Systolic ≥130mmHg or diast) (high blood pressu you/Is SP) now takir	e/hypertension), (hang prescribed medic	ave you, has s/he) e ine (for high blood	ever been told to take prescribe pressure/hopertension)?" lealth care arrovoders technologies. 2025 at Depa	



	en positive QuantiFERON-TB res dults, NHANES 2011 – 2012	uit and hypertensi	on: Stratified by der	ыс <u>3</u> -	
·	Subaraun	Crude Estimates	Crude PD (95%Cl)	075176 on 12 March 2024. Downloaded from htt Erasmushogeschool . luding for uses related to text and data mining,	
	Subgroup			y fo	
	All Cohort	1	10.2 (5, 15.4)	or n	
	Age Quartile	1.	4 / 00 7 40 7)	112	
	Quartile 1 (18 - 31)		-1 (-20.7, 18.7) -6.1 (-19.6, 7.5)	š Ma	
	Quartile 2 (32 - 47) Quartile 3 (48 - 62)		6 (-5.9, 18)	еі псн	
	Quartile 4 (>62)	1	3.5 (-5.1, 12.1)	n 2 Iras	
	Age Group	⊢ ∎1 1	0.0 (-0.1, 12.1)		
	18 - 49		8.7 (2.5, 14.8)	ο te	
	50+		7.5 (-3.1, 18.1)) Dov	
	Race		1.0 (-0.1, 10.1)	an vnl	
	Hispanic		14.3 (7.3, 21.3)	d c b a	
	Non-Hispanic White	· · · · · · · · · · · · · · · · · · ·	17.1 (5.7, 28.6)	de at	
	Non-Hispanic Black	i i i i i i i i i i i i i i i i i i i	8.9 (-3.9, 21.6)	a - d n - fr	
	Other Race		5.7 (-1, 12.4)	nin	
	Body Mass Index			ing	
	Underweight (BMI <18.5 kg/m2)	<	21 (-20.5, 62.6)	, ttp	
	Normal (BMI 18.5 - 24.9 kg/m2)		17.7 (6.3, 29.2)	.//b	
	Overweight (BMI 25 - 29.9 kg/m2		9.6 (-2.9, 22.2)		
	Obese (BMI ≥30 kg/m2)	H	5.9 (-2.5, 14.3)	http://bmjopen.bmj.com/ ŋg, Al training, and simila	
	Country of Birth			g, en	
	US born		15.4 (5.8, 25)	anc.bn	
	Foreign born	+ = +	13.6 (9.3, 17.9)	1.bmj.com/ on May 21, 202 and similar technologies.	
	Smoking status	1		<u>n</u> ğ	
	Non-Smoker		14.4 (4.2, 24.5)	lar n/ o	
	Smoker		-0.3 (-14.3, 14.9)	r te	
	Diabetes Status			May	
	Euglycemic	' ⊨ ∎→	11 (3, 18.9)	nol	
	Pre-diabetes	⊢∎¦1	-1.9 (-15.6, 11.8)	21, 9log	
	Diabetes		-2.5 (-13, 8)	ies 20	
	HIV Status			25	
	Negative	++=-+	4.1 (-4.3, 12.5)	at	
	Positive	i	81.6 (61, 100)	De	
		-20 0 20 40 60	100	2025 at Department GEZ-LTA ies.	

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Table 3. Weighted prevalence and adjusted prevalence ratios of controlled and uncontrolled hyperten	isioာ် bခ်ို့QuantiFERON-TB Gold
In-Tube status among US adults with known hypertension, NHANES 2011-2012	3-07
	0. ci

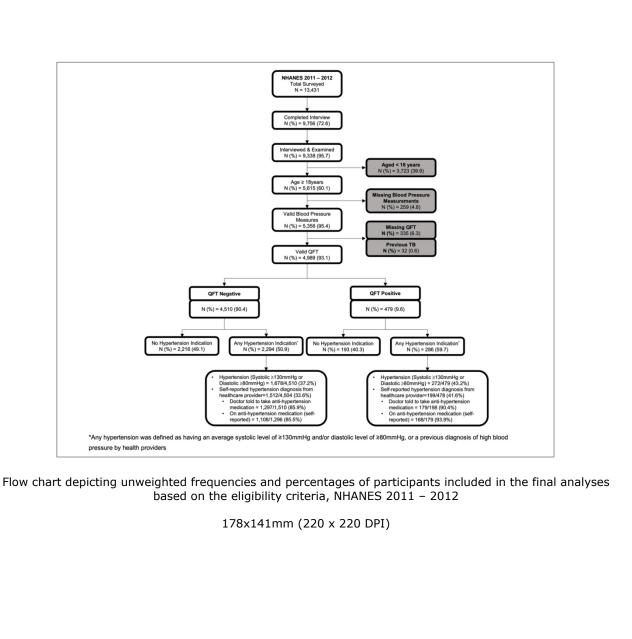
Hypertension Controls	Total	among QFT (-)	among QFT (+)	Mean/Prevalence Difference	aPR† (95% CI)
	N=1,711	94.3 (93.3, 95.3)	5.7 (4.7, 6.7)	Percentage potnt (95%CI)	
Controlled without medications ^a (n=308)	11.3 (9.2, 13.3)	11.8 (9.5, 14.0)	5.2 (2.0, 8.3)	-6.6 (-10.🦉 -2.🖻)	0.62 (0.36 - 1.09)
Controlled with medications ^b (n=838)	33.9 (29.1, 38.8)	33.9 (28.8, 40.0)	34.8 (25.5, 44.1)	0.9 (-9.0 ° 10. 5	1.10 (0.84 – 1.45)
Uncontrolled without medications ^c (n=127)	15.0 (12.0, 18.1)	15.2 (12.0, 18.5)	12.2 (5.5, 18.9)	-3.1 (-10. ස , டி. 2)	0.80 (0.41 – 1.59)
Uncontrolled with medications ^d (n=438)	39.8 (36.7, 42.8)	39.1 (35.7, 42.6)	47.8 (40.1, 55.6)	8.7 (-1.0 👼 🐉 💫	1.16 (0.94 – 1.43)
Abbreviations: CI - confidence interval; QFT -	- QuantiFERON-TB	Gold In-Tube			

Abbreviations: CI – confidence interval; QFT – QuantiFERON-TB Gold In-Tube *Mean/prevalence difference was calculated by setting those without TBI (i.e., QFT negative) as the referent group †Model was adjusted for age, sex, race, education attainment level, country of birth, type-2 diabetes mellitus, body mass index, and smoking

^aHaving systolic blood pressure <130 mmHg and a diastolic blood pressure <80 mmHg without a record of taking medications to a blood pressure levels ^bHaving systolic blood pressure <130 mmHg and a diastolic blood pressure <80 mmHg with a record of taking medications to lo a body and pressure levels ^cHaving systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg without a record of taking medications to lower bed pressure levels ^dHaving systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg with a record of taking medications to lower **B**loog pressure levels ng,

ich only

Bold indicates that the finding is significant at α =0.05

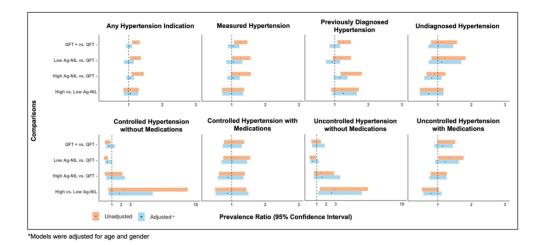


based on the eligibility criteria, NHANES 2011 - 2012 178x141mm (220 x 220 DPI)

QFT I

No Hypertension Indicati N (%) = 2,216 (49.1)

pressure by health providers



Crude and adjusted associations between QuantiFERON-TB Gold In-Tube results and select hypertension measures among US adults, NHANES 2011 – 2012

227x106mm (220 x 220 DPI)

Subgroup	Crude Estimates	Crude PD (95%CI)
All Cohort		10.2 (5, 15.4)
Age Quartile		
Quartile 1 (18 - 31)		-1 (-20.7, 18.7)
Quartile 2 (32 - 47)		-6.1 (-19.6, 7.5)
Quartile 3 (48 - 62)		6 (-5.9, 18)
Quartile 4 (>62)		3.5 (-5.1, 12.1)
Age Group		24
18 - 49	(H#H)	8.7 (2.5, 14.8)
50+	⊢ • - •	7.5 (-3.1, 18.1)
Race	1	
Hispanic		14.3 (7.3, 21.3)
Non-Hispanic White		17.1 (5.7, 28.6)
Non-Hispanic Black		8.9 (-3.9, 21.6)
Other Race		5.7 (-1, 12.4)
Body Mass Index		
Underweight (BMI <18.5 kg/m2)		21 (-20.5, 62.6)
Normal (BMI 18.5 - 24.9 kg/m2)		17.7 (6.3, 29.2)
Overweight (BMI 25 - 29.9 kg/m2) + 	9.6 (-2.9, 22.2)
Obese (BMI ≥30 kg/m2)	+++++	5.9 (-2.5, 14.3)
Country of Birth		
US born		15.4 (5.8, 25)
Foreign born	101	13.6 (9.3, 17.9)
Smoking status	1	
Non-Smoker		14.4 (4.2, 24.5)
Smoker		-0.3 (-14.3, 14.9)
Diabetes Status		
Euglycemic		11 (3, 18.9)
Pre-diabetes		-1.9 (-15.6, 11.8)
Diabetes	⊢ ∎ <u>1</u>	-2.5 (-13, 8)
HIV Status		
Negative	H	4.1 (-4.3, 12.5)
Positive	· · · ·	81.6 (61, 100)
veen positive QuantiFERON-TE	<i></i>	100 ension: Stratified by
clinical characteristics amo	ng US adults, NHAI	NES 2011 - 2012
100,100		
129x139	mm (96 x 96 DPI)	

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SUPPEMENTAL MATERIALS Page(s) Table S1 Weighted prevalence of and characteristics associated with i – iv tuberculosis infection among according to QuantiFERON-TB Gold In-Tube results among representative of civilian, noninstitutionalized US adult population, NHANES 2011-2012 Table S2 Weighted prevalence of and characteristics associated with v – viii hypertension among representative of civilian, noninstitutionalized US adult population, NHANES 2011-2012 Table S3 Weighted prevalence of various hypertension classifications by ix – x interferon gamma tuberculosis antigen responses among representative of civilian, non-institutionalized US adult population, NHANES 2011-2012 Table S4 Crude and adjusted associations between interferon gamma xi – xii tuberculosis antigen responses and hypertension among representative of civilian, non-institutionalized US adult population, NHANES 2011 – 2012 Table S5 The crude and adjusted prevalence odds ratios of any xiii – xiv hypertension stratified by race, body mass index category, and foreign-born status, among representative of civilian, noninstitutionalized US adult population, NHANES 2011 - 2012 Weighted prevalence of various hypertension classifications by Table S6 xv – xvi confirmed tuberculosis infection status among representative of civilian, non-institutionalized US adult population, NHANES 2011-2012 Table S7 Crude and adjusted associations between confirmed tuberculosis xvii – xviii infection status and hypertension among representative of civilian, non-institutionalized US adult population, NHANES 2011 - 2012 Table S8 Sensitivity analysis to account for misclassification of covariates xix - xxand different ways to handle age (confounder) included in the multivariable survey-weighted robus Poisson models to estimate the association between tuberculosis infection and hypertension among representative of civilian, non-institutionalized US adult population, NHANES 2011-2012

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Supplemental Materials

Table S1. Weighted prevalence of and characteristics associated with tuberculosis infection among according to QuantiFERON-TB Gold In-Tube results among representative of civilian, non-institutionalized US adult population, NHANES 2011-2012

9	Weighted Prevalence, % (95%CI)			
10 Characteristics 11 12	QFT Negative % (95% Cl) 94.3 (93.3 – 95.3)	QFT Positive % (95% Cl) 5.7 (4.7 – 6.7)	Mean/Prevalence Difference* Percentage point (95%CI)	P-Values (X²)ີດ
12 Any hypertension indication ^a				te
No No	95.4 (94.4 - 96.4)	4.6 (3.6 – 5.6)	Reference	<0.00
14 Yes	93.2 (91.8 – 94.5)	6.8 (5.5 – 8.2)	2.2 (1.0, 3.4)	
15 Age, years				cop
16 Mean (95%CI)	46.0 (44.1 – 48.0)	53.2 (51.2 – 55.1)	7.1 (5.1, 9.2)	<0.00¥ٍ‡
17				igh
18 Age groups				Ę.
19 Quartile 1 (18 – 31)	97.2 (96.2 – 98.3)	2.8(1.7 - 3.8)	Reference	<0.00
Quartile 2 $(32 - 47)$	95.5 (94.4 – 96.6)	4.5 (3.4 – 5.6)	1.7 (0.1, 3.3)	ü
21 Qual life 5 (40 – 62)	92.0 (89.2 – 94.7)	8.0 (5.3 – 10.8)	5.3 (2.1, 8.4)	dir
21 Quartile 4 (>62) 22	91.9 (89.8 – 94.1)	8.1 (5.9 – 10.2)	5.3 (3.4, 7.2)	DI
	04.0 (04.1 05.7)		Deference	
	94.9 (94.1 – 95.7) 92.5 (90.4 – 94.7)	5.1 (4.3 – 5.9) 7.5 (5.3 – 9.6)	Reference 2.4 (0.5, 4.2)	0.004
24 <u>≥50</u>	92.0 (90.4 - 94.7)	7.5 (5.5 – 9.0)	2.4 (0.3, 4.2)	cop¥right, bccluding fokuses <0.0004 v.0000000000000000000000000000000
25 Sex	93.4 (92.1 – 94.6)	6.6 (5.4 – 7.9)	Reference	0.000 ter
26 Male Ser Female	95.2 (94.1 – 96.2)	4.8 (3.8 – 5.9)	-1.8 (-3.2, -0.4)	0.0032
27 Race	95.2 (94.1 - 90.2)	4.0 (3.0 - 3.3)	-1.0 (-3.2, -0.4)	ed
28 Hispanic	87.6 (85.4 – 89.9)	12.4 (10.1 – 14.6)	Reference	<0.00
29 Non-Hispanic white	96.8 (95.8 – 97.8)	3.2 (2.2 – 4.2)	-9.2 (-12.0, -6.4)	te loss
30 Non-Hispanic black	92.8 (90.9 – 94.7)	7.2 (5.3 – 9.1)	-5.1 (-7.7, -2.6)	text
31 Other race	86.7 (84.0 – 89.5)	13.3 (10.5 – 16.0)	0.9 (-2.4, 4.2)	an
32 Education (n=4,757)			0.0 (2.1, 1.2)	<u> </u>
Lass these Othernals	82.4 (77.8 - 86.9)	17.6 (13.1 – 22.2)	Reference	d daa mining, <0.004a mining,
-11^{th} grade	92.4 (90.1 – 94.7)	7.6 (5.3 – 9.9)	-10.4 (-15.5, -4.6)	a .
³⁴ High school graduate	92.9 (90.5 – 95.3)	7.1 (4.7 – 9.5)	-10.6 (-15.8, -5.3)	nir
³⁵ Some college	96.7 (95.4 – 98.0)	3.3(2.0-4.6)	-14.3 (-19.2, -9.5)	nin
36 College graduate or above	95.0 (93.4 – 96.7)	5.0 (3.2 - 6.6)	-12.7 (-17.1, -8.3)	g,
37	, , , , , , , , , , , , , , , , , , ,			A
38 Missing (n=264)	98.0 (95.6 - 100.0)	2.0 (0 – 4.4)		a mining, Al trainittg, 0.00 0.00
39 Ratio of family income to poverty (n=4,623)				ini
40 Mean (95%CI)	2.9 (2.7 – 3.1)	2.4 (2.1 – 2.7)	-0.5 (-0.9, -0.2)	0.00뮹
41				, a
⁴¹ 0 – 0.99	92.0 (89.8 – 94.2)	8.0 (5.8 -10.2)	Reference	0.00 ²⁰
42 1 – 1.99	92.5 (91.0 – 94.1)	7.5 (5.9 – 9.0) 🛛 🥌	-0.5 (-3.1, 2.1)	l similar
43 2 – 2.99	94.9 (91.7 – 98.1)	5.1 (1.9 – 8.3)	-2.9 (-7.0, 1.2)	<u> </u>
44 3 – 3.99	95.8 (94.0 – 97.6)	4.2 (2.4 – 6.0)	-3.8 (-6.4, -1.3)	lar
45 4 - 4.99	96.7 (94.5 - 98.8)	3.3 (1.2 – 5.5)	-4.7 (-8.3, -1.1)	te
46 ^{≥5}	95.9 (94.1 – 97.7)	4.1 (2.3 – 5.9)	-3.9 (-6.9, -0.9)	ch .
A 7				no
	91.9 (88.4 – 95.5)	8.1 (4.5 – 11.6)		r technologies <0.05
			Deference	
49 No 50 Yes	96.5 (95.5 – 97.6) 83.6 (80.8 – 86.3)	3.5 (2.4 – 4.5) 16.4 (14.0 – 19.2)	Reference	<υ.υψι
	63.0 (60.6 – 60.3)	10.4 (14.0 – 19.2)	13.0 (9.6, 16.3)	
51 52 Missing (n=2)	100.0 (100.0 – 100.0)	0 (0 – 0)		
	100.0 (100.0 - 100.0)	0 (0 - 0)		
Mean (95%Cl)	28.7 (28.2 – 29.1)	28.9 (27.8 – 30.1)	0.2 (-0.7, 1.2)	0.603‡
54 Mean (55 % 61)	20.7 (20.2 20.1)	20.0 (21.0 00.1)	0.2 (0.1, 1.2)	0.000
55 BMI categories				
56 Underweight (<18.5 kg/m ²)	93.1 (87.8 – 98.4)		0.9 (-3.7, 5.4)	0.868
57			(,)	
58				
58				

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Weighted Prevalence, % (95%CI)				
Characteristics	QFT Negative % (95% CI)	QFT Positive % (95% CI)	Mean/Prevalence Difference*	− P-Value (X²)†
	94.3 (93.3 – 95.3)	5.7 (4.7 – 6.7)	Percentage point (95%CI)	
Normal (18.5 – 24.9 kg/m ²)	93.9 (92.0 - 95.8)	6.9 (1.6 – 12.2)	Reference	
Overweight (25 – 29.9 kg/m ²)	94.5 (93.2 – 95.9)	6.1 (4.2 – 8.0)	-0.6 (-2.6, 1.4)	
Obese (≥30 kg/m²)	94.4 (93.2 – 95.5)	5.5 (4.1 – 6.8)	-0.4 (-2.6, 1.7)	
Missing (n=59)		5.6 (4.5 – 6.8)		-
wissing (n=59)	95.8 (90.2 – 100.0)	4.2 (0 – 9.8)		Prote
Smoking status (n=4,722)		4.2 (0 = 3.0)		teo
Never smokers ^b	94.9 (94.0 – 95.8)	5.1 (4.2 – 6.0)	Reference	0.14 9
Past smokers ^c	93.1 (90.7 – 95.4)	6.9 (4.6 – 9.3)	1.8 (-0.7, 4.3)	- <u>σ</u>
Current smokers ^d	93.3 (90.7 – 95.8)	6.7 (4.2 – 9.3)	1.6 (-1.0, 4.2)	Ý.
		, ,		öp
Missing (n=267)	98.1 (95.7 – 100.0)	1.9 (0 – 4.3)		ýr.
Heavy alcohol drinking (n=3,867)				ngi
No	95.0 (93.5 – 96.4)	5.0 (3.6 – 6.5)	Reference	by copyright includi
Yes ^e	94.7 (93.7 – 95.8)	5.3 (4.2 – 6.3)	0.3 (-1.1, 1.6)	Inc
M_{ioping} (n=1.122)				IUC
Missing (n=1,122)	92.0 (90.5 – 93.6)	8.0 (6.4 – 9.5)		
HbA1c, % Mean (95%CI)	5.6 (5.6 – 5.7)	5.9 (5.7 – 6.0)	0.3 (0.1, 0.4)	ي 0.00
	5.6 (5.6 – 5.7)	3.3(3.7 - 0.0)	0.0 (0.1, 0.4)	0.00 0
Diabetes categories ^f				use
Normal	95.5 (94.6 – 96.4)	4.5 (3.6 – 5.4)	Reference	<0.00
Prediabetes	93.4 (91.7 – 95.0)	6.6 (5.0 – 8.3)	2.1 (0.8, 3.5)	re
Diabetes	88.9 (85.2 – 92.5)	11.1 (7.5 – 14.8)	6.6 (2.9, 10.4)	ate
HIV co-infection status (n=3,408)		<u> </u>		ă
negative	95.4 (94.4 – 96.4)	4.6 (3.6 – 5.6)	Reference	0.86 9
Positive	96.1 (88.3 – 100.0)	3.9 (0 – 11.7)	0.7 (-7.0, 8.3)	ext
				Co.00 Generation of the text and data 0.86 text and data 0.86 text and data 0.83 mining 0.111 Mining 0.1111 Mining 0.111 Mining 0.11
Missing (n=1,600)	91.3 (89.3 – 93.3)	8.7 (6.7 – 10.7)		0
Dyslipidemia Measures				
HDL (mg/dL) (n=4,889) Mean (95%CI)	52.8 (51.8 – 53.9)	51.7 (48.9 – 54.5)	-1.1 (-3.5, 1.2)	0330#
Mean (95/001)	32.8 (31.8 - 33.9)	31.7 (40.9 - 34.3)	-1.1 (-3.3, 1.2)	0.000
HDL levels ^g				n
Normal	94.6 (93.5 – 95.7)	5.4 (4.3 – 6.5)	Reference	0.113
Lower	93.6 (92.4 – 94.9)	6.4 (5.1 – 7.6)	1.0 (-0.3, 2.2)	<u>N</u>
	, , , , , , , , , , , , , , , , , , ,			tra
Missing (n=100)	91.8 (82.9 – 100.0)	8.2 (0 – 17.1)		0.614and
LDL ^h (mg/dL) (n=2,236)				, Pr
Mean (95%CI)	114.8 (112.5 – 117.0)	113.1 (107.1 – 119.2)	-1.6 (-8.4, 5.1)	0.614
				<u> </u>
LDL levels	94.3 (92.8 – 95.8) 95.8 (94.6 – 97.2)	5.7 (4.2 – 7.2)	Reference	0.39 2
Normal (<130 mg/dL) Elevated (130 – 159 mg/dL)	95.8 (94.6 - 97.2)	4.2(2.8-5.6)	-1.5 (-3.3, 0.4)	nile
High ($\geq 160 \text{ mg/dL}$)	94.5 (90.7 – 98.4)	5.4 (1.6 – 9.3)	-0.2 (-3.9, 3.4)	ar t
	99.5 (98.3 – 100.0)	0.5 (0 – 1.7)		0.39 imilar technologies. 0.18 isoto 0.18
Missing (n=67)	00.0 (00.0 - 100.0)	0.0 (0 1.7)		hn
Total Cholesterol (mg/dL) (n=4,889)				0
Mean (95%CI)	194.2 (191.9 – 196.4)	196.8 (192.5 – 201.0)	2.6 (-1.3, 6.5)	0.18
	()	,/	(_,)	S S S S S S S S S S S S S S S S S S S
Total cholesterol levels				
Low (≤130 mg/dL)	93.3 (89.8 – 96.8)	6.7 (3.2 – 10.2)	Reference	0.728
Normal (131 – 199 mg/dL)	94.5 (93.3 – 95.7)	5.5 (4.2 - 6.7)	-1.3 (-5.6, 3.0)	
Elevated (≥200 mg/dL)	94.2 (82.9 – 100.0)	5.8 (4.4 – 7.2)	-0.9 (-4.9, 3.1)	
Missing (n=100)	91.8 (82.9 – 100.0)	8.2 (0 – 17.1)		
Triglyceride ^h (mg/dL) (n=2,276)				

	N	/eighted Prevalence, %	(95%CI)	
Characteristics	QFT Negative % (95% Cl)	QFT Positive % (95% CI)	Mean/Prevalence Difference*	P-Value (X ²) [†] 0.374 [‡] 0.796 Protected by copyright, including for 0.63 copyright, octave related by copyright, octave related b
Mean (95%CI)	<u>94.3 (93.3 – 95.3)</u> 129.6 (118.9 – 140.2)	<u>5.7 (4.7 – 6.7)</u> 123.4 (111.8 – 135.0)	Percentage point (95%Cl) -6.2 (-20.5, 8.1)	0.374‡
Triglyceride levels				
Optimal (<150 mg/dL)	94.6 (93.0 – 96.2)	5.4 (3.8 -7.0)	Reference	0.796
Elevated (150 – 199 mg/dL)	94.9 (92.5 – 97.2)	5.1 (2.8 – 7.5)	-0.3 (-3.1, 2.6)	P
High (≥200 mg/dL)	95.4 (93.6 – 97.2)	4.6 (2.8 – 6.4)	-0.9 (-3.2, 1.5)	Protectec
Missing (n=27)	100.00 (100.0 – 100.0)	0 (0 – 0)		cted
Any dyslipidemia ^{i&h} (n=2,277)				5
No Yes	94.4 (92.1 – 96.7) 94.9 (93.6 – 96.2)	5.6 (3.3 – 7.9) 5.1 (3.8 – 6.4)	Reference -0.5 (-3.0, 2.0)	0.636
Tes	94.9 (93.0 - 90.2)	5.1 (5.6 – 0.4)	-0.5 (-5.0, 2.0)	руг
Missing (n=26)	100.0 (100.0 – 100.0)	0 (0 – 0)		h
Statin prescription ^j (n=2,770) No	94.2 (92.7 – 95.6)	58(11 - 73)	Reference	0.63 0.63 0.49 0.49 0.49 0.04 0.04 0.04 0.04 0.04
Yes	94.2 (92.7 – 95.6) 93.5 (91.8 – 95.2)	5.8 (4.4 – 7.3) 6.5 (4.7 – 8.2)	0.6 (-1.3, 2.6)	0.498
		0.0 (0.2)	0.0 (1.0, 2.0)	udii
Missing (n=2,238)	94.7 (93.6 – 95.8)	5.3 (4.2 – 6.4)		ng
CHD ^k (n=4,712)	04 1 (03 0 05 1)		Deference	
No Yes	94.1 (93.0 – 95.1) 96.5 (94.7 – 98.3)	5.9 (4.9 – 7.0) 3.5 (1.7 – 5.3)	Reference -2.4 (-4.6, - 0.2)	0.04 <u>6</u>
Yes	00.01	0.0 (1.1 0.0)	(es r
Missing (n=277)	97.8 (95.5 – 100.0)	2.2 (0 – 4.5)		6 related do text a
Heart attack ^I (n=4,723)	94.1 (93.1 – 95.1)	5.9 (4.9 – 6.9)	Reference	
No Yes	94.1 (93.1 – 95.1) 96.3 (94.5 – 98.1)	5.9 (4.9 – 6.9) 3.7 (1.9 – 5.5)	-2.2 (-3.6, -0.8)	0.00 <u>8</u> Ö
		0.07	2.2 (0.0, 0.0)	tey
Missing (n=266)	98.1 (95.7 – 100.0)	1.9 (0 – 4.3)		(t a
Stroke ^m (n=4,725)		57/47 00	Deference	
No Yes	94.3 (93.2 – 95.3) 90.7 (86.4 – 94.9)	5.7 (4.7 – 6.8) 9.3 (5.1 – 13.6)	Reference 3.6 (-0.9, 8.0)	0.042
	00.1 (00.1 07.0)	0.0 (0.1 10.0)	0.0 (0.0, 0.0)	a n
Missing (n=264)	98.1 (95.7 – 100.0)	1.9 (0 – 4.3)		מור
Abbreviations:				, bu
BMI – body mass index; CHD – coronary lipoprotein; HIV – human immunodeficien Survey; QFT - QuantiFERON Gold-In-Tut	cy virus; LDL – low-density lipop be;	protein; NHANES – Natior	nal Health and Nutrition Examin	ation trainin
*Mean/prevalence difference was calculat	ed by setting those without TBI	(i.e., QFT negative) as the	e referent group, unless indicate	ed otherwa
(with "reference" statement) [†] P-values from Rao-Scott Chi-square test	s unless indicated otherwise			aņ
*P-values from t-tests	שיים איזיניים איזינים א איזיגעריינים איזינים איז			d S
^a Systolic ≥130mmHg and/or diastolic ≥80				and similar techno
^b Survey participants answered "No" to the				lar i
°Survey participants answered "Not at all" you/has SP) smoked at least 100 cigarett		SP) now smoke cigarettes	and rest to the question "(H	have f
^d Survey participants answered "Every day		n "(Do you/does SP) now	smoke cigarettes?" and "Yes"	to the
question "(Have you/has SP) smoked at le ^e Survey participants answered "Yes" to th	e question "Was there ever time	e or times in (your/SP's) lif	e when (you/he/she) drank 4 (f	or female
5 (for male) or more drinks of any kind of Diabetes was categorized according to H	alcoholic beverage almost every bA1c levels and self-reported pr	/ 0ay?" revious type-2 diabetes m	ellitus diagnosis hy health care	nrovidere
⁹ HDL level was using gender-specific cut-	offs: "normal" HDL was defined	if HDL level was ≥40 mg/		
"lower" HDL was defined if HDL level was hLDL and triglyceride measurements were			asting and appropriate weight v	ariable (for
those who were fasting) was applied acco	ordingly			
Any dyslipidemia was defined as having	either elevated LDL. total choles	terol, triglyceride, or lower	r HDL levels	, .
Taken statin in the past 30 days prior to s	survey date, survey participants	were also asked to show	medicine container to surveyor	enumerato
			:	

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3			v	Veighted Prevalence, %	% (95%Cl)	<u> </u>
4 5	Characteristics		QFT Negative % (95% CI)	QFT Positive % (95% CI)	Mean/Prevalence Difference*	Open: first published as 10.1136/bmjopen-2023-075176 on 12 March 2024. Downloaded Erasmushogeschool ad coronary ad a heart Protected by copyright, including for uses related to text and data had a
		ç	94.3 (93.3 – 95.3)	5.7 (4.7 – 6.7)	Percentage point (95%CI)	(^) [,] irs
6. 7	^k Survey participants answered "Y					ad coronary 👳
8	heart disease?"			F		, ubl
9	Survey participants answered "Ye		"Has a doctor or othe	er health professional ev	er told (you/SP) that (you/s/he) h	ad a heart 🛒
10	attack (also called myocardial infa					F ed
11	^m Survey participants answered "Y	'es" to the questior	n "Has a doctor or oth	er health professional e	ver told (you/SP) that (you/s/he) I	nada č s
12	stroke?"					lec 10.
13		statistically significa	ant at α =0.05			had a Protected
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representative of civilian, r	non-Institutionalized US	adult population, INH	ANES 2011-2012	
		Weighted Prevalence, %		
Characteristics	No Hypertension % (95% Cl) 51.1 (47.4 – 54.8)	Any Hypertension ^a % (95% Cl) 48.9% (45.2 – 52.6)	Mean/Prevalence Difference [*] Percentage point (95%Cl)	P-Value (X²)†
QFT result	<u> </u>	40.070 (40.2 - 02.0)	recentage point (55%61)	
Negative	51.7 (47.9 – 55.5)	48.3 (44.5 – 52.1)	Reference	<0.00
Positive	41.5 (35.5 – 47.6)	58.5 (52.4 - 64.5)	10.2 (5.0, 15.4)	
Age, years Mean (95%CI)	38.9 (37.3 – 40.6)	54.3 (52.8 – 55.7)	15.3 (14.0, 16.6)	<0.000
Age group				
Quartile 1 (18 – 31)	80.8 (78.6 – 83.1)	19.2 (16.9 – 21.4)	Reference	<0.00
Quartile 2 (32 – 47)	57.5 (52.3 – 62.7)	42.5 (37.3 – 47.7)	23.4 (18.6, 28.1)	Vrig
Quartile 3 (48 – 62)	38.0 (34.4 – 41.7)	62.0 (58.3 - 65.6)	42.8 (37.9, 47.7)	gn
Quartile 4 (>62)	23.0 (18.9 – 27.1)	77.0 (72.9 – 81.1)	57.8 (53.1, 62.5)	,
18 – 49	57.1 (53.1 – 61.1)	42.9 (38.9 – 46.9)	Reference	v copyright, including <0.00yright, including
≥50	34.2 (30.2 – 38.3)	65.8 (61.7 – 69.8)	22.9 (17.6, 28.2)	
Sex		· · · · ·	· · · · · · · · · · · · · · · · · · ·	g
Male	47.7 (43.2 – 52.2)	52.3 (47.8 - 56.8)	Reference	0.00 ⁷
Female	54.4 (50.4 – 58.4)	45.6 (41.6 – 49.6)	-6.7 (-10.9, -2.5)	<0.00+
Race Hispanic	61.3 (55.8 – 66.8)	38.7 (33.2 – 44.2)	Reference	ប័ •ាា
Non-Hispanic white	49.6 (44.7 – 54.4)	50.4 (45.6 – 55.3)	11.7 (5.3, 18.2)	<0.00
Non-Hispanic black	43.6 (39.9 – 47.4)	56.4 (52.6 – 60.1)	17.7 (11.8, 23.5)	
Other race	56.5 (51.5 – 61.5)	43.5 (38.5 – 48.5)	4.8 (-2.2, 11.7)	
Education (n=4,725)		<u> </u>		<0.00
Less than 9 th grade	39.0 (31.3 – 46.9)	61.0 (53.3 – 68.7)	Reference	<0.00
9-11 th grade	42.3 (36.9 – 47.6)	57.7 (52.3 – 63.1)	-3.2 (-13.4, 6.9)	2
High school graduate	45.5 (40.9 – 50.1)	54.5 (49.9 – 59.1)	-6.5 (-14.9, 2.0)	Ē
Some college	51.7 (46.3 – 57.0)	48.3 (42.9 – 53.7)	-12.7 (-20.9, -4.5)	ua
College graduate or above	55.3 (48.9 – 61.5)	44.7 (38.4 – 51.1)	-16.2 (-25.5, -7.0)	a –
Aissing (n=264)	86.7 (81.8 – 91.5)	13.3 (8.5 – 18.2)		
Ratio of family income to poverty (n=4,593)				<u> </u>
Mean (95%CI)	2.8 (2.6 – 3.1)	2.9 (2.7 – 3.1)	0.1 (-0.1, 0.3)	0.439
0 – 0.99	55.8 (49.1 – 62.5)	44.2 (37.5 – 50.9)	Reference	0.43
1 – 1.99	49.6 (43.3 – 55.9)	50.4 (44.1 – 56.7)	6.2 (-0.5, 12.9)	=
2 – 2.99	49.4 (43.7 – 55.0)	50.6 (45.0 – 56.3)	6.4 (-2.4, 15.3)	ç
3 – 3.99	53.5 (48.6 – 58.4)	46.5 (41.6 – 51.4) 🧹	2.3 (-4.9, 9.5)	a
4 – 4.99	47.6 (39.8 – 55.0)	52.4 (44.6 – 60.2)	8.2 (-2.7, 19.0)	2
≥5	50.9 (43.0 – 58.7)	49.1 (41.3 – 57.0)	4.9 (-3.5, 13.4)	
Aissing (n=396)	49.4 (39.9 – 58.8)	50.6 (41.2 – 60.1)		0.438
Foreign born (n=5,019)	· · ·			
No	49.2 (45.9 – 52.6)	50.8 (47.4 – 54.1)	Reference	<0.00
Yes	60.1 (54.7 – 65.5)	39.9 (34.5 – 45.3)	-10.8 (-14.5, -7.2)	
Missing (n=2)	70.6 (8.7 – 100.0)	29.4 (0 – 91.3)		glei
3MI, kg/m² (n=4,930)				•
Mean (95%CI)	27.2 (26.7 – 27.8)	30.2 (29.7 – 30.8)	3.0 (2.4, 3.7)	<0.00
BMI categories				
Underweight (<18.5 kg/m ²)	68.6 (61.2 – 76.0)	31.4 (24.0 – 38.8)	-1.2 (-9.3, 6.9)	<0.00
Normal $(18.5 - 24.9 \text{ kg/m}^2)$	67.4 (62.8 – 72.0)	32.6 (28.0 - 37.2)	Reference	
Overweight (25 – 29.9 kg/m²) Obese (≥30 kg/m²)	49.8 (46.2 – 53.4) 38.0 (33.6 – 42.5)	50.2 (46.6 – 53.8) 62.0 (57.5 – 66.4)	17.6 (14.4, 20.9) 29.4 (23.3, 35.5)	



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lean/Prevalence Difference* entage point (95%CI) Reference 17.3 (12.6, 21.9) 1.7 (-3.8, 7.1) Reference 11.3 (-14.9, -7.7) 0.4 (0.4, 0.5) Reference 9.6 (15.8 – 23.4) 0.8 (37.3 – 44.3) Reference 17.7 (-43.6, 8.3)	<0.00 <0.00 <0.00 <0.00
Reference 17.3 (12.6, 21.9) 1.7 (-3.8, 7.1) Reference 11.3 (-14.9, -7.7) 0.4 (0.4, 0.5) Reference 9.6 (15.8 – 23.4) 0.8 (37.3 – 44.3) Reference	<0.00 <0.00 <0.00
17.3 (12.6, 21.9) 1.7 (-3.8, 7.1) Reference 11.3 (-14.9, -7.7) 0.4 (0.4, 0.5) Reference 9.6 (15.8 – 23.4) 0.8 (37.3 – 44.3) Reference	<0.00
17.3 (12.6, 21.9) 1.7 (-3.8, 7.1) Reference 11.3 (-14.9, -7.7) 0.4 (0.4, 0.5) Reference 9.6 (15.8 – 23.4) 0.8 (37.3 – 44.3) Reference	<0.00
17.3 (12.6, 21.9) 1.7 (-3.8, 7.1) Reference 11.3 (-14.9, -7.7) 0.4 (0.4, 0.5) Reference 9.6 (15.8 – 23.4) 0.8 (37.3 – 44.3) Reference	<0.00
1.7 (-3.8, 7.1) Reference 11.3 (-14.9, -7.7) 0.4 (0.4, 0.5) Reference 9.6 (15.8 – 23.4) 0.8 (37.3 – 44.3) Reference	<0.00 <0.00 <0.00
Reference 11.3 (-14.9, -7.7) 0.4 (0.4, 0.5) Reference 9.6 (15.8 – 23.4) 0.8 (37.3 – 44.3) Reference	<0.00 <0.00 <0.00
11.3 (-14.9, -7.7) 0.4 (0.4, 0.5) Reference 9.6 (15.8 – 23.4) 0.8 (37.3 – 44.3) Reference	<0.00 <0.00 <0.00
11.3 (-14.9, -7.7) 0.4 (0.4, 0.5) Reference 9.6 (15.8 – 23.4) 0.8 (37.3 – 44.3) Reference	<0.00 <0.00 <0.00
11.3 (-14.9, -7.7) 0.4 (0.4, 0.5) Reference 9.6 (15.8 – 23.4) 0.8 (37.3 – 44.3) Reference	<0.00 <0.00
0.4 (0.4, 0.5) Reference 9.6 (15.8 – 23.4) 0.8 (37.3 – 44.3) Reference	<0.00 <0.00
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9.6 (15.8 – 23.4) 0.8 (37.3 – 44.3) Reference	
Reference	
17.7 (-43.6, 8.3)	0.22
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	0.22
-0.9 (-2.0, 0.1)	0.08
	0.08 <0.00
Reference	<0.00
6.0 (2.4, 9.6)	
3.2 (-1.1, 7.6)	0.13
,	
Reference	0.01
-2.1 (-11.3, 7.1)	
15.0 (4.7, 25.3)	1
	2
8.3 (3.4, 13.2)	0.00
- <i>i</i>	<0.00
	<0.00
4.2 (-3.3, 11.7)	:
	<0.00
37.3 (26.3, 48.2)	
37.3 (26.3, 48.2)	~~ ~~
37.3 (26.3, 48.2) Reference	<0.00
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	<0.00
	Reference -4.7 (-10.6, 1.3) 4.2 (-3.3, 11.7) 37.3 (26.3, 48.2)

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3		Veighted Prevalence, %	, ,	- D) ()
Characteristics	No Hypertension % (95% Cl)	Any Hypertension ^a % (95% CI)	Mean/Prevalence Difference*	P-Values (X ²) [†]
	51.1 (47.4 – 54.8)	48.9% (45.2 – 52.6)	Percentage point (95%CI)	(^-)'
6 7 Elevated (150 – 199 mg/dL)	41.8 (34.1 – 49.5)	58.2 (50.5 – 65.9)	16.1 (9.8, 22.5)	
' High (>200 mg/dL)	28.7 (21.8 – 35.6)	71.3 (64.4 – 78.2)	29.2 (22.4, 36.1)	
8 High (=200 Hig/dE)	20.7 (21.0 00.0)	11.0 (04.4 10.2)	20.2 (22.4, 00.1)	
⁹ Missing (n=27)	25.7 (6.7 – 44.8)	74.3 (55.2 – 93.3)		
10 Any dyslipidemia ^{i&h} (n=2,277)				P
11 No	61.0 (56.7 – 65.4)	39.0 (34.6 - 43.3)	Reference	<0.00
12 Yes	47.4 (41.9 – 52.8)	52.6 (47.2 – 58.1)	13.7 (7.7, 19.6)	ect
13				led
14 Missing (n=26)	24.6 (6.0 – 43.2)	75.4 (56.8 – 94.0)		<0.00 ected by
Statin prescription ^j (n=2,770)				1 0
NO	44.8 (40.0 – 49.6)	55.2 (50.4 - 60.0)	Reference	p
10 Yes 17	20.6 (16.0 – 25.2)	79.4 (74.8 – 84.0)	24.2 (17.6, 30.9)	<0.00
				v cop g ight,i 0. 0. 0.
18 Missing (n=2,238)	69.8 (66.6 – 73.0)	30.2 (27.0 – 33.4)		,, ,,
19 CHD ^k (n=4,712)	50.9 (47.2 – 54.6)	49.1 (45.4 – 52.8)	Reference	
20 No 51 Yes	50.9 (47.2 – 54.6) 15.3 (5.9 – 24.8)	49.1 (45.4 – 52.8) 84.7 (75.2 – 94.1)	35.6 (25.0, 46.1)	~0.00 <u>H</u> Q
21 Yes	13.3 (3.9 – 24.8)	04.7(10.2 - 94.1)	35.0 (23.0, 40.1)	ing
²² Missing (n=277)	85.6 (80.4 – 90.8)	14.4 (9.2 – 19.6)		, inceding for <0.00
²³ Heart attack ^l (n=4,723)				
24 No	50.8 (47.1 – 54.5)	49.2 (45.5 – 52.9)	Reference	<pre>umpty control con</pre>
25 Yes	20.9 (11.6 - 30.2)	79.1 (69.8 – 88.4)	29.9 (18.5, 41.4)	S T
26			(, , , , , , , , , , , , , , , , , , ,	related
Missing (n=266)	86.1 (80.7 – 91.5)	13.9 (8.5 – 19.3)		ate
28 Stroke ^m (n=4,725)				d toftext a
NO NO	50.9 (47.3 – 54.4)	49.1 (45.6 – 52.7)	Reference	<0.00 t
²⁹ Yes 30	15.6 (8.8 – 22.4)	84.4 (77.6 – 91.2)	35.3 (28.1, 42.5)	ext
				ar
31 <i>Missing (n=264)</i> 32 Abbreviations:	86.9 (82.1 – 91.6)	13.1 (8.4 – 17.9)		<u>ā č</u>
33 BMI – body mass index; CI – confidence	interval: HDL – high-density ling	protein: I DI - low-density	V lipoprotein: NHANES - Nation	
	- QuantiEERON Gold-In-Tube: TS	ST – tuberculin skin test		arrieanແກລ ສໍ
J 4				nin
³⁵ *Mean/prevalence difference was calcula	ated by setting those without TBI	(i.e., QFT negative) as the	e referent group, unless indicate	d otherwise
³⁰ (with "reference" statement)			0 17	-
37 [†] P-values from Rao-Scott Chi-square tes	sts, unless indicated otherwise			Alt
 P-values from Rao-Scott Chi-square tes ¹P-values from t-tests ²Systolic ≥130mmHg and/or diastolic ≥80 ⁶Survey participants answered "No" to the ¹Survey participants answered "Not at al you/has SP) smoked at least 100 cigared ¹dSurvey participants answered "Every dat question "(Have you/has SP) smoked at 4 ¹Survey participants answered "Yes" to the ¹Survey participants answered "Yes" to the 				rai
39 ^a Systolic ≥130mmHg and/or diastolic ≥80	OmmHg or any previous diagnosi	s of high blood pressure b	by health providers	nir
10 ^D Survey participants answered "No" to th	e question "(Have you/has SP) s	moked at least 100 cigare	ettes in life?	lĝ,
11 ^c Survey participants answered "Not at al	I" to the question "(Do you/does S	SP) now smoke cigarettes	?" and "Yes" to the question "(H	ave an
you/has SP) smoked at least 100 cigaret	ites in life? w" or "Como dovo" to the guantia		amaka aigarattaa?" and "Vaa" to	ā.
¹³ substian "(Have you/bas SD) smoked at	locat 100 signatures in life?	n (Do you/does SP) now	smoke cigarettes? and res to	sine <u>v</u> .
¹⁹ question (Have you/has SF) shoked at 14 °Survey participants answered "Yes" to t	he question "Was there ever time	or times in (vour/SP's) li	fe when (vou/be/she) drank 4 (fr	vr female Nor
45 5 (for male) or more drinks of any kind o	f alcoholic beverage almost ever	/ dav?"		riemale poi
45 5 (for male) or more drinks of any kind or 46 ^f Diabetes was categorized according to I	HbA1c levels and self-reported pr	revious type-2 diabetes m	ellitus diagnosis by health care	providers
⁹ HDL level was using gender-specific cu	t-offs: "normal" HDL was defined	if HDL level was ≥40 mg/	/dL for male or ≥50 ma/dL for fer	nale: and
"Iower" HDL was defined if HDL level was	s <40 ma/dL for male or <50 ma/	dL for female		ō
⁺⁸ ^h LDL and triglyceride measurements we	re done among a subset of surve	y participants who were fa	asting and appropriate weight va	ariable (fo
¹⁹ those who were fasting) was applied acc	cordingly			S.
⁶⁰ Any dyslipidemia was defined as having				
51 JTaken statin in the past 30 days prior to	survey date, survey participants	were also asked to show	medicine container to surveyor/e	enumerator
² ^k Survey participants answered "Yes" to t	he question "Has a doctor or othe	er health professional eve	r told (you/SP) that (you/s/he) ha	ad coronary
53 heart disease?"				
54 Survey participants answered "Yes" to the		er health professional even	r told (you/SP) that (you/s/he) ha	ad a heart
atta al. (ala a called use a sensible information)	ጋ"			
55 attack (also called myocardial infarction)	!			
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Characteristics	No Hyperten % (95% C 51.1 (47.4 – 5	l) % (95% Cl)	a Mean/Prevalence Difference*	P-Value (X²)†
Survey participants answered "` roke?"			ever told (you/SP) that (you/s/he)	had a
old indicates that the finding is	statistically significant at α =0.05	5		Pr
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 Table S3. Weighted prevalence of various hypertension classifications by interferon gamma tuberculosis
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	Weia	hted Prevalence (95%C				
		QFT P	ositive 5	 Pr	evalence Difference (95%C)
	QFT Negative	Ag-NIL	Values*			
Hypertension Measures	N=4510	Low (<4 IU/ml)	Higlซี(≥4₩U/ml)			
	94.3% (93.3 – 95.2)	N=299	ŭ,∐=1 ₹ 0	Low Ag-NIL vs. QFT (-)	High Ag-NIL vs. QFT (-)	High vs. Low Ag-NIL
		4.0% (3.2 – 4.7)				
Primary study outcome			# 3 7			
Any hypertension indication ^a	48.3 (44.5, 52.1)	57.6 (48.7, 66.6)	60.4 45 5 67.7)	9.4 (1.6, 17.1)	12.1 (3.6, 20.5)	2.7 (-10.1, 15.5)
Measured blood pressure categories			4.20			
Normal blood pressure ^b	47.9 (44.6, 51.2)	35.6 (25.1, 46.1)	39.5 629.59 49.7) 17.7 7 19.8 25.1)	-12.3 (-22.7, -1.9)	-8.4 (-18.1, 1.2)	3.8 (-9.7, 17.4)
Borderline hypertension ^c	17.6 (15.9, 19.3)	21.1 (14.2, 27.9)	1/./ 	3.4 (-3.0, 9.9)	0.1 (-7.5, 7.6)	-3.4 (-13.9, 7.2
Hypertension ^d	34.5 (31.8, 37.2)	43.3 (34.0, 52.7)	42.8 ⊒36.6 , 52.1)	8.8 (-0.4, 18.1)	8.4 (-1.4, 18.2)	-0.5 (-14.6, 13.7)
Stage 1 hypertension ^e	24.2 (21.9, 26.5)	28.8 (18.9, 38.8)	33.2 2239 414.1	4.6 (-5.7, 14.9)	9.0(-2.7, 20.7)	4.4 (-10.2, 19.0)
Stage 2 hypertension ^f	10.3 (8.9, 11.7)	14.5 (10.3, 18.7)	42.8739.8, 52.1) 33.2 2239 414.1 9.64 516	4.2 (-0.3, 8.7)	-0.6 (-5.2, 3.9)	-4.9 (-9.0, -0.7)
Hypertension Diagnosis						
Previously diagnosed hypertension ^g	30.3 (27.1, 33.6)	35.8 (28.3, 43.3)	44.2 94.4 94.4 87.7 100.0	5.4 (-2.5, 13.4)	13.9 (5.0, 22.7)	8.4 (-4.7, 21.6)
Self-reported current use of anti-hypertension medication ^h	86.3 (82.7, 90.0)	95.0 (90.7, 98.9)	94.4 B 7.7 5 100.0	8.5 (2.3, 14.6)	8.1 (-0.6, 16.8)	-0.6 (-7.8, 6.9)
Undiagnosed hypertension ⁱ	18.0 (15.8, 20.2)	21.9 (13.6, 30.3)	16.2 ⁴ (12.4 20.3)	3.9 (-4.8, 12.7)	-1.8 (-7.1, 3.4)	-5.8 (-12.7, 4.8)
Hypertension Control [†]						
Controlled hypertension without medications	11.8 (9.5, 14.0)	3.5 (1.2, 5.7)	8.3 5 0.0 <mark>2</mark> 17.0)	-8.3 (-11.4, -5.2)	-3.5 (-12.8, 5.8)	4.8 (-4.7, 14.3)
Controlled hypertension with medicationsk	33.9 (28.8, 39.0)	36.6 (25.1, 48.2)	31.4 317 5; 44.9)		-2.5 (-15.1, 10.2)	-5.2 (-22.5, 12.1)
Uncontrolled hypertension without medications	15.2 (12.0, 18.5)	7.3 (2.6, 12.0)	21.3 (7.9 34.7)	-8.0 (-13.6, -2.3)	6.1 (-8.3, 20.4)	14.0 (-0.9, 27.2)
Uncontrolled hypertension with medications ^m	39.1 (35.7, 42.6)	52.6 (40.8, 64.4)	39.0 (30.7, 47.3)	13.5 (-0.2, 27.1)	-0.1 (-9.5, 9.2)	-13.6 (-28.9, 1.7)
Abbreviations:						
CI – confidence interval; IFN-y - interferon gamma; QFT – QuantiFERON	-TB Gold In-Tube		mj.com/ on nd similar te			
*Estimated by subtracting TB antigen value by TB Nil control value (LBXT			ar			
[†] Calculated among those with a previous diagnosis of hypertension by he			ter m			
^a Systolic ≥130mmHg and/or diastolic ≥80mmHg or any previous diagnosi	s of high blood pressure by	health providers	ı May echnc			
^b Systolic <120 mmHg and diastolic <80 mmHg			no			
°Systolic 120-129 mmHg and diastolic <80 mmHg			n May 21, 20 technologies			
^d Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmHg or diast	olic ≥80mmHg)		, 2 gie			
eSystolic 130-139 mmHg or diastolic 80-89 mmHg			s. 02			
^f Systolic ≥140 mmHg or diastolic ≥90 mmHg			ບ ນ			
⁹ Survey participants answered "yes" to the question "(Have you/has SP)	ever been told by a doctor o	r other health profession	al that (you/s/拍e) had	hypertension, also called high	blood pressure?"	
^h Among those who answered "yes" to "Because of (your/SP's) (high bloo	d pressure/hypertension), (h	ave you, has s/he) ever	been told to take pres	scribed medicine?", survey part	icipants also answered "yes"	to the question "(Are
you/Is SP) now taking prescribed medicine (for high blood pressure/hype		,	bar .		. ,	
Elevated blood pressure levels (Systolic ≥130mmHg or diastolic ≥80mm	la) with no prior diagnosis o	f hypertension by health	care provide			
Having systolic blood pressure <130 mmHg and a diastolic blood pressu				ure levels		
^k Having systolic blood pressure <130 mmHg and a diastolic blood pressu						
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 Table S4. Crude and adjusted associations between interferon gamma tuberculosis antigen responses
 and adjusted associations between interferon gamma tuberculosis antigen responses

 US adult population, NHANES 2011 – 2012
 and adjusted associations between interferon gamma tuberculosis antigen responses

Stratification Variables	ے۔ ۔ ۔ ۔ ۔ ۔ ۔ ۔ ۔ ۔ ۔ ۔ ۔ ۔ ۔ ۔ ۔ ۔ ۔				Adjusted Estimates*	
	Low Ag-NIL vs. QFT (-)	High Ag-NIL vs. QFT (-)	ق High vs.Ľow_Ag-NIL	Low Ag-NIL vs. QFT (-)	High Ag-NIL vs. QFT (-)	High vs. Low Ag-N
Primary study outcome						
Any hypertension indication ^a	1.19 (1.04 – 1.36)	1.25 (1.08 – 1.45)	1.05 (0 💑 4 – 🔤 1.30)	0.99 (0.86 – 1.15)	1.04 (0.93 – 1.16)	1.05 (0.85 – 1.29
Measured blood pressure categories				0.00 (0.00 1110)	1.01 (0.00 1110)	1.00 (0.00 1.20
Normal blood pressure ^b	0.74 (0.56 - 0.99)	0.82 (0.64 – 1.05)	1.11 (0000000000000000000000000000000000	0.89 (0.66 – 1.21)	0.99 (0.80 - 1.24)	1.12 (0.76 – 1.63
Borderline hypertension ^c	1.20(0.88 - 1.62)	1.00 (0.66 - 1.54)	0.84 (0.48-51.46)	1.12 (0.82 – 1.54)	0.94 (0.61 - 1.45)	0.84 (0.47 – 1.5
Hypertension	1.26 (1.01 – 1.56)	1.24 (0.98 – 1.57)	0.99 (0 7 5 - 1.37)	1.05 (0.84 – 1.32)	1.04 (0.87 – 1.24)	0.99 (0.72 – 1.34
Stage 1 hypertension ^e	1.19(0.83 - 1.77)	1.37 (0.96 – 1.97)	1.15 (0 2 2 5 1.85)	1.06 (0.73 – 1.55)	1.22 (0.89 – 1.66)	1.15 (0.72 – 1.8
Stage 2 hypertension ^f	1.41 (1.02 – 1.95)	0.94 (0.59 - 1.50)	0.67 (0∰5–≦0.99)	1.03 (0.74 – 1.44)	0.70 (0.40 – 1.23)	0.67 (0.43 – 1.0
Hypertension Diagnosis			d no no			
Previously diagnosed hypertension ^g	1.18 (0.94 – 1.48)	<u> </u>	<u>ກຊິເດີດ</u> 1.24 (0 ຊູສູດ-ດ 1.72)	0.93 (0.74 – 1.16)	1.16 (0.97 – 1.38)	1.25 (0.93 – 1.6
Self-reported current use of anti-hypertension medication ^h	1.10 (1.03 – 1.18)	1.09 (0.99 – 1.20)	1.00 (032-01.08)	1.07 (1.00 – 1.14)	1.07 (0.98 – 1.17)	1.00 (0.92 – 1.09
Undiagnosed hypertension ⁱ	1.22 (0.81 – 1.83)	0.90 (0.66 – 1.23)	0.74 (0 3 7 - 3 1.17)	1.12 (0.73 – 1.70)	0.82 (0.60 – 1.12)	0.73 (0.46 – 1.17
Hypertension Control [†]			<u> </u>	, , , , , , , , , , , , , , , , , , ,	· · · · · · · · · · · · · · · · · · ·	
Controlled hypertension without medications ^j	0.30 (0.15 – 0.58)	0.70 (0.23 - 2.12)	2.37 (03629.12)	0.53 (0.28 – 1.00)	0.97 (0.39 – 2.39)	1.83 (0.62 – 5.38
Controlled hypertension with medications ^k	1.08 (0.75 – 1.55)	0.93 (0.62 – 1.39)	0.86 (0 5 1 - 1.44)	1.01 (0.70 – 1.46)	0.89 (0.59 – 1.35)	0.88 (0.52 – 1.5
Uncontrolled hypertension without medications ¹	0.48 (0.24 – 0.94)	1.40 (0.70 – 2.81)	2.93 (1 🛃 + 💑 .40)	0.61 (0.31 – 1.21)	1.56 (0.70 – 3.47)	2.57 (1.14 – 5.7
Uncontrolled hypertension with medications ^m	1.34 (1.02 – 1.77)	1.00 (0.79 – 1.27)	0.74 (0253-31.03)	1.22 (0.92 – 1.63)	0.98 (0.75 – 1.27)	0.80 (0.57 – 1.1
Abbreviations:			nir			
[†] Calculated among those with a previous diagnosis of hypertensi ^a Systolic ≥130mmHg and/or diastolic ≥80mmHg or any previous ^b Systolic <120 mmHg and diastolic <80 mmHg ^c Systolic 120-129 mmHg and diastolic <80 mmHg ^d Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmHg ^e Systolic 130-139 mmHg or diastolic 80-89 mmHg ^f Systolic ≥140 mmHg or diastolic ≥90 mmHg ^g Survey participants answered "yes" to the question "(Have you/h	diagnosis of high blood pres or diastolic ≥80mmHg) nas SP) ever been told by a	sure by health providers doctor or other health profes:	iopen.bmj.com/ on May 21, ning, and similar technologi sional that (餪u/鉛e) had h	hypertension, also called high	n blood pressure?"	
^h Among those who answered "yes" to "Because of (your/SP's) (h you/Is SP) now taking prescribed medicine (for high blood pressu Elevated blood pressure levels (Systolic ≥130mmHg or diastolic Having systolic blood pressure <130 mmHg and a diastolic blood "Having systolic blood pressure ≥130 mmHg or diastolic blood pre mHaving systolic blood pressure ≥130 mmHg or diastolic blood pre mHaving systolic blood pressure ≥130 mmHg or diastolic blood pre mHaving systolic blood pressure ≥130 mmHg or diastolic blood pre mHaving systolic blood pressure ≥130 mmHg or diastolic blood pre	ure/hypertension)?" ≥80mmHg) with no prior dia d pressure <80 mmHg witho d pressure <80 mmHg with a essure ≥80 mmHg without a	gnosis of hypertension by he ut a record of taking medicati a record of taking medication record of taking medications	alth care providers ons to lower blogd pressur s to lower blood pressure l to lower blood pressure le	re levels levels evels	rticipants also answered "yes	" to the question "(A

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 Table S5. The crude and adjusted prevalence odds ratios of any hypertension stratified by race, body mass and category, and foreign-born status, among representative of civilian, non-institutionalized US adult population, NHANES 2011 – 2012

18 – 49 Negative Positive 50+ Negative Positive Stratified by race Hispanic Negative Positive Non-Hispanic White Negative Positive Non-Hispanic Black Negative Positive Other Race/Ethnicity Negative Positive Stratified by body mass index category Underweight (BMI <18.5 kg/m²) Negative Positive Negative Positive	frequency Hypertension*/Total 2294/4510 286/479 253/1256 6/40 512/1186 32/94 678/1033 105/166 851/1035 143/179 1568/3454 175/307 726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196 80/115	of Hypertension* $(95\%Cl)$ 48.3 (44.5 - 52.1) 58.5 (52.4 - 64.5)19.2 (16.9 - 21.5) 18.2 (0 - 37.5)42.8 (37.8 - 47.8) 36.7 (20.0 - 52.4)61.5 (58.0 - 65.0) 67.5 (55.0 - 80.1)76.7 (72.3 - 81.1) 80.2 (72.9 - 87.5)42.5 (38.5 - 46.4) 51.1 (43.4 - 58.9)65.2 (61.2 - 69.2) 72.7 (61.4 - 84.0)36.9 (31.4 - 42.5) 51.2 (42.0 - 60.4)49.9 (45.0 - 54.8) 67.0 (55.3 - 78.7)55.7 (51.8 - 59.7)	La Zi e initial structure or 95%Cl) us Reference 102 (5.0, 15.4) reference attern Reference attereference	Crude cPR (95%Cl) Reference 1.21 (1.10 – 1.33) Reference 0.95 (0.32 – 2.81) Reference 0.86 (0.59 – 1.25) Reference 1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	Adjusted [†] aPR (95%Cl) Reference 1.01 (0.92 – 1.10 Reference 0.81 (0.25 – 2.64 Reference 0.87 (0.59 – 1.26 Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference 1.08 (0.91 – 1.27
Positive Stratified by age quartiles‡ Quartile 1 (18 – 31) Negative Quartile 2 (32 – 47) Negative Quartile 3 (48 – 62) Negative Quartile 3 (48 – 62) Negative Quartile 4 (>62) Positive Quartile 4 (>62) Negative Stratified by age group 18 – 49 18 – 49 Negative 50+ Negative Stratified by race Positive Hispanic Negative Non-Hispanic White Negative Non-Hispanic Black Negative Positive Positive Other Race/Ethnicity Negative Positive Negative Positive Negative Positive Positive	2294/4510 286/479 253/1256 6/40 512/1186 32/94 678/1033 105/166 851/1035 143/179 1568/3454 175/307 726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196	$\begin{array}{c} 48.3 \ (44.5-52.1) \\ 58.5 \ (52.4-64.5) \\ \hline \\ 19.2 \ (16.9-21.5) \\ 18.2 \ (0-37.5) \\ 42.8 \ (37.8-47.8) \\ 36.7 \ (20.0-52.4) \\ 61.5 \ (58.0-65.0) \\ 67.5 \ (55.0-80.1) \\ 76.7 \ (72.3-81.1) \\ 80.2 \ (72.9-87.5) \\ \hline \\ 42.5 \ (38.5-46.4) \\ 51.1 \ (43.4-58.9) \\ 65.2 \ (61.2-69.2) \\ 72.7 \ (61.4-84.0) \\ \hline \\ 36.9 \ (31.4-42.5) \\ 51.2 \ (42.0-60.4) \\ 49.9 \ (45.0-54.8) \\ 67.0 \ (55.3-78.7) \\ 55.7 \ (51.8-59.7) \\ \end{array}$	(2.5, 14.8) (2.5, 14.8) (2.5, 14.8) (2.5, 14.8) (2.5, 14.8) (2.5, 14.8) (2.5, 14.8) (3.3, 21.3) (3.3, 21.3) (3.4, 21.3)	Reference 1.21 (1.10 – 1.33) Reference 0.95 (0.32 – 2.81) Reference 0.86 (0.59 – 1.25) Reference 1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	Reference 1.01 (0.92 – 1.10 Reference 0.81 (0.25 – 2.64 Reference 0.87 (0.59 – 1.26 Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
Positive Stratified by age quartiles‡ Quartile 1 (18 – 31) Negative Quartile 2 (32 – 47) Negative Quartile 3 (48 – 62) Negative Quartile 3 (48 – 62) Negative Quartile 4 (>62) Positive Quartile 4 (>62) Negative Stratified by age group 18 – 49 18 – 49 Negative 50+ Negative Stratified by race Positive Hispanic Negative Non-Hispanic White Negative Non-Hispanic Black Negative Positive Positive Other Race/Ethnicity Negative Positive Negative Positive Negative Positive Positive	286/479 253/1256 6/40 512/1186 32/94 678/1033 105/166 851/1035 143/179 1568/3454 175/307 726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196	58.5 (52.4 - 64.5) $19.2 (16.9 - 21.5)$ $18.2 (0 - 37.5)$ $42.8 (37.8 - 47.8)$ $36.7 (20.0 - 52.4)$ $61.5 (58.0 - 65.0)$ $67.5 (55.0 - 80.1)$ $76.7 (72.3 - 81.1)$ $80.2 (72.9 - 87.5)$ $42.5 (38.5 - 46.4)$ $51.1 (43.4 - 58.9)$ $65.2 (61.2 - 69.2)$ $72.7 (61.4 - 84.0)$ $36.9 (31.4 - 42.5)$ $51.2 (42.0 - 60.4)$ $49.9 (45.0 - 54.8)$ $67.0 (55.3 - 78.7)$ $55.7 (51.8 - 59.7)$	 102 (5.0, 15.4) reinfrage attars TReference control (-20.7, 18.7) to us 6 (-20.7, 18.7) <lito (-20.7,="" 18.7)<="" 6="" li="" us=""> to us 6 (-20.7, 18.7)</lito>	1.21 (1.10 – 1.33) Reference 0.95 (0.32 – 2.81) Reference 0.86 (0.59 – 1.25) Reference 1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	1.01 (0.92 – 1.10 Reference 0.81 (0.25 – 2.64 Reference 0.87 (0.59 – 1.26 Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
Stratified by age quartiles‡ Quartile 1 (18 – 31) Negative Positive Positive Quartile 2 (32 – 47) Negative Quartile 3 (48 – 62) Negative Quartile 3 (48 – 62) Negative Quartile 4 (>62) Negative Positive Positive Stratified by age group 18 – 49 18 – 49 Negative 50+ Negative Stratified by race Positive Hispanic Negative Non-Hispanic White Negative Non-Hispanic Black Negative Positive Stratified by body mass index category Underweight (BMI <18.5 kg/m²)	253/1256 6/40 512/1186 32/94 678/1033 105/166 851/1035 143/179 1568/3454 175/307 726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196	$\begin{array}{c} 19.2 \ (16.9 - 21.5) \\ 18.2 \ (0 - 37.5) \\ 42.8 \ (37.8 - 47.8) \\ 36.7 \ (20.0 - 52.4) \\ 61.5 \ (58.0 - 65.0) \\ 67.5 \ (55.0 - 80.1) \\ 76.7 \ (72.3 - 81.1) \\ 80.2 \ (72.9 - 87.5) \\ \hline \\ 42.5 \ (38.5 - 46.4) \\ 51.1 \ (43.4 - 58.9) \\ 65.2 \ (61.2 - 69.2) \\ 72.7 \ (61.4 - 84.0) \\ \hline \\ 36.9 \ (31.4 - 42.5) \\ 51.2 \ (42.0 - 60.4) \\ 49.9 \ (45.0 - 54.8) \\ 67.0 \ (55.3 - 78.7) \\ 55.7 \ (51.8 - 59.7) \\ \end{array}$	et construction et al. (1.20, 7, 18, 7) to the second se	Reference 0.95 (0.32 – 2.81) Reference 0.86 (0.59 – 1.25) Reference 1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	Reference 0.81 (0.25 – 2.64 Reference 0.87 (0.59 – 1.26 Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
Quartile 1 (18 – 31) Negative Positive Quartile 2 (32 – 47) Negative Positive Quartile 3 (48 – 62) Negative Positive Quartile 4 (>62) Negative Positive Stratified by age group 18 – 49 18 – 49 Negative Positive 50+ Negative Positive Stratified by race Negative Positive Hispanic Negative Positive Non-Hispanic Black Negative Positive Other Race/Ethnicity Negative Positive Stratified by body mass index category Underweight (BMI < 18.5 kg/m²)	6/40 512/1186 32/94 678/1033 105/166 851/1035 143/179 1568/3454 175/307 726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196	$\begin{array}{r} 18.2\ (0-37.5)\\ 42.8\ (37.8-47.8)\\ 36.7\ (20.0-52.4)\\ 61.5\ (58.0-65.0)\\ 67.5\ (55.0-80.1)\\ 76.7\ (72.3-81.1)\\ 80.2\ (72.9-87.5)\\ \end{array}$ $\begin{array}{r} 42.5\ (38.5-46.4)\\ 51.1\ (43.4-58.9)\\ 65.2\ (61.2-69.2)\\ 72.7\ (61.4-84.0)\\ \end{array}$ $\begin{array}{r} 36.9\ (31.4-42.5)\\ 51.2\ (42.0-60.4)\\ 49.9\ (45.0-54.8)\\ 67.0\ (55.3-78.7)\\ 55.7\ (51.8-59.7)\\ \end{array}$	io is: Reference io: Single Reference <td>0.95 (0.32 – 2.81) Reference 0.86 (0.59 – 1.25) Reference 1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)</td> <td>0.81 (0.25 – 2.64 Reference 0.87 (0.59 – 1.26 Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference</td>	0.95 (0.32 – 2.81) Reference 0.86 (0.59 – 1.25) Reference 1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	0.81 (0.25 – 2.64 Reference 0.87 (0.59 – 1.26 Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
PositiveQuartile 2 (32 – 47)Negative PositiveQuartile 3 (48 – 62)Negative PositiveQuartile 4 (>62)Negative PositiveStratified by age group18 – 4918 – 49Negative Positive50+Negative PositiveStratified by raceNegative PositiveHispanicNegative PositiveNon-Hispanic BlackNegative PositiveNon-Hispanic BlackNegative PositiveOther Race/EthnicityNegative PositiveStratified by body mass index category Underweight (BMI <18.5 kg/m²)	6/40 512/1186 32/94 	$\begin{array}{r} 18.2\ (0-37.5)\\ 42.8\ (37.8-47.8)\\ 36.7\ (20.0-52.4)\\ 61.5\ (58.0-65.0)\\ 67.5\ (55.0-80.1)\\ 76.7\ (72.3-81.1)\\ 80.2\ (72.9-87.5)\\ \end{array}$ $\begin{array}{r} 42.5\ (38.5-46.4)\\ 51.1\ (43.4-58.9)\\ 65.2\ (61.2-69.2)\\ 72.7\ (61.4-84.0)\\ \end{array}$ $\begin{array}{r} 36.9\ (31.4-42.5)\\ 51.2\ (42.0-60.4)\\ 49.9\ (45.0-54.8)\\ 67.0\ (55.3-78.7)\\ 55.7\ (51.8-59.7)\\ \end{array}$	io is: Reference io: Single Reference <td>0.95 (0.32 – 2.81) Reference 0.86 (0.59 – 1.25) Reference 1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)</td> <td>0.81 (0.25 – 2.64 Reference 0.87 (0.59 – 1.26 Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference</td>	0.95 (0.32 – 2.81) Reference 0.86 (0.59 – 1.25) Reference 1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	0.81 (0.25 – 2.64 Reference 0.87 (0.59 – 1.26 Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
PositiveQuartile 2 (32 – 47)Negative PositiveQuartile 3 (48 – 62)Negative PositiveQuartile 4 (>62)Negative PositiveStratified by age group18 – 4918 – 49Negative Positive50+Negative PositiveStratified by raceNegative PositiveHispanicNegative PositiveNon-Hispanic BlackNegative PositiveNon-Hispanic BlackNegative PositiveOther Race/EthnicityNegative PositiveStratified by body mass index category Underweight (BMI <18.5 kg/m²)	512/1186 32/94 678/1033 	$\begin{array}{c} 42.8 \ (37.8-47.8) \\ 36.7 \ (20.0-52.4) \\ 61.5 \ (58.0-65.0) \\ 67.5 \ (55.0-80.1) \\ 76.7 \ (72.3-81.1) \\ 80.2 \ (72.9-87.5) \\ \hline \\ 42.5 \ (38.5-46.4) \\ 51.1 \ (43.4-58.9) \\ 65.2 \ (61.2-69.2) \\ 72.7 \ (61.4-84.0) \\ \hline \\ \hline \\ 36.9 \ (31.4-42.5) \\ 51.2 \ (42.0-60.4) \\ 49.9 \ (45.0-54.8) \\ 67.0 \ (55.3-78.7) \\ 55.7 \ (51.8-59.7) \\ \end{array}$	io is: Reference io: Single Reference <td>Reference 0.86 (0.59 – 1.25) Reference 1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)</td> <td>Reference 0.87 (0.59 – 1.26 Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference</td>	Reference 0.86 (0.59 – 1.25) Reference 1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	Reference 0.87 (0.59 – 1.26 Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
Positive Quartile 3 (48 – 62) Negative Quartile 4 (>62) Negative Quartified by age group Positive Stratified by age group 18 – 49 18 – 49 Negative 50+ Negative Stratified by race Positive Hispanic Negative Non-Hispanic White Negative Non-Hispanic Black Negative Other Race/Ethnicity Negative Other Race/Ethnicity Negative Stratified by body mass index category Underweight (BMI <18.5 kg/m²)	32/94 678/1033 105/166 851/1035 143/179 1568/3454 175/307 726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196	$\begin{array}{r} 36.7 (20.0-52.4) \\ 61.5 (58.0-65.0) \\ 67.5 (55.0-80.1) \\ 76.7 (72.3-81.1) \\ 80.2 (72.9-87.5) \\ \hline \\ 42.5 (38.5-46.4) \\ 51.1 (43.4-58.9) \\ 65.2 (61.2-69.2) \\ 72.7 (61.4-84.0) \\ \hline \\ 36.9 (31.4-42.5) \\ 51.2 (42.0-60.4) \\ 49.9 (45.0-54.8) \\ 67.0 (55.3-78.7) \\ 55.7 (51.8-59.7) \\ \end{array}$	io is: Reference io: Single Reference <td>0.86 (0.59 – 1.25) Reference 1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)</td> <td>0.87 (0.59 – 1.26 Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference</td>	0.86 (0.59 – 1.25) Reference 1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	0.87 (0.59 – 1.26 Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
Quartile 3 (48 – 62) Negative Positive Quartile 4 (>62) Negative Positive Stratified by age group 18 – 49 18 – 49 Negative Positive 50+ Negative Positive Stratified by race Negative Positive Hispanic Negative Positive Non-Hispanic White Negative Positive Non-Hispanic Black Negative Positive Other Race/Ethnicity Negative Positive Stratified by body mass index category Underweight (BMI <18.5 kg/m²)	678/1033 105/166 851/1035 143/179 1568/3454 175/307 726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196	$\begin{array}{c} 61.5 \ (58.0-65.0) \\ 67.5 \ (55.0-80.1) \\ 76.7 \ (72.3-81.1) \\ 80.2 \ (72.9-87.5) \\ \hline \\ 42.5 \ (38.5-46.4) \\ 51.1 \ (43.4-58.9) \\ 65.2 \ (61.2-69.2) \\ 72.7 \ (61.4-84.0) \\ \hline \\ 36.9 \ (31.4-42.5) \\ 51.2 \ (42.0-60.4) \\ 49.9 \ (45.0-54.8) \\ 67.0 \ (55.3-78.7) \\ 55.7 \ (51.8-59.7) \\ \end{array}$	t ge Reference a ge Reference a ge (-5.9, 18.0) cho Reference a ge (-5.1, 12.1) mi Reference ng Reference A (2.5, 14.8) Reference A (2.5, 14.8) Reference A (-3.1, 18.1) Tami Reference A (-3.1, 18.1) A (-3.1,	Reference 1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	Reference 1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
Positive Quartile 4 (>62) Negative Positive Stratified by age group 18 – 49 18 – 49 Positive 50+ Negative Positive Stratified by race Negative Positive Hispanic Negative Positive Non-Hispanic White Negative Positive Non-Hispanic Black Negative Positive Other Race/Ethnicity Negative Positive Stratified by body mass index category Underweight (BMI <18.5 kg/m²)	105/166 851/1035 143/179 1568/3454 175/307 726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196	$\begin{array}{r} 67.5\ (55.0-80.1)\\ 76.7\ (72.3-81.1)\\ 80.2\ (72.9-87.5)\\ \hline \\ 42.5\ (38.5-46.4)\\ 51.1\ (43.4-58.9)\\ 65.2\ (61.2-69.2)\\ 72.7\ (61.4-84.0)\\ \hline \\ \hline \\ 36.9\ (31.4-42.5)\\ 51.2\ (42.0-60.4)\\ 49.9\ (45.0-54.8)\\ 67.0\ (55.3-78.7)\\ 55.7\ (51.8-59.7)\\ \end{array}$	ng 6 2 (-5.9, 18.0) do a Reference at 9 6 (-5.1, 12.1) mini Reference ng 7 (2.5, 14.8) Reference 7 5 (-3.1, 18.1) Train Reference 14 3 (7.3, 21.3) an Reference 14 3 (7.3, 21.3) Reference 14 3 (5.7, 28.6)	1.10 (0.92 – 1.31) Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	1.03 (0.88 – 1.21 Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
Quartile 4 (>62) Negative Positive Stratified by age group 18 – 49 18 – 49 Positive 50+ Negative Positive Stratified by race Positive Hispanic Negative Positive Non-Hispanic White Negative Positive Non-Hispanic Black Negative Positive Other Race/Ethnicity Negative Positive Stratified by body mass index category Underweight (BMI <18.5 kg/m²)	851/1035 143/179 1568/3454 175/307 726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196	$\begin{array}{c} 76.7 \ (72.3-81.1) \\ 80.2 \ (72.9-87.5) \\ \hline \\ 42.5 \ (38.5-46.4) \\ 51.1 \ (43.4-58.9) \\ 65.2 \ (61.2-69.2) \\ 72.7 \ (61.4-84.0) \\ \hline \\ \hline \\ 36.9 \ (31.4-42.5) \\ 51.2 \ (42.0-60.4) \\ 49.9 \ (45.0-54.8) \\ 67.0 \ (55.3-78.7) \\ 55.7 \ (51.8-59.7) \\ \end{array}$	ng 6 2 (-5.9, 18.0) do a Reference at 9 6 (-5.1, 12.1) mini Reference ng 7 (2.5, 14.8) Reference 7 5 (-3.1, 18.1) Train Reference 14 3 (7.3, 21.3) an Reference 14 3 (7.3, 21.3) Reference 14 3 (5.7, 28.6)	Reference 1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	Reference 1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
Positive Stratified by age group 18 – 49 Negative 18 – 49 Positive 50+ Negative 50+ Negative Stratified by race Positive Hispanic Negative Non-Hispanic White Negative Non-Hispanic Black Negative Other Race/Ethnicity Negative Other Race/Ethnicity Negative Stratified by body mass index category Underweight (BMI <18.5 kg/m²)	143/179 1568/3454 175/307 726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196	80.2 (72.9 - 87.5) $42.5 (38.5 - 46.4)$ $51.1 (43.4 - 58.9)$ $65.2 (61.2 - 69.2)$ $72.7 (61.4 - 84.0)$ $36.9 (31.4 - 42.5)$ $51.2 (42.0 - 60.4)$ $49.9 (45.0 - 54.8)$ $67.0 (55.3 - 78.7)$ $55.7 (51.8 - 59.7)$	A Q3 (9) (-5.1, 12.1) mini Reference ni Reference 7 (-3.1, 18.1) rai Reference 143 (7.3, 21.3) Reference 143 143 (5.7, 28.6)	1.05 (0.94 – 1.17) Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	1.03 (0.91 – 1.17 Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
Stratified by age group 18 – 49 Negative Positive 50+ Negative Positive Stratified by race Hispanic Hispanic Negative Positive Non-Hispanic White Negative Positive Non-Hispanic Black Negative Positive Other Race/Ethnicity Negative Positive Stratified by body mass index category Underweight (BMI <18.5 kg/m²)	1568/3454 175/307 726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196	$\begin{array}{c} 42.5 \ (38.5-46.4) \\ 51.1 \ (43.4-58.9) \\ 65.2 \ (61.2-69.2) \\ 72.7 \ (61.4-84.0) \\ \hline \\ \hline \\ 36.9 \ (31.4-42.5) \\ 51.2 \ (42.0-60.4) \\ 49.9 \ (45.0-54.8) \\ 67.0 \ (55.3-78.7) \\ 55.7 \ (51.8-59.7) \\ \end{array}$	A Q3 (9) (-5.1, 12.1) mini Reference ni Reference 7 (-3.1, 18.1) rai Reference 143 (7.3, 21.3) Reference 143 143 (5.7, 28.6)	Reference 1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	Reference 0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
18 – 49 Negative Positive 50+ Negative Positive Stratified by race Hispanic Negative Positive Non-Hispanic White Negative Positive Non-Hispanic Black Negative Positive Other Race/Ethnicity Negative Positive Stratified by body mass index category Underweight (BMI <18.5 kg/m²)	175/307 726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196	51.1 (43.4 - 58.9) $65.2 (61.2 - 69.2)$ $72.7 (61.4 - 84.0)$ $36.9 (31.4 - 42.5)$ $51.2 (42.0 - 60.4)$ $49.9 (45.0 - 54.8)$ $67.0 (55.3 - 78.7)$ $55.7 (51.8 - 59.7)$	m. m	1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
Positive 50+ Negative 50+ Negative Stratified by race Positive Hispanic Negative Positive Positive Non-Hispanic White Negative Non-Hispanic Black Negative Other Race/Ethnicity Negative Stratified by body mass index category Underweight (BMI <18.5 kg/m²)	175/307 726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196	51.1 (43.4 - 58.9) $65.2 (61.2 - 69.2)$ $72.7 (61.4 - 84.0)$ $36.9 (31.4 - 42.5)$ $51.2 (42.0 - 60.4)$ $49.9 (45.0 - 54.8)$ $67.0 (55.3 - 78.7)$ $55.7 (51.8 - 59.7)$	A Reference 75 (-3.1, 18.1) 75 (-3.1, 18.1)	1.20 (1.07 – 1.36) Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	0.95 (0.84 – 1.08 Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
50+ Negative Positive Stratified by race Hispanic Negative Positive Non-Hispanic White Negative Positive Non-Hispanic Black Negative Positive Other Race/Ethnicity Negative Positive Stratified by body mass index category Underweight (BMI <18.5 kg/m ²) Negative Positive	726/1056 111/172 374/864 67/158 947/1769 47/71 711/1196	65.2 (61.2 - 69.2) 72.7 (61.4 - 84.0) 36.9 (31.4 - 42.5) 51.2 (42.0 - 60.4) 49.9 (45.0 - 54.8) 67.0 (55.3 - 78.7) 55.7 (51.8 - 59.7)	A Reference 75 (-3.1, 18.1) 75 (-3.1, 18.1)	Reference 1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	Reference 1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
Positive Stratified by race Hispanic Negative Positive Negative Non-Hispanic White Negative Non-Hispanic Black Negative Other Race/Ethnicity Negative Stratified by body mass index category Underweight (BMI <18.5 kg/m²) Negative Positive Negative Positive	111/172 374/864 67/158 947/1769 47/71 711/1196	72.7 (61.4 - 84.0) 36.9 (31.4 - 42.5) 51.2 (42.0 - 60.4) 49.9 (45.0 - 54.8) 67.0 (55.3 - 78.7) 55.7 (51.8 - 59.7)	A Reference 75 (-3.1, 18.1) 75 (-3.1, 18.1)	1.11 (0.96 – 1.29) Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	1.07 (0.93 – 1.24 Reference 0.98 (0.86 – 1.11 Reference
Stratified by race Hispanic Negative Positive Non-Hispanic White Negative Positive Non-Hispanic Black Negative Positive Other Race/Ethnicity Negative Positive Stratified by body mass index category Underweight (BMI <18.5 kg/m ²) Negative Positive Negative	374/864 67/158 947/1769 47/71 711/1196	36.9 (31.4 – 42.5) 51.2 (42.0 – 60.4) 49.9 (45.0 – 54.8) 67.0 (55.3 – 78.7) 55.7 (51.8 – 59.7)	and 121 (5.7, 18.1)	Reference 1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	Reference 0.98 (0.86 – 1.11 Reference
Hispanic Negative Positive Non-Hispanic White Negative Positive Non-Hispanic Black Negative Positive Other Race/Ethnicity Negative Positive Stratified by body mass index category Underweight (BMI <18.5 kg/m ²) Negative Positive	67/158 947/1769 47/71 711/1196	51.2 (42.0 - 60.4) 49.9 (45.0 - 54.8) 67.0 (55.3 - 78.7) 55.7 (51.8 - 59.7)	n. Reference 143 (7.3, 21.3) Reference 141 (5.7, 28.6)	1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	0.98 (0.86 – 1.11 Reference
Positive Non-Hispanic White Negative Positive Positive Non-Hispanic Black Negative Other Race/Ethnicity Negative Stratified by body mass index category Positive Underweight (BMI <18.5 kg/m²)	67/158 947/1769 47/71 711/1196	51.2 (42.0 - 60.4) 49.9 (45.0 - 54.8) 67.0 (55.3 - 78.7) 55.7 (51.8 - 59.7)	Reference d. 121 (5.7, 28.6)	1.39 (1.20 – 1.60) Reference 1.34 (1.12 – 1.60)	0.98 (0.86 – 1.11 Reference
Non-Hispanic White Negative Positive Non-Hispanic Black Negative Positive Other Race/Ethnicity Negative Positive Stratified by body mass index category Negative Positive Underweight (BMI <18.5 kg/m ²) Negative Positive	947/1769 47/71 711/1196	49.9 (45.0 – 54.8) 67.0 (55.3 – 78.7) 55.7 (51.8 – 59.7)	Reference d. 121 (5.7, 28.6)	Reference 1.34 (1.12 – 1.60)	Reference
Positive Non-Hispanic Black Negative Positive Positive Other Race/Ethnicity Negative Stratified by body mass index category Positive Underweight (BMI <18.5 kg/m²)	<u>47/71</u> 711/1196	<u>67.0 (55.3 – 78.7)</u> 55.7 (51.8 – 59.7)	a 1 <u>a</u> 1 (5.7, 28.6)	1.34 (1.12 – 1.60)	
Non-Hispanic Black Negative Positive Other Race/Ethnicity Negative Positive Stratified by body mass index category Negative Underweight (BMI <18.5 kg/m²)	711/1196	55.7 (51.8 – 59.7)	a 1 <u>a</u> 1 (5.7, 28.6)		1.08 (0.91 – 1.27
Positive Other Race/Ethnicity Negative Positive Stratified by body mass index category Underweight (BMI <18.5 kg/m²)			(A Defense		
Other Race/Ethnicity Negative Positive Stratified by body mass index category Underweight (BMI <18.5 kg/m²)	80/115		Seference	Reference	Reference
Positive Stratified by body mass index category Underweight (BMI <18.5 kg/m²)	00/110	64.6 (52.0 – 77.2)	S. Reference S. 89 (-3.9, 21.6)	1.16 (0.95 – 1.42)	0.86 (0.71 – 1.05
Stratified by body mass index category Underweight (BMI <18.5 kg/m²)	262/681	42.7 (37.5 – 47.9)	Reference	Reference	Reference
Underweight (BMI <18.5 kg/m ²) Negative Positive	68/135	48.4 (41.3 – 55.6)	6 5.7 (-1.0, 12.4)	1.13 (0.98 – 1.31)	0.88 (0.71 – 1.09
Positive		· · ·	<u> </u>	· · ·	
	28/96	29.9 (22.4 - 37.5)	o Reference	Reference	Reference
	7/11	50.9 (10.6 – 91.2)	 21 , (-20.5, 62.6)	1.70 (0.71 – 4.05)	0.71 (0.34 – 1.51
Normal (BMI 18.5 – 24.9 kg/m ²) Negative	478/1367	31.5 (26.9 - 36.1)	B eference	Reference	Reference
Positive	75/149	49.2 (36.8 – 61.7)	ິ ^ທ 17 <u>8</u> 7 (6.3, 29.2)	1.56 (1.23 – 1.98)	1.24 (1.00 – 1.52
Overweight (BMI 25 – 29.9 kg/m ²) Negative	709/1400	49.7 (46.2 - 53.2)	Reference	Reference	Reference
Positive	96/160	59.3 (46.0 - 72.6)	9🛱 (-2.9, 22.2)	1.19 (0.97 – 1.48)	0.98 (0.81 – 1.20
Obese (BMI ≥30 kg/m ²) Negative	1040/1592	61.6 (57.2 – 66.1)	Reference	Reference	Reference
Positive	107/155	67.5 (57.9 – 77.1)	5 🙀 (-2.5, 14.3)	1.10 (0.97 – 1.24)	0.98 (0.89 – 1.08
Stratified by foreign born status		. ,	B	. ,	· · ·
US Born Negative	1793/3341	50.2 (46.8 - 53.7)	Reference	Reference	Reference
Positive	120/172	65.6 (56.1 – 75.1)	1504 (5.8, 25.0)	1.31 (1.12 - 1.52)	1.05 (0.92 - 1.21

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		Unweighted	Weighted Prevalence		Prevalen	ce Ratios
Stratification Variables	QFT Status	frequency	of Hypertension*	Pifference	Crude	Adjusted [†]
		Hypertension*/Total	(95%CI)	ଜୁ ସ୍ଥି(95%Cl)	cPR (95%Cl)	aPR (95%CI)
Foreign Born	Negative	500/1167	37.7 (31.9 – 43.4)	F eference	Reference	Reference
	Positive	166/307	51.3 (45.4 – 57.1)	🖳 1306 (9.3, 17.9)	1.36 (1.22 – 1.51)	1.05 (0.92 – 1.21)
Stratified by current smoking sta	atus		· · ·	Ör On	· · ·	· · ·
No	Negative	627/954	61.8 (56.0 - 67.7)	5 5 5 5 6 6 6 7 6 6 7 6 7 6 7 6 7 7 7 7 7 7 7 7 7 7	Reference	Reference
	Positive	95/130	76.2 (66.8 - 85.6)	ģ 14 4 (4.2, 24.5)	1.23 (1.07 – 1.42)	1.09 (0.93 – 1.27)
Yes	Negative	439/851	47.2 (42.5 – 52.0)	a Reference	Reference	Reference
	Positive	56/101	47.5 (34.4 - 60.7)	<u> ም</u> ዋeference	1.01 (0.74 – 1.37)	0.89 (0.69 - 1.14)
Stratified by diabetes status				20 asr		
Euglycemic	Negative	1083/2764	39.6 (35.4 – 43.8)	ਰ ਟੋ 🕱 eference	Reference	Reference
	Positive	114/223	50.6 (42.6 - 58.5)	🚡 🗳 🤂 (3.0, 18.9)	1.28 (1.08 – 1.51)	1.01 (0.86 – 1.18)
Pre-diabetes	Negative	689/1102	59.8 (56.6 - 63.0)	A g Reference	Reference	Reference
	Positive	83/141	57.9 (44.2 – 71.6)	😫 🗑 .🗕 (-15.6, 11.8)	0.97 (0.76 – 1.23)	0.95 (0.76 - 1.18)
Diabetes	Negative	522/644	81.1 (78.3 – 83.9)	C S Reference	Reference	Reference
	Positive	89/115	78.6 (68.7 – 88.5)	a 0265 (-13.0, 8.0)	0.97 (0.85 – 1.11)	0.94 (0.82 - 1.07)
Stratified by HIV Status						· · · · ·
HIV negative	Negative	1226/3130	39.1 (35.5 – 42.6)	A Reference 5 4. 7 (-4.3, 12.5)	Reference	Reference
-	Positive	102/243	43.2 (34.8 – 51.6)]; 4.] (-4.3, 12.5)	1.11 (0.91 – 1.35)	0.93 (0.81 – 1.07)
HIV positive	Negative	4/15	18.4 (0 – 39.0)	eference	Reference	Reference
-	Positive	1/1	100.0 (100.0 - 100.0)	🗷 1.🕃 (61.0 – 100.0)	5.43 (1.92 – 15.36)	6.24 (1.79 – 21.72)

Positive 1/1 100.0 (100.0 - 100.0) 211.€(61.0 - 100.0) 5.43 (1.92 - 15 aPR - adjusted prevalence ratio; CI - Confidence interval; PR - prevalence ratio; QFT - QuantiFERON TB Gold In-Tube; US - United States *Systolic ≥130mmHg and/or diastolic ≥80mmHg or any previous diagnosis of high blood pressure by head in providers *Adjusted for age (continuous) and gender *Adjusted for gender *Adjusted for gender

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 Table S6. Weighted prevalence of various hypertension classifications by confirmed tuberculosis infection structure
 Sector Sect

		Pr in	rmed TB Infection S N=4,266	เลเมร	
Hypertension Measures	Confi		Discordant TST and QFT		
	Negative N=3706	Posvitive≦ N= <u>a</u> igna	TST [*] – and QFT + N=177	TST + and QFT – N=193	Any Discordance N=370
	92.2% (90.5 – 93.9)		2.5 (1.4 – 3.5)	3.2 (2.5 – 4.00)	5.7% (4.6 - 6.8)
Primary study outcome	40 G (4E 7 E2 E)	<u>2.1% (144 4 2.8)</u> d sm 40.3) 60.8 (51 6 4 0.3) 60.8 (516 5 0 0			ED 7 (42 0 64 6
Any hypertension indication ^a (n=2,250/4,266)	49.6 (45.7 – 53.5)		50.5 (38.9 - 62.2)	54.4 (43.5 - 65.4)	52.7 (43.9 – 61.6
Measured blood pressure categories	470/400 54 4)	36.6 (27,60,405.5) 15.3 (8,11,40,405.5) 48.1 (38,60,6,6,6,6) 37.0 (28,60,6,6,6,6) 11.1 (6,2,7,6,1)	40.0 (40.0 50.7)		44.0 (05.0 50.0
Normal blood pressure ^b (n=1,914)	47.0 (42.9 – 51.1)	30.0 (2/ .00 € €5.5)	49.8 (40.9 – 58.7)	39.6 (26.1 – 53.0)	44.0 (35.2 – 52.9
Borderline hypertension ^c (n=714)	17.8 (15.5 – 20.0)	15.3 (8. 3 % 22 .3)	16.3 (8.2 – 24.4)	25.1 (14.7 – 35.5)	21.3 (13.4 – 29.1
Hypertensiond (n=1,638/4,266)	35.2 (32.3 – 38.1)	48.1 (38.0 - 5 0/.6)	33.9 (25.4 – 42.4)	35.3 (26.9 – 43.7)	34.7 (28.3 – 41.1
Stage 1 hypertension ^e (n=1121)	24.9 (22.5 – 27.3)		25.4 (16.7 – 34.1)	24.0 (12.6 – 35.4)	24.6 (16.3 – 32.9
Stage 2 hypertension ^f (n=517)	10.3 (8.9 – 11.7)	<u> </u>	8.5 (3.3 – 13.7)	11.3 (4.0 – 18.5)	10.1 (5.5 – 14.6)
Hypertension Diagnosis	00.0 (07.5 04.0)		00 4 (47 0 40 0)		00.0/07.0 40.0
Previously diagnosed hypertension ⁹ (n=1,496/4,266)	30.9 (27.5 – 34.3)	35.8 (275 – 4.0)	29.4 (17.9 – 40.8)	37.1 (25.9 – 48.4)	33.8 (27.0 – 40.6
Self-reported current use of anti-hypertension medication ^h (n=1,292/1,496)	86.0 (82.2 - 89.9)	90.2(79.7 - 10.0)	81.5 (65.8 – 97.1)	98.6 (96.0 – 100.0)	92.5 (87.4 – 97.5
Undiagnosed hypertension ⁱ (n=754/4,266)	18.7 (16.4 – 21.0)	25.2 (18 – 22.3)	21.4 (12.2 – 30.6)	17.3 (6.1 – 28.5)	19.1 (12.2 – 25.9
Hypertension Control (n=1,496)					
Controlled hypertension without medications ¹ (n=1,286)	11.8 (9.6, 13.9)	6.9 (0. 9 , 1 5 0)	13.5 (1.6, 25.4)	5.4 (1.0, 9.8)	8.4 (3.5, 13.3)
Controlled hypertension with medications ^k (n=79)	34.8 (29.2, 40.4)	28.9 (1622, 41.6)	43.6 (20.8, 66.4)	46.1 (34.0, 58.2)	45.2 (35.4, 55.0
Uncontrolled hypertension without medications ¹ (n=51)	15.0 (11.5, 18.4)	17.2 (5,7, 28.7)	18.9 (6.1, 29.7)	5.4 (0.3, 10.5)	10.1 (5.5, 14.7)
Uncontrolled hypertension with medications ^m (n=80)	38.5 (34.7, 42.2)	47.0 (3622, 57.8)	25.0 (12.3, 37.7)	43.1 (28.9, 57.3)	36.3 (26.4, 46.2
Abbreviations:	dia alda 4a at	simil			
CI – confidence interval; QFT – QuantiFERON-TB Gold In-Tube; TST – tubercu	Jiin skin test	nii m			
TST positive was defined as skin induration ≥5mm among HIV-positive individu	iala ar >10mm amana H			noton) Induration <5m	m (for HIV positive
ndividuals) or ≤ 10 mm (for HIV-negative individuals) was considered negative	als of 210mm among r		INTAINES analytical	notes). Induration Sin	
(101 M) maximum (101		May			
²Systolic ≥130mmHg and/or diastolic ≥80mmHg or any previous diagnosis of hi	ah blood procesure by b	0 '			
Systolic < 120 mmHg and diastolic < 80 mmHg	gii blood pressure by ne	· O -			
Systolic 120-129 mmHg and diastolic <80 mmHg		2025 ies.			
	(OmmUa)	° 25			
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ⁱ Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmHg or diastolic ≥8	onning)	H			
^I Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmHg or diastolic ≥8 vSystolic 130-139 mmHg or diastolic 80-89 mmHg	ommig)				
^I Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmHg or diastolic ≥8 ²Systolic 130-139 mmHg or diastolic 80-89 mmHg Systolic ≥140 mmHg or diastolic ≥90 mmHg		at Dep			Und birk bland
^I Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmHg or diastolic ≥8 vSystolic 130-139 mmHg or diastolic 80-89 mmHg		bther health provession	nal that (you/s/he) had	l hypertension, also ca	lled high blood
^d Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmHg or diastolic ≥8 Systolic 130-139 mmHg or diastolic 80-89 mmHg Systolic ≥140 mmHg or diastolic ≥90 mmHg 2Survey participants answered "yes" to the question "(Have you/has SP) ever b	een told by a doctor or o	÷ ÷			-
^d Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmHg or diastolic ≥8 ² Systolic 130-139 mmHg or diastolic 80-89 mmHg Systolic ≥140 mmHg or diastolic ≥90 mmHg ² Survey participants answered "yes" to the question "(Have you/has SP) ever b pressure?" ³ Among those who answered "yes" to "Because of (your/SP's) (high blood pres	een told by a doctor or o sure/hypertension), (ha	ve you, has s/h	been told to take pre		-
^d Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmHg or diastolic ≥8 Systolic 130-139 mmHg or diastolic 80-89 mmHg Systolic ≥140 mmHg or diastolic ≥90 mmHg ^J Survey participants answered "yes" to the question "(Have you/has SP) ever bo pressure?"	een told by a doctor or o sure/hypertension), (ha	ve you, has s/h	been told to take pre		-

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1 2	opyrie
2 3 4 5 6 7	ⁱ Elevated blood pressure levels (Systolic ≥130mmHg or diastolic ≥80mmHg) with no prior diagnosis of hypertension be health care providers ^j Having systolic blood pressure <130 mmHg and a diastolic blood pressure <80 mmHg without a record of taking medications to lower blood pressure levels ^k Having systolic blood pressure <130 mmHg and a diastolic blood pressure <80 mmHg with a record of taking medications to lower blood pressure levels ^l Having systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg without a record of taking medications to lower blood pressure levels ^l Having systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg with a record of taking medications to lower blood pressure levels ^m Having systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg with a record of taking medications to lower blood pressure levels ^m Having systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg with a record of taking medications to lower blood pressure levels
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 Table S7. Crude and adjusted associations between confirmed tuberculosis infection status and hypertensions among representative of civilian, non-institutionalized US adult population, NHANES 2011 – 2012

	alleagures of Association					
	Prevalence Difference (95%CI)		Prevalence Ratios (PR)			
Hypertension Measures			ត្តិ Crude PR (95%Cl)		Adjusted [*] PR (95%Cl)	
	Confirmed TBI vs. non-TBI	Any Discordance vs. non-TBI	Confirmed Tell vs. norse EBE	Any Discordance vs. non-TBI	Confirmed TBI vs. non-TBI	Any Discordanc vs. non-TBI
Primary study outcome			20 asi ied			
Any hypertension indication ^a	11.3 (1.0, 21.5)	3.2 (-5.1 – 11.5)	1.23 (1.68 글 1.46)	1.06 (0.91 – 1.25)	1.08 (0.90 – 1.30)	0.98 (0.84 – 1.14
Measured blood pressure categories			te sh			
Normal blood pressure ^b	-10.5 (-19.4, -1.6)	3.0 (-12.5, 6.4)	0.78 (0.64 9 .99)	0.94 (0.76 – 1.16)	0.89 (0.69 – 1.15)	1.03 (0.84 – 1.2
Borderline hypertension ^c	-2.4 (-9.5, 4.6)	3.5 (-4.1, 11.1)	0.86 (0. 5£5 %, 3 .36)	1.20 (0.84 – 1.71)	0.82 (0.51 – 1.32)	1.15 (0.81 – 1.6
Hypertension ^d	12.9 (2.8, 23.0)	-0.5 (-7.1, 6.1)	1.37 (1.199 🛱 💁 😨 .70)	0.99 (0.82 – 1.19)	1.21 (0.98 – 1.49)	0.91 (0.75 – 1.1
Stage 1 hypertension ^e	12.1 (2.8, 21.5)	-0.2 (-8.5, 8.0)	1.49 (1.월 🎘 🖗 94)	0.99 (0.71 – 1.38)	1.37 (1.06 – 1.77)	0.93 (0.66 – 1.3
Stage 2 hypertension ^f	0.8 (-4.1, 5.7)	-0.3 (-5.2, 4.7)	1.49 (1.월 5 8.94) 1.08 (0. 9 - 4 .68)	0.98 (0.60 – 1.59)	0.88 (0.53 – 1.48)	0.86 (0.52 – 1.4
Hypertension Diagnosis			mi rc	, , , , , , , , , , , , , , , , , , ,	``````````````````````````````````````	
Previously diagnosed hypertension ⁹	4.9 (-3.0, 12.7)	2.9 (-5.0, 10.7)	1.16 (0. 5 – 3 .44)	1.09 (0.86 - 1.38)	0.99 (0.77 – 1.28)	1.00 (0.81 – 1.2
Self-reported current use of anti-hypertension medication ^h	4.2 (-8.1, 16.5)	6.4 (0.6, 12.3)	1.05 (0.91 – 720)	1.07 (1.01 – 1.15)	1.03 (0.91 – 1.18)	1.08 (1.01 – 1.1
Undiagnosed hypertension ⁱ	6.5 (-0.3, 13.3)	0.4 (-6.9, 7.7)	1.35 (1.03 – 7.77)	1.02 (0.70 – 1.50)	1.26 (0.97 – 1.64)	0.96 (0.65 – 1.4
Hypertension Control [†]						0.00 1.
Controlled hypertension without medications ^j	-4.9 (-14.2, 4.4)	-3.3 (-8.6, 2.0)	0.59 (0. 🔓 – 🛃 10)	0.72 (0.39 – 1.32)	0.85 (0.27 – 2.70)	0.85 (0.48 – 1.5
Controlled hypertension with medications ^k	-5.9 (-18.6, 6.8)	10.4 (-0.6, 21.4)	$0.83 (0.54 - \frac{2}{3}.28)$	1.30 (1.00 – 1.69)	0.81 (0.53 – 1.22)	1.26 (0.97 – 1.6
Uncontrolled hypertension without medications	2.3 (-9.7, 14.2)	-4.9 (-10.3, 5.4)	1.15 (0. 57 – 2 .33)	0.68 (0.42 – 1.10)	1.32 (0.68 – 2.58)	0.70 (0.41 – 1.1
Uncontrolled hypertension with medications ^m	8.5 (-3.4, 20.4)	-2.2 (-12.4, 8.1)	$1.13(0.97 - \frac{1}{2}.33)$ $1.22(0.94 - \frac{1}{2}.58)$	0.94 (0.71 – 1.25)	1.20 (0.91 – 1.58)	1.27 (1.05 – 1.5
CI – confidence interval; PR – prevalence ratio; TBI – tubercule *Models adjusted for age and gender †Calculated among those with a previous diagnosis of hyperter aSystolic ≥130mmHg and/or diastolic ≥80mmHg or any previou bSystolic <120 mmHg and diastolic <80 mmHg cSystolic 120-129 mmHg and diastolic <80 mmHg	nsion by healthcare provi		nj.com/ on May 21, 2025 d similar technologies.			

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1 2 3 4 5	الطعنام systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg without a record of taking medications to loger blood pressure levels ^m Having systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg with a record of taking medications to loger blood pressure levels
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BMJ Open Table S8. Sensitivity analysis to account for misclassification of covariates and different ways to handle age confounder) included in the multivariable survey-weighted robus Poisson models to estimate the association between tuberculosis infection and hypertension among representative of civilian, non-institutionalized US adult population, NHANES 2011-2012

		g for	Adjusted Prevalence Ratios		
Models	Covariate(s) included in the model	QFT Resutt	A (Age, continuous)	B (Age Group - Quartiles)	
		es M	aPR (95%CI)	aPR (95%Cl)	
Model 1	Age	Negative arch Positive as 22 Negative 22	Reference	Reference	
		Positive	1.02 (0.93 – 1.13)	1.03 (0.93 – 1.14)	
Model 2	Age, sex	Negative 2 2	Reference	Reference	
		Positive 4	1.01 (0.92 – 1.10)	1.01 (0.91 – 1.13)	
Model 3	Age, sex, BMI	Negative s	Reference	Reference	
		Positive 8 5	1.02 (0.92 – 1.13)	1.03 (0.93 – 1.15)	
Model 4	Age, sex, income to poverty ratio	Negative of	Reference	Reference	
		Positive	1.00 (0.91 – 1.09)	1.01 (0.91 – 1.12)	
Model 5	Age, sex, country of birth	Negative	Reference	Reference	
		Positive 2	1.05 (0.96 – 1.14)	1.07 (0.97 – 1.19)	
Model 6	Age, sex, income to poverty ratio, country of birth, BMI 🧹 🚫 📄	Positive Negative Positive	Reference	Reference	
		Positive 🖥	1.05 (0.95 – 1.17)	1.08 (0.97 – 1.21)	
Model 7	Age, sex, income to poverty ratio, country of birth, BMI, current	Negative 3	Reference	Reference	
	smoking status	Positive 🖥	1.05 (0.93 – 1.17)	1.07 (0.93- 1.24)	
Model 8	Age, sex, income to poverty ratio, country of birth, BMI, current	Negative Positive	Reference	Reference	
	smoking status, type-2 diabetes mellitus status, HIV status	Positive 3	1.03 (0.99 – 1.08)	1.04 (0.99 – 1.08)	
Model 9	Age, sex, income to poverty ratio, country of birth, BMI, type-2	Negative	Reference	Reference	
	diabetes mellitus status, HIV status	Positive 💐	1.04 (0.90 – 1.20)	1.05 (1.00 – 1.09)	
Model 10*	Age, sex, race, education attainment level, country of birth, type-2	Negative n Positive n	Reference	Reference	
	diabetes mellitus, BMI, smoking	Positivë 👼	1.01 (0.97 – 1.06)	1.04 (0.99 – 1.09)	
Model 11	Age, sex, race, education attainment level, country of birth, type-2	Negativ¥e ⊵	Reference	Reference	
	diabetes mellitus status, self-reported previous diagnosis of	Positive. 1, 2025	1.00 (0.96 – 1.05)	1.03 (0.98 – 1.08)	
	coronary heart disease, heart attack, and stroke	025 s.			
Model 12	Age, sex, race, education attainment level, country of birth, type-2	Negative 🚆	Reference	Reference	
	diabetes mellitus status, self-reported previous diagnosis of	Positive	1.01 (0.96 – 1.05)	1.04 (0.99 – 1.08)	
	coronary heart disease, heart attack, and stroke, BMI, smoking	par			
Model 13	Age, sex, race education attainment level, country of birth, type-2	Negative f Positive f	Reference	Reference	
	diabetes mellitus status, self-reported previous diagnosis of	Positive 🚆	1.07 (0.97 – 1.18)	1.09 (1.00 – 1.18)	
	coronary heart disease, heart attack, stroke, BMI, current smoking	G			

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STROBE Statement—Checklist of items that should be included in reports of cross-section	al studies
	1

1 2 3	 (a) Indicate the study's design with a commonly used term in the title or the abstract (b) Provide in the abstract an informative and balanced summary of what was done and what was found Explain the scientific background and rationale for the investigation 	1 3
	 (b) Provide in the abstract an informative and balanced summary of what was done and what was found Explain the scientific background and rationale for the investigation 	3
	what was done and what was found Explain the scientific background and rationale for the investigation	3
	Explain the scientific background and rationale for the investigation	
3	heing reported	5-6
	being reported State specific objectives, including any prespecified hypotheses	6
4	Present key elements of study design early in the paper	6
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	of participants	
7	Clearly define all outcomes, exposures, predictors, potential	7-8
	confounders, and effect modifiers. Give diagnostic criteria, if applicable	
8*		7-8
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		Figure
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	(g) Deserver any sensitivity analyses	,
13*	(a) Report numbers of individuals at each stage of study—eg numbers	9
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	7	5 Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection 6 (a) Give the eligibility criteria, and the sources and methods of selection of participants 7 Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable 8* For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group 9 Describe any efforts to address potential sources of bias 10 Explain how the study size was arrived at 11 Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why 12 (a) Describe any methods used to examine subgroups and interactions (c) Explain how missing data were addressed (d) If applicable, describe analytical methods taking account of sampling strategy (g) Describe any sensitivity analyses 13* (a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed (b) Give reasons for non-participation at each stage (c) Consider use of a flow diagram 14* (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders

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		(b) Report category boundaries when continuous variables were	7-8
		categorized	
		(c) If relevant, consider translating estimates of relative risk into	NA
		absolute risk for a meaningful time period	
Other analyses	17	Report other analyses done-eg analyses of subgroups and interactions,	10-12
		and sensitivity analyses	
Discussion			
Key results	18	Summarise key results with reference to study objectives	12
Limitations	19	Discuss limitations of the study, taking into account sources of potential	14-1
		bias or imprecision. Discuss both direction and magnitude of any	
		potential bias	
Interpretation	20	Give a cautious overall interpretation of results considering objectives,	15
		limitations, multiplicity of analyses, results from similar studies, and	
		other relevant evidence	
Generalisability	21	Discuss the generalisability (external validity) of the study results	15
Other information			
Funding	22	Give the source of funding and the role of the funders for the present	16
		study and, if applicable, for the original study on which the present	
		article is based	

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Tuberculosis infection and hypertension: Prevalence estimates from the US National Health and Nutrition Examination Survey

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11	6	Health and Nutrition Examination Survey
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3	35	Summary:
4 5	36	The prevalence of hypertension was high (59%) among adults with tuberculosis infection in the
6 7	37	U.S. In addition, we found that the prevalence of hypertension was significantly higher among
8	38	adults with positive QFT without established hypertension risk factors.
9 10	39	
11	40	Corresponding Author:
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48 ABSTRACT

49 Objectives: Latent Tuberculosis infection (LTBI) is marked by dynamic host-pathogen
50 interactions with persistent low-grade inflammation and is associated with increased risk of
51 cardiovascular diseases (CVD) including acute coronary syndrome, myocardial infarction, and
52 stroke. However, few studies assess the relationship between LTBI and hypertension, an
53 intermediate of CVD. We sought to determine the association between LTBI and hypertension
54 using data representative of the adult US population.

Methods: We performed cross-sectional analyses using data from the 2011–2012 US National Health and Nutrition Examination Survey (NHANES). Eligible participants included adults with valid QuantiFERON-TB Gold In-Tube (QFT-GIT) test results who also had blood pressure measures and no history of TB disease. LTBI was defined by a positive QFT-GIT. We defined hypertension by either elevated measured blood pressure levels (i.e., systolic ≥130mmHg or diastolic \geq 80mmHq) or known hypertension indications (i.e., self-reported previous diagnosis or use of antihypertensive medications). Analyses were performed using robust guasi-Poisson regressions and accounted for the stratified probability sampling design of NHANES. Results: The overall prevalence of LTBI was 5.7% (95%CI 4.7-6.7) and hypertension was present among 48.9% (95%CI 45.2–52.7) of participants. The prevalence of hypertension was higher among those with LTBI (58.5%, 95%CI 52.4–64.5) than those without LTBI (48.3%, 95%CI 44.5–52.1) (prevalence ratio [PR]=1.2, 95%CI 1.1–1.3). However, after adjusting for confounders, the prevalence of hypertension was similar for those with and without LTBI (adjusted PR=1.0, 95%CI 0.9 –1.1). The unadjusted prevalence of hypertension was higher among those with LTBI vs. no LTBI, especially among individuals without CVD risk factors including those with normal BMI (PR=1.6, 95%CI 1.2-2.0), euglycemia (PR=1.3, 95%CI 1.1-1.5), or non-smokers (PR = 1.2, 95%Cl 1.1–1.4).

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72	Conclusions: More than half of adults with LTBI in the US had hypertension. Importantly, we
73	observed a relationship between LTBI and hypertension among those without established CVD
74	risk factors.
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76	Strengths and limitations
	-
	Strengths:
	- These analyses were conducted using data representative of civilian, non-
79	institutionalized US adults, and thus, provide a robust population estimate of the
80	prevalence of latent tuberculosis infection and hypertension in the US
81	 Comprehensive definitions and different cut-offs of hypertension were used (i.e.,
82	measured blood pressure level, previous diagnosis hypertension by healthcare
83	providers) to model the association between latent tuberculosis infection and
84	hypertension
85	Limitations:
	Our findings may not be representative to other regions with higher burdens of
	tuberculosis
	 The cross-sectional study design of NHANES prevented us from assessing the
	temporal relationship between latent tuberculosis infection and hypertension
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INTRODUCTION

About one-guarter of the world's population (~2 billion) has been infected to Mycobacterium tuberculosis (Mtb). [1] Among individuals infected with the bacteria, 5-10% are at risk of developing TB disease at some point in their life. [2 3] Tuberculosis infection (TBI), or most commonly known as latent tuberculosis infection or LTBI, is increasingly recognized as a heterogenous clinical state in which some individuals have dynamic host-pathogen interactions with persistent low-grade inflammation. This immune dysregulation has been associated with an increased risk of cardiovascular diseases (CVD) including acute coronary syndromes, myocardial infarction, and stroke. [1 4-12] This convergence of TBI and CVD risk poses a particular challenge for low- and middle-income countries where TBI is most prevalent and incidence of chronic non-communicable diseases, including CVD, is increasing rapidly. [13 14] Improved understanding of the impact of TBI on CVD risk is vital in settings where TBI and CVD are highly co-prevalent in order to design public health intervention programs aiming to reduce the burden of two diseases. Epidemiologic data from observational cohort studies support an increased risk of CVD among people with TB disease. [8-12] Several studies also indicated that hypertension, an established intermediate of CVD, may be more common among patients with TB disease compared to non-TB controls. [8 11 14-16] Furthermore, CVD was the leading contributor to post-TB mortality, accounting for 15 – 26% of deaths among TB survivors in a recent systematic review and meta-analysis. [17] In addition to these associations between TB disease and CVD. recent observational studies have found an association between TBI and various CVDs including acute myocardial infarction and coronary artery disease. [9 18 19] However, studies assessing the association between TBI and hypertension remain limited. To date, few studies have evaluated the relationship between TBI and hypertension. One cohort study from a large metropolitan healthcare system in the U.S. reported that

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individuals with TBI had greater incidence of hypertension compared to those without TBI and that rates were highest among those untreated for TBI. [5] Furthermore, it is unknown whether the guantitative measures of IGRA, which may indicate the underlying mycobaterial burden and has been associated with increased risks of progression to TB disease, [20-23] is associated with hypertension. Improved understanding of the association between TBI, quantitative measures of IGRA, and and hypertension may clarify the role that TB prevention efforts in reducing the burden of CVD, both in the U.S. and globally. Given existing knowledge gaps, we aimed to estimate the association between TBI and hypertension prevalence. We also investigated whether the magnitude of host immune responses to *Mtb* was associated with hypertension among those with positive IGRA test results. METHODS Study Design and Eligible Participants We performed an analysis of cross-sectional data from the 2011 – 2012 US National Health and Nutrition Examination Survey (NHANES), [24] the most recent NHANES cycle released that includes measures of TBI. NHANES is a study led by the US Centers for Disease Control and Prevention (CDC) which aims to assess the health and nutritional status of non-institutionalized civilians representative of the US population using a complex, stratified, multistage probability cluster sampling design. NHANES collects demographic and health information using questionnaires administered by trained interviewers and standardized physical examinations performed in mobile examination centers. Eligible NHANES participants for our analyses were adults (\geq 18 years) with valid TBI test results and blood pressure measurements, and no history of TB disease (Figure 1). Study Measures and Definitions

Our primary study outcome, any hypertension, was defined as having either (1) "measured hypertension," defined as an average systolic blood pressure level of ≥130 mmHg or diastolic blood pressure level of \geq 80 mmHg across three consecutive measurements, or (2) a self-reported previous hypertension diagnosis by a health care provider or current use of antihypertensive medications (i.e., known hypertension). We categorized measured blood pressure levels into "normal" (i.e., systolic <120mmHg and diastolic <80mmHg), "borderline hypertension" (i.e., systolic 120-129mmHg and diastolic <80mmHg), "stage 1 hypertension" (i.e., systolic 130 – 139mmHg or diastolic 80-89mmHg), and "stage 2 hypertension" (i.e., systolic ≥140mmHg or diastolic ≥90mmHg) according to American College of Cardiology/American Heart Association guidelines. [25] Among participants with a prior diagnosis of hypertension, we classified blood pressure as "controlled" (systolic <130 mmHg and diastolic <80 mmHg) or "uncontrolled" (systolic ≥130mmHg or diastolic ≥80mmHg) with or without a self-reported use of antihypertensive medications. Our primary study exposure, TBI, was defined by a positive QuantiFERON-TB Gold In Tube or QFT test, an in-vitro laboratory test to detect TB infection by measuring cell-mediated immune responses to TB-specific antigens. [26 27] Individuals with indeterminate test results were excluded from our analyses. For those with a positive QFT, we also extracted the quantitative results and defined the IFN- γ TB antigen response by subtracting TB NIL control values from TB antigen values (i.e., Ag-NIL values). To express IFN-y TB antigen responses, instead of using the traditional manufacturer cut-off of ≥ 0.35 , we used the 4.00 cut-off as previous studies showed that individuals with Aq-NIL values \geq 4.00 are at greater risk from developing TB disease. [20 22 23] Thus, in our analyses, Ag-NIL values were categorized as "low" (<4 IU/ml) or "high" (≥4 IU/ml). For a sensitivity analysis, we performed a subgroup analysis of participants with both QFT and tuberculin skin test (TST) results. We defined "confirmed TB infection" when both TST and QFT results were positive and "no TB infection" if

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n TST and QFT results were negative. Participants with discordant TST and QFT results TST negative and QFT positive, TST positive and QFT negative) were classified as "any ordance." Other important covariates, including age, sex, race, educational attainment, income to

erty ratio, country of birth, body mass index (BMI), diabetes mellitus status, HIV status, lipid ile, self-reported smoking behavior, alcohol consumption, statin prescription, and previous nosis of coronary heart disease, myocardial infarction, or stroke were also abstracted. We sified BMI as "underweight" (BMI <18.5 kg/m²), "normal" (BMI 18.5 – 24.9 kg/m²), erweight" (BMI 25 – 29.9 kg/m²), and obese (BMI ≥30kg/m²). [28] As NHANES grouped viduals aged \geq 80 years in one category, we divided age into quartile ranges and grouped as artile 1 (18 – 31 years)", "quartile 2 (32 – 47 years)", "quartile 3 (48 – 62 years)", and artile 4 (\geq 63 years)" to account for the non-linearity of age in sensitivity analyses. ent and Public Involvement e tistical Analysis We estimated weighted prevalence and 95% confidence intervals (CI) to determine the ten of TBI and hypertension in the US adult population. Rao-Scott Chi-square tests were d to assess the bivariate association between participants' demographic and clinical racteristics, TBI, Ag-NIL values, and hypertension. Multivariable robust Poisson regression guasi-likelihood was used to estimate the association between TBI and hypertension, ressed in prevalence ratios (PRs) and 95% CI. The same regression approach was used to mate the association between Ag-NIL responses and hypertension. In addition to prevalence os, we also estimated prevalence differences (PDs) and their 95%CI. Covariates included in

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the multivariable models were based on bivariate associations (Table S1 and S2), established risk factors reported in previously published studies, and directed acyclic graphs (DAG). [29] Briefly, we identified potential confounders using bivariate associations and previously published literature, which then mapped into a DAG to determine inclusion in the final model. To account for the missingness of key covariates in the final adjusted model, we assigned aberrant values to any missing information to avoid deletion. We also assessed interaction between TBI and hypertension by participant characteristics (i.e., age, BMI, glycemic status, smoking status) on the additive (prevalence difference) and multiplicative (prevalence ratio) scales by including the cross-product terms within multivariable models. All analyses were performed using survey package in R and accounted for the weighted stratified probability sample design of NHANES by applying weight (WTMEC2YR), cluster (SDMVPSU), and strata (SDMVSTRA) variables. Taylor Series Linearization was used to produce design-adjusted standard errors and a two-sided p-value less than 0.05 considered statistically significant in all analyses. Subgroup and Sensitivity Analyses Sub-group analyses were conducted using an analytic approach with "domain" variables created to indicate sub-populations of interest. [30 31] Subgroup analyses were performed among those with previously diagnosed hypertension to determine the association between TBI (including Ag-NIL values) and controlled hypertension. Sensitivity analyses were performed to quantify systematic errors due to a) TBI misclassification, b) hypertension misclassification, c) covariate misspecification in multivariable models, and d) the classification of age as a confounder. To account for errors resulting from TBI misclassification, we ran additional models

with confirmed TB infection as the exposure. To address potential biases due to hypertension
 misclassification, we ran an additional analysis using the prior hypertension clinical cut off. [25]

- In this additional model, we defined any hypertension as having (1) an average systolic blood
- ⁵⁵ 217 pressure level of ≥140 mmHg or diastolic blood pressure level of ≥90 mmHg across three

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2 3	210	consecutive measurements, or (2) a celf reported providus hypertension diagnosis by a health	
4	218	consecutive measurements, or (2) a self-reported previous hypertension diagnosis by a health	
5 6	219	care provider or current use of antihypertensive medications. To quantify errors due to covariate	e
7 8	220	misspecification, we ran multiple robust Poisson models with different sets of covariates and	
9 10	221	observed changes in prevalence ratios estimates across models. To account for the	
11 12	222	confounding effect of age, we ran multiple iterations of robust Poisson models with different	
13 14	223	forms of age measures (i.e., continuous and age quartiles).	
15 16 17	224		
17 18 19	225	RESULTS	
20 21	226	Study population	
22 23	227	In NHANES 2011 – 2012, 9,338 participants were surveyed and examined (response	
24 25	228	rate of 69.5%), 60.1% (5,615/9,338) of whom were ≥18 years old (Figure 1). Among included	
26 27	229	adults, 259 did not have valid blood pressure measurements. Of those with valid blood pressure	е
28 29	230	measurements, 32 had a previous diagnosis of TB disease and 335 had a missing QFT, with	
30 31	231	4,989 participants meeting eligiblity for this analytic cohort. The weighted prevalence of TBI in	
32 33	232	the cohort was 5.7% (95% confidence interval [CI] 4.7-6.7) and any hypertension was present	
34 35	233	for 48.9% (95%CI 45.2 – 52.7) of participants (Table 1).	
36 37 38	234		
39 40	235	Associations between tuberculosis infection and hypertension	
41 42	236	The prevalence of any hypertension was higher among those with TBI (58.5%, 95% CI	
43 44	237	52.4 – 64.5) than those without TBI (48.3%, 95%CI 44.5 – 52.1) (prevalence difference [PD]	
45 46	238	10.2%, 95%CI 5.0 – 15.4) (Table 1). After adjusting for potential confounders including age	
47 48	239	(continuous), sex, race, educational attainment level (as a proxy of socioeconomic status),	
49 50	240	country of birth, diabetes mellitus status, BMI, and smoking status, the prevalence of any	
51 52	241	hypertension was similar among those with and without TBI (adjusted prevalence ratio [aPR]	
53 54	242	1.0, 95%CI 1.0 – 1.1). The association between TBI and hypertension was similar when	
55 56 57	243	examining the two components used to define our primary outcome (i.e., measured	
57 58		1	0
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1 2		
- 3 4	244	hypertension and self-reported hypertension/use of antihypertensive medications) both in the
5 6	245	crude and adjusted models (Table 1).
7 8	246	
9 10	247	Association between Ag-NIL values and hypertension
11 12	248	The prevalence of any hypertension was highest among those with TBI and high Ag-NIL
13 14	249	values (60.4%, 95%CI 53.0 – 67.7) compared to those with TBI and low Ag-NIL values (57.6%,
15 16	250	95%CI 48.7 – 66.6) or those without TBI (48.3%, 95%CI 44.5 – 52.1) (Table S3). After adjusting
17 18 19	251	for age and gender, however, the prevalence of any hypertension was similar among the three
20 21	252	QFT groups being compared (Table S4). Similar trends were also observed for the associations
22 23	253	between Ag-NIL values and both measured hypertension and self-reported previous diagnosis
24 25	254	of hypertension (Figure 2).
26 27	255	
28 29	256	Interaction analyses: established hypertension risk factors and HIV
30 31	257	We observed relationships between TBI and hypertension among participants without
32 33	258	established hypertension risk factors who would be considered at lower risk for CVD. For
34 35	259	example, comparing individuals with and without TBI, the prevalence difference of any
36 37	260	hypertension was substantially higher among those with normal BMI (prevalence difference [PD]
38 39 40	261	17.7, 95%Cl 6.3 – 29.2), euglycemia (PD 11.3, 95%Cl 3.0 – 18.9), and non-smoking (PD 14.4,
40 41 42	262	95%CI 4.2 – 24.5) groups (Figure 3) compared to those with BMI <18.5 kg/m ² or BMI \geq 25 kg/m ² ,
43 44	263	pre-diabetes/diabetes or smokers. Product terms for BMI, glycemic level, and smoking status
45 46	264	were non-significant on the prevalence ratio scale (p<0.05).
47 48	265	We also found that the association between TBI and hypertension was significantly
49 50	266	different across HIV status. For instance, the prevalence difference of any hypertension
51 52	267	comparing those with TBI to those without TBI was 4.1 percentage points (95%CI -4.3 – 12.5)
53 54	268	among those without HIV infection and 81.6 percentage points (95%CI 61.0 – 100.0) among
55 56	269	those with HIV infection. After adjusting for age and gender, the adjusted prevalence ratio was
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- 3 4	270	0.9 (95%CI 0.8 – 1.1) among those without HIV infection and 6.2 (95%CI 1.8 – 21.7) among	
5 6	271	those with HIV infection (statistical interaction p<0.01) (Table S5).	
7 8	272		
9 10	273	Subgroup and sensitivity analyses	
11 12	274	From subgroup analyses conducted among those with known hypertension, the	
13 14 15	275	prevalence of controlled hypertension without medications was significantly lower among those	
15 16 17	276	with positive QFT (5.2%, 95%CI 2.0 – 8.3) compared to those with negative QFT (11.8%,	
17 18 19	277	95%Cl 9.5 – 14.0), although the association was no longer significant after adjusting for key	
20 21	278	confounders (aPR 0.6, 95%CI 0.4 – 1.1) (Table 2). Conversely, the prevalence of uncontrolled	
22 23	279	hypertension with medications, the more severe form of hypertension, although non-significant,	
24 25	280	were slightly higher among those with positive QFT compared to those with negative QFT	
26 27	281	(Figure 2).	
28 29	282	In models with confirmed TB infection (i.e., positive QFT and positive TST) as the study	
30 31	283	exposure, the prevalence of any hypertension was highest among those with confirmed TB	
32 33	284	infection (60.8%, 95%CI 51.4 – 70.3) compared to those with no TB infection (49.6%, 95%CI	
34 35	285	45.7 – 53.5) or those with discordant TST and QFT results (52.7%, 95%CI 43.9 – 61.6) (p=0.12))
36 37 38	286	(Table S6). We observed similar trends in the crude and adjusted associations between TBI and	ł
39 40	287	hypertension when we used both QFT and TST (Table S7) vs. QFT alone to define TBI. Results	;
41 42	288	from models that used prior clinical cut-offs to define hypertension (systolic blood pressure level	
43 44	289	of ≥140 mmHg or diastolic blood pressure level of ≥90 mmHg) were similar to results from	
45 46	290	models with current hypertension definitions (aPR _{prior} =1.01, 95%CI 0.97 – 1.06 vs.	
47 48	291	aPR _{current} =0.94, 95%CI 0.89 – 1.00) (data not shown). Results from sensitivity analyses to	
49 50	292	quantify bias due to covariate misspecification in the multivariable models indicated that	
51 52	293	prevalence ratios of any hypertension comparing those with positive QFT to those with negative	
53 54	294	QFT were similar when age was treated continuously or grouped in quartiles (ranged from 1.0 -	
55 56 57	295	1.1) (Table S8).	
57 58		12	2

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5 6 7 8 9 10 11 12	297	DISCUSSION
	298	Using data representative of US adult population, we found a high prevalence of
	299	hypertension (i.e., nearly 1 out of 2) in the 2011 – 2012 NHANES cycle. We reported similar
	300	adjusted prevalence of hypertension among individuals with or without TBI. In our study,
13 14	301	individuals with positive QFT and high Ag-NIL values were more likely to have any
15 16	302	hypertension, but less likely to have the more severe form of hypertension (i.e., uncontrolled
17 18	303	hypertension without medications). We also observed that the association between TBI and
19 20 21	304	hypertension was more common among individuals without established hypertension risk
22 23	305	factors. Collectively, our results provide preliminary epidemiologic evidence suggesting that
24 25	306	hypertension, a well-established intermediate for CVD, was more common among individuals
26 27	307	with TBI than those without TBI in the US populations.
28 29 30 31 32 33	308	Our finding suggesting that hypertension is more common among individuals with TBI
	309	than those without TBI is consistent with previous studies. For example, a retrospective cohort
	310	study conducted among 5,185 individuals with TBI and healthy controls using data from a large
34 35	311	metropolitan healthcare system in the US reported a higher hazard rates of hypertension
36 37 38	312	incidence (defined by ICD-9 codes) among those with TBI (defined by ICD-9 codes and
39 40	313	tuberculin skin test/IFN- γ release assay) compared to healthy controls without TBI (HR 2.0,
41 42	314	95%CI 1.6 – 2.5). [5] In addition, a cross-sectional study conducted among 2,351 TST-positive
43 44	315	individuals in South India reported a slightly higher prevalence of hypertension (defined as
45 46	316	systolic >130 mmHg) among those with confirmed TBI (defined as TST and QFT positive) (15%)
47 48	317	compared to those latent TB negative (12%) (aOR 1.18, 95%CI 1.0 – 1.56). [32] Unlike the two
49 50 51 52	318	studies mentioned above, we used a more comprehensive definition of hypertension by
	319	combining objectively measured blood pressure levels (systolic and diastolic) and known
53 54 55	320	hypertension indications (i.e., previous hypertension diagnosis or self-reported use of
56 57	321	antihypertensive medications) to avoid potential misclassification.
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There are several plausible mechanisms that explain how TBI may be associated with hypertension. First, underlying pathophysiology related to chronic inflammation, even at relatively low levels, is linked to hypertension and therefore the proinflammatory state that accompanies TBI may increase blood pressure. [33 34] Second, TBI may be a proxy of other key factors related to social position which in turn impact hypertension risk. Hypertension is known to be multifactorial spanning from the group or community to the individual. Several physical, social, political, and environments risk factors that may influence hypertension were not fully accounted for in our analyses (e.g., stress, family history, diet, lifestyle, physical activity, geographical delineation, illicit drug use, access to healthcare, or insurance coverage). If some of these variables are associated with TBI, it is plausible that our reported estimates are distorted due to residual confounding effects. Further studies utilizing social ecological models and longitudinal designs are warranted to better understand the true effect of TBI on hypertension. Furthermore, we also reported that the prevalence of hypertension was highest among individuals with positive QFT and high Ag-NIL values, but we observed no dose-response relationship nor statistical significance after adjusting for key risk factors. TB infection has been associated with enhanced levels of systemic inflammation and immune activation, including increased expression of tumor necrosis factor (TNF)- α , interferons, and interlukin-6 (IL-6). [4-7] These chemokines and dysfunctional immune responses play an important role in the pathogenesis of hypertension and CVD. [35 36] Individuals with positive QFT and higher Ag-NIL values are more likely to develop to active TB [22 37] as they may have higher mycobacterial burden, [20] and thus, could potentially have higher degree of inflammation or immune responses to the bacterial infection. Interestingly, among those with previously diagnosed hypertension, we found that individuals with TBI may have higher levels of hypertension compared to those without TBI. This was indicated by the higher prevalence of uncontrolled

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347 hypertension without medications among those with TBI. However, the available data do not 348 allow us to discern if these differences are due to clinical differences or access to care. Our cross-sectional study design may not be the appropriate design to observe the 349 expected associations or dose-response relationship between TBI, IFN- γ TB antigen responses, 350 351 and hypertension. Furthermore, the time of TBI in the life-course may have different implications on TBI and hypertension association. In this NHANES cohort, the majority (>90%) of foreign 352 353 born with positive QFT have stayed in the US for ≥5 years, and thus, we postulated that TBI 354 happened before arriving in the US. It is plausible that these individuals are either in the latent or incipient stage where there is no to minimum bacteria replication, and thus, minimum pro-355 356 inflammatory responses. [38] Newly arrived immigrants may face higher level of stress with 357 acculturation and other social-environmental pressures which could impact systemic 358 inflammation, immune responses, and/or increased risks of hypertension. Prospective studies to follow individuals with recent TBI diagnosis are still warranted to determine the hypertension 359 and CVD risk trajectories. 360 Interestingly, we observed associations between TBI and hypertension among those 361 362 with normal BMI, euglycemic, and non-smokers. These groups may be considered at lower risk of CVD. This finding further reinforces the premise that there is likely to be differing effects of 363 364 TBI on hypertension risk within subgroups. While the significant TBI-hypertension associations observed among those with lower risk of CVD may be due to the larger sample sizes in 365 366 NHANES, these preliminary results suggest the need for mechanistic studies. Further clinical investigations and modeling studies are needed to determine whether targeted TB preventive 367 treatment is effective to reduce the global burden of CVD among these groups. 368 369 Last, we reported that HIV infection may modify the association between TBI and hypertension. However, this finding needs to be interpreted with caution considering the low 370 prevalence of HIV infection in the 2011-2012 NHANES cycle. Previous studies demonstrated 371

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3 4	372	that hypertension is more common among individuals with HIV infection on antiretroviral therapy
5 6	373	compared to those without HIV infection, [39 40] and that there are several plausible pathways
7 8	374	regarding how HIV infection could lead to hypertension. [39] For example, the chronic
9 10	375	inflammation among people living with HIV (PLWH), even among those with undetectable viral
11 12	376	loads on stable antiretroviral therapy, would trigger host immune activation (e.g., upregulation of
13 14	377	IL-6) and could lead to stiff blood vessels and impact hypertension risk. [41 42] Further clinical
15 16	378	studies with larger sample size are still warranted to fully assess the joint effect between HIV
17 18	379	(including HIV clinical characteristics) and TBI, and its association with hypertension.
19 20	380	Our study is subject to limitations. First, our TBI definition (i.e., according to QFT
21 22 23	381	positivity) may include a broad spectrum of individuals who may have cleared the infection,
23 24 25	382	have latent TB, incipient TB, or subclinical TB since no further clinical assessment was made
26 27	383	(e.g., symptom screening, chest X-ray, culture test). [43 44] Second, we could not determine the
28 29	384	temporal relationship between TBI and hypertension with the cross-sectional study design used
30 31	385	in the present paper. Third, we did not account for any record of hypertension prescription, or
32 33	386	other commonly prescribed medications that could potentially affect blood pressure levels.
34 35	387	Fourth, we defined some of our key variables (including hypertension status and hypertension
36 37	388	medication intake) with self-reported information that may be prone to recall bias and likely
38 39	389	included some misclassification. However, if misclassification of hypertension was non-
40 41 42	390	differential with respect to TBI, we expect any misclassification in our results would likely biased
42 43 44	391	towards the null. [45] Fourth, we did not take into consideration the CD4 count for the HIV-
44 45 46	392	stratified analyses due to the small, unweighted frequency of individuals with HIV infection. Last,
47 48	393	this study was conducted using survey data representative of US adult population but may not
49 50	394	be generalizable to other regions with higher TB burdens. Furthermore, we used data from
51 52	395	NHANES 2011 – 2012 and were not able to determine whether the prevalence of TB infection
53 54	396	and hypertension reported in this study cycle is reflective of the current US population. An
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updated analysis to assess trends in the association across multiple NHANES cycles is warranted.

In conclusion, we reported a higher prevalence of hypertension among individuals with positive QFT, although the association was non-significant after adjusting for key confounders, particularly age. To determine the direction of the association between TBI and hypertension, a prospective study following hypertension-free individuals at TBI diagnosis is warranted and would help establish the biological pathways regarding how TBI might increase the risk of CVD. Future prospective work should address the question whether individuals treated for LTBI have lower risk of hypertension. Importantly, our results underscore the need to screen for hypertension and other metabolic disorders among those with TBI, especially among those without traditional CVD risk factors; doing so may help prevent premature deaths attributed to TB and CVD.

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Competing interest

We have no conflict of interest to declare.

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Author contributions

MAH, MJM, and ADS conceived the study design. ADS performed the analyses. ADS, MAH, and MJM wrote the first draft of the manuscript. SCA, UPG, EMU, and JRA assisted with further drafting and revisions of manuscripts. All authors reviewed and approved the final version of the manuscript.

Data Availability Statement

This work used publicly available data of the US National Health and Nutrition Examination Survey (NHANES) 2011 – 2012 that can be downloaded directly from CDC's webpage.

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TABLE LEGENDS

Table 1 (p.24) Weighted prevalence and adjusted prevalence ratios of hypertension measures by QuantiFERON-TB Gold In-Tube status among US adults, NHANES 2011-2012

> This table shows the prevalence of select hypertension measures in the overall adult cohort of NHANES 2011 – 2012 as well as stratified by their tuberculosis infection status. The crude measure of association was expressed as prevalence difference (PD), while the adjusted measure of association was expressed as prevalence ratio (PR).

Table 2 (p.25)

Weighted prevalence and adjusted prevalence ratios of controlled and uncontrolled hypertension by QuantiFERON-TB Gold In-Tube status among US adults with known hypertension, NHANES 2011-2012

This table summarizes findings on whether latent tuberculosis infection is associated with severe clinical manifestation of hypertension, indicated by elevated measured blood pressure levels with the use of antihypertensive medications among individuals with known hypertension indications (n=1,711)

1 2			
3		FIGURE LEGENDS	
4 5 6 7	Figure 1	Flow chart depicting unweighted frequencies and percentages of participants included in the final analyses based on the eligibility criteria, NHANES 2011 – 2012	
8 9 10 11 12 13 14		This study flow chart provides description of the stepwise exclusion of ineligible participants. From 9,338 individuals who completed NHANES interview and medical examination, we included 4,989 (53.4%) individuals in our primary analyses after excluding those who are <18 years old or those with a record of previous TB disease, or missing blood pressure data and QuantiFERON results	
15 16 17 18	Figure 2	Crude and adjusted associations between QuantiFERON-TB Gold In-Tube results and select hypertension measures among US adults, NHANES 2011 – 2012	
19 20 21 22 23 24 25 26 27 28		Circles in this panel of figures indicate point estimates from the robust Poisson models, expressed as prevalence ratios with the colored bands indicating the accompanying 95% confidence intervals. The vertical dashed line on the x axis value of 1 marks the study null value (i.e., β estimates=0 or prevalence ratio=1.00), suggesting no association. The top panel figures were produced from analyses performed among eligible participants (n=4,989). The lower panel figures were produced from analyses performed among a subset of participants with known hypertension indication(n=1,711)	
29 30 31 32	Figure 3	Relationship between positive QuantiFERON-TB result and hypertension: Stratified by demographic and clinical characteristics among US adults, NHANES 2011 – 2012	S
33 34 35 36 37 38 39 40		This figure shows results from the analyses with statistical interaction term included in the robust Poisson models to evaluate the joint effect between tuberculosis infection and other key risk factors on hypertension. We selected these "moderator" variables by identifying common risk factors for cardiovascula diseases from published studies (e.g., age, race, body mass index, country of birth, smoking status, diabetes status, and HIV status.	ır
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 MAIN RESULTS
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 Table 1. Weighted prevalence and adjusted prevalence ratios of hypertension measures by QuantiFERGIN-34B
 Gold In-Tube status

 among US adults, NHANES 2011-2012
 Weighted Prevalence of Hypertension
 % (95% Cth

Hypertension Measures Primary study outcome Any hypertension indication ^a (n=2,580/4,989) Measured blood pressure Hypertension ^b (n=1,885/4,989) Stage 1 hypertension ^c (n=1273)	Total N=4,989	among QFT (-)			
Any hypertension indication ^a (n=2,580/4,989) Measured blood pressure Hypertension ^b (n=1,885/4,989)	N=4,989		among QFT (+)	Prevalence Difference*	aPR† (95% CI)
Any hypertension indication ^a (n=2,580/4,989) Measured blood pressure Hypertension ^b (n=1,885/4,989)		94.3 (93.3, 95.3)	5.7 (4.7, 6.7)	Percentage pint (95%Cl)	
Measured blood pressure Hypertension ^b (n=1,885/4,989)				ilar re	
lypertension ^b (n=1,885/4,989)	48.9 (45.2, 52.7)	48.3 (44.5, 52.1)	58.5 (52.4, 64.5)	10.ភ្នំ (ឆ្.ថ្មី, 15.4)	1.01 (0.97 – 1.06)
				20) asn	
Stage 1 hypertension ⁽⁾ (n=1272)	35.0 (32.3, 37.6)	34.5 (31.8, 37.2)	43.2 (36.4, 49.9)	8. 7(2%15.5)	1.04 (0.97 – 1.12)
	24.5 (22.4, 26.7)	24.2 (21.9, 26.5)	30.1 (22.4, 37.9)	5.9 2 2 14.2)	1.13 (0.99 – 1.29)
Stage 2 hypertension ^d (n=612)	10.4 (9.1, 11.8)	10.3 (8.9, 11.7)	13.0 (9.1, 17.0)	2. ૻૣૼૢૢૢ૽ૢૢૣ ૺ ઙ _, 6.8)	0.88 (0.75 – 1.02)
ypertension Diagnosis				ind	
Previously diagnosed hypertension ^e (n=1,711)	30.8 (27.7, 33.9)	30.3 (27.1, 33.6)	38.3 (33.6, 43.1)	8.0 (2:4) 13.6)	0.97 (0.90 – 1.04)
Current use of anti-hypertension medication ^f (n=1,276)	86.9 (83.7, 90.1)	86.3 (82.7, 89.9)	• • •	8.4. (ž. 3 14.4)	1.13 (1.02 – 1.09)
Undiagnosed hypertension ^g (n=869) b breviations: CI – confidence interval; QFT – QuantiFER0	18.1 (16.1, 20.2)	18.0 (15.8, 20.2)	20.2 (14.0, 26.4)	2.25 (+4.55, 8.9)	1.08 (0.91 – 1.28)
Systolic 130-139 mmHg or diastolic 80-89 mmHg Systolic ≥140 mmHg or diastolic ≥90 mmHg Survey participants answered "yes" to the question "(Have y called high blood pressure?" Among those who answered "yes" to "Because of (your/SP's survey participants also answered "yes" to the question "(Are Elevated blood pressure levels (Systolic ≥130mmHg or dias Bold indicates that the finding is significant at α=0.05) (high blood pressur you/Is SP) now takir	e/hypertension), (hang prescribed medic	ave you, has s/he) e ine (for high blood p	ever been taid to take prescrit pressure/hypertension)?" ealth care proveers	
				. 25	24
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In-Tube status among US adults with			nce of Hypertension	in, % (95%Cl) ing 17	
Hypertension Controls	Total	among QFT (-)	among QFT (+)	Mean/Prevalence Difference	
Controlled without medications ^a (n=308)	N=1,711 11.3 (9.2, 13.3)	94.3 (93.3, 95.3) 11.8 (9.5, 14.0)	5.7 (4.7, 6.7) 5.2 (2.0, 8.3)	Percentage point (95%Cl) -6.6 (-10.9 -2.19)) 0.62 (0.36 – 1.
Controlled with medications ^b (n=838)	33.9 (29.1, 38.8)	33.9 (28.8, 40.0)	34.8 (25.5, 44.1)	0.9 (-9.0 , 10.5	1.10 (0.84 – 1.
Uncontrolled without medications ^c (n=127)	15.0 (12.0, 18.1)	15.2 (12.0, 18.5)	12.2 (5.5, 18.9)	-3.1 (-10.5, m.2)	0.80 (0.41 – 1.
Uncontrolled with medications ^d (n=438)	39.8 (36.7, 42.8)	39.1 (35.7, 42.6)	47.8 (40.1, 55.6)	8.7 (-1.0 g 8.4)	1.16 (0.94 – 1.
Abbreviations: CI - confidence interval; QFT				d to	- (
^a Having systolic blood pressure <130 mmHg a ^b Having systolic blood pressure <130 mmHg a ^c Having systolic blood pressure ≥130 mmHg o ^d Having systolic blood pressure ≥130 mmHg o	and a diastolic blood p or diastolic blood press	oressure <80 mmHg v sure ≥80 mmHg with	with a record of takin out a record of taking	g medications to lo a a a cod p	ressure levels
Bold indicates that the finding is significant at		sure ≥80 mmHg with	a record of taking m	ing, Al tr	

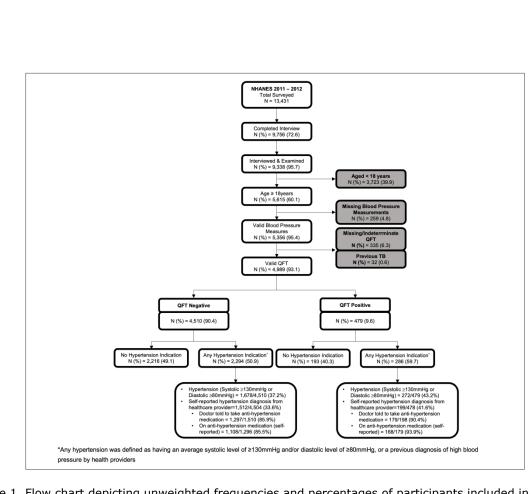


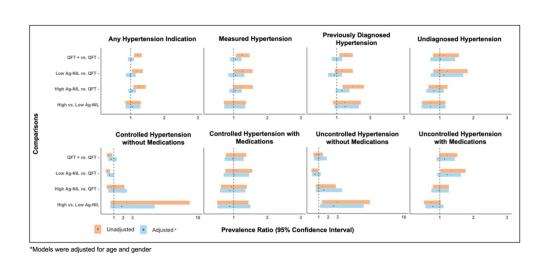
Figure 1. Flow chart depicting unweighted frequencies and percentages of participants included in the final analyses based on the eligibility criteria, NHANES 2011 – 2012

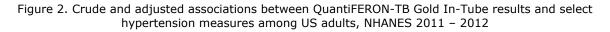
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7	Subgroup	Crude Estimates	Crude PD (95%CI)	
8	All Cohort		10.2 (5, 15.4)	
9	Age Quartile			
10	Quartile 1 (18 - 31)		-1 (-20.7, 18.7)	
11	Quartile 2 (32 - 47)		-6.1 (-19.6, 7.5)	
12	Quartile 3 (48 - 62)		6 (-5.9, 18)	
13	Quartile 4 (>62)	H-	3.5 (-5.1, 12.1)	
14	Age Group			
15	18 - 49	-	8.7 (2.5, 14.8)	
	50+	H H	7.5 (-3.1, 18.1)	
16	Race			
17	Hispanic	+++	14.3 (7.3, 21.3)	
18	Non-Hispanic White	i	17.1 (5.7, 28.6)	
19	Non-Hispanic Black	H-	8.9 (-3.9, 21.6)	
20	Other Race	÷	5.7 (-1, 12.4)	
21	Body Mass Index			
22	Underweight (BMI <18.5 kg/m2)		21 (-20.5, 62.6)	
23	Normal (BMI 18.5 - 24.9 kg/m2)		17.7 (6.3, 29.2)	
24	Overweight (BMI 25 - 29.9 kg/m)		9.6 (-2.9, 22.2)	
25	Obese (BMI ≥30 kg/m2)	++++++	5.9 (-2.5, 14.3)	
26	Country of Birth			
27	US born		15.4 (5.8, 25)	
28	Foreign born	181	13.6 (9.3, 17.9)	
29	Smoking status	1	444(40.045)	
30	Non-Smoker		14.4 (4.2, 24.5)	
31	Smoker		-0.3 (-14.3, 14.9)	
32	Diabetes Status		11 (3, 18.9)	
33	Euglycemic Pre-diabetes		-1.9 (-15.6, 11.8)	
34	Diabetes		-2.5 (-13, 8)	
35	HIV Status		-2.5 (-15, 6)	
36	Negative	H	4.1 (-4.3, 12.5)	
37	Positive		→ 81.6 (61, 100)	
38		-20 0 20 40 60	100	
39				
40 Figure 3. Relat	ionship between positive QuantiFE			d by demographic
41	and clinical characteristics a	mong US adults, NH	ANES 2011 – 2012	
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SUPPEMENTAL MATERIALS

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Supplemental Materials

Table S1. Weighted prevalence of and characteristics associated with tuberculosis infection among according to QuantiFERON-TB Gold In-Tube results among representative of civilian, non-institutionalized US adult population, NHANES 2011-2012

		Veighted Prevalence, %		
Characteristics	QFT Negative % (95% Cl) 94.3 (93.3 – 95.3)	QFT Positive % (95% Cl) 5.7 (4.7 – 6.7)	Mean/Prevalence Difference* Percentage point (95%CI)	P-Valu (X ²)
Any hypertension indication ^a	34.3 (33.3 - 33.3)	5.7 (4.7 - 0.7)	Tercentage point (35 %61)	
No	95.4 (94.4 – 96.4)	4.6 (3.6 – 5.6)	Reference	<0.00
Yes	93.2 (91.8 – 94.5)	6.8 (5.5 – 8.2)	2.2 (1.0, 3.4)	-0.00
Age, years	55.2 (51.6 54.6)	0.0 (0.0 0.2)	2.2 (1.0, 0.4)	
Mean (95%CI)	46.0 (44.1 – 48.0)	53.2 (51.2 – 55.1)	7.1 (5.1, 9.2)	~0.00
	40.0 (44.1 – 40.0)	55.2 (51.2 – 55.1)	7.1 (3.1, 9.2)	<0.00
Age groups				, i
Quartile 1 (18 – 31)	97.2 (96.2 – 98.3)	2.8 (1.7 – 3.8)	Reference	-0.00
	95.5 (94.4 – 96.6)		1.7 (0.1, 3.3)	<0.00
Quartile 2 $(32 - 47)$	· · · · · · · · · · · · · · · · · · ·	4.5(3.4-5.6)		
Quartile 3 $(48 - 62)$	92.0 (89.2 – 94.7)	8.0 (5.3 – 10.8)	5.3 (2.1, 8.4)	
Quartile 4 (>62)	91.9 (89.8 – 94.1)	8.1 (5.9 – 10.2)	5.3 (3.4, 7.2)	
40 40			D (
18 – 49	94.9 (94.1 – 95.7)	5.1 (4.3 – 5.9)	Reference	<0.00 <0.00
≥50	92.5 (90.4 - 94.7)	7.5 (5.3 – 9.6)	2.4 (0.5, 4.2)	
Sex				0.00
Male	93.4 (92.1 – 94.6)	6.6 (5.4 – 7.9)	Reference	0.00
Female	95.2 (94.1 – 96.2)	4.8 (3.8 – 5.9)	-1.8 (-3.2, -0.4)	
Race				<0.0
Hispanic	87.6 (85.4 – 89.9)	12.4 (10.1 – 14.6)	Reference	<0.0
Non-Hispanic white	96.8 (95.8 – 97.8)	3.2 (2.2 – 4.2)	-9.2 (-12.0, -6.4)	
Non-Hispanic black	92.8 (90.9 – 94.7)	7.2 (5.3 – 9.1)	-5.1 (-7.7, -2.6)	
Other race	86.7 (84.0 – 89.5) 🧹	13.3 (10.5 – 16.0)	0.9 (-2.4, 4.2)	
Education (n=4,757)				
Less than 9 th grade	82.4 (77.8 – 86.9)	17.6 (13.1 – 22.2)	Reference	<0.0
9-11 th grade	92.4 (90.1 – 94.7)	7.6 (5.3 – 9.9)	-10.4 (-15.5, -4.6)	4010
High school graduate	92.9 (90.5 – 95.3)	7.1 (4.7 – 9.5)	-10.6 (-15.8, -5.3)	
Some college	96.7 (95.4 – 98.0)	3.3(2.0 - 4.6)	-14.3 (-19.2, -9.5)	
	. , , , , , , , , , , , , , , , , , , ,			
College graduate or above	95.0 (93.4 – 96.7)	5.0 (3.2 – 6.6)	-12.7 (-17.1, -8.3)	
Missing (n. 264)		20(0 1 1)		<0.00
Missing (n=264)	98.0 (95.6 – 100.0)	2.0 (0 – 4.4)		
Ratio of family income to poverty (n=4,623)				0.00
Mean (95%CI)	2.9 (2.7 – 3.1)	2.4 (2.1 – 2.7)	-0.5 (-0.9, -0.2)	0.00
0-0.99	92.0 (89.8 – 94.2)	8.0 (5.8 -10.2)	Reference	0.00
1 – 1.99	92.5 (91.0 - 94.1)	7.5 (5.9 – 9.0) 🔪	-0.5 (-3.1, 2.1)	
2 – 2.99	94.9 (91.7 – 98.1)	5.1 (1.9 – 8.3)	-2.9 (-7.0, 1.2)	
3 – 3.99	95.8 (94.0 – 97.6)	4.2 (2.4 – 6.0)	-3.8 (-6.4, -1.3)	
4 – 4.99	96.7 (94.5 – 98.8)	3.3 (1.2 – 5.5)	-4.7 (-8.3, -1.1)	
≥5	95.9 (94.1 – 97.7)	4.1 (2.3 – 5.9)	-3.9 (-6.9, -0.9)	
Missing (n=396)	91.9 (88.4 – 95.5)	8.1 (4.5 – 11.6)		
Foreign born (n=4,987)	· · · · · · · · · · · · · · · · · · ·	,		
No	96.5 (95.5 – 97.6)	3.5 (2.4 – 4.5)	Reference	<0.00
Yes	83.6 (80.8 – 86.3)	16.4 (14.0 – 19.2)	13.0 (9.6, 16.3)	
		· · · · · · · · · · · · · · · · · · ·		
Missing (n=2)	100.0 (100.0 – 100.0)	0 (0 – 0)		
BMI, kg/m ² (n=4,930)				
Mean (95%CI)	28.7 (28.2 – 29.1)	28.9 (27.8 – 30.1)	0.2 (-0.7, 1.2)	0.603
	20.7 (20.2 - 20.1)	20.0 (21.0 - 00.1)	0.2 (0.1, 1.2)	0.00
BMI categories				
Underweight (<18.5 kg/m ²)	93.1 (87.8 – 98.4)		0.9 (-3.7, 5.4)	0.86
	33.1 (07.0 - 30.4)		0.3 (-0.7, 0.4)	0.00

		leighted Prevalence, %		_
Characteristics	QFT Negative % (95% CI)	QFT Positive % (95% CI)	Mean/Prevalence Difference [*]	P-Value (X ²)†
	94.3 (93.3 – 95.3)	5.7 (4.7 – 6.7)	Percentage point (95%CI)	、 /
Normal (18.5 – 24.9 kg/m ²)	93.9 (92.0 – 95.8)	6.9 (1.6 – 12.2)	Reference	
Overweight (25 – 29.9 kg/m ²)	94.5 (93.2 - 95.9)	6.1 (4.2 - 8.0)	-0.6 (-2.6, 1.4)	
Obese (≥30 kg/m²)	94.4 (93.2 – 95.5)	5.5 (4.1 – 6.8)	-0.4 (-2.6, 1.7)	
		5.6 (4.5 – 6.8)		
Missing (n=59)	95.8 (90.2 – 100.0)			ב
		4.2 (0 – 9.8)		Prote
Smoking status (n=4,722)				Ċ
Never smokers ^b	94.9 (94.0 – 95.8)	5.1 (4.2 – 6.0)	Reference	0.14
Past smokers ^c	93.1 (90.7 – 95.4)	6.9 (4.6 – 9.3)	1.8 (-0.7, 4.3)	9
Current smokers ^d	93.3 (90.7 – 95.8)	6.7 (4.2 – 9.3)	1.6 (-1.0, 4.2)	0
				op p
Missing (n=267)	98.1 (95.7 – 100.0)	1.9 (0 – 4.3)		ÿr
Heavy alcohol drinking (n=3,867)				ngi
No	95.0 (93.5 - 96.4)	5.0 (3.6 – 6.5)	Reference	0.68
Yes ^e	94.7 (93.7 – 95.8)	5.3 (4.2 – 6.3)	0.3 (-1.1, 1.6)	Inc
Missing (n=1,122)	92.0 (90.5 – 93.6)	8.0 (6.4 – 9.5)		
HbA1c, %				<u> </u>
Mean (95%CI)	5.6 (5.6 – 5.7)	5.9 (5.7 – 6.0)	0.3 (0.1, 0.4)	0.001
				Ë
Diabetes categories ^f				se
Normal	95.5 (94.6 - 96.4)	4.5 (3.6 – 5.4)	Reference	<0.00
Prediabetes	93.4 (91.7 – 95.0)	6.6 (5.0 – 8.3)	2.1 (0.8, 3.5)	ela
Diabetes	88.9 (85.2 – 92.5)	11.1 (7.5 – 14.8)	6.6 (2.9, 10.4)	
HIV co-infection status (n=3,408)			- <i>i</i>	
Negative	95.4 (94.4 – 96.4)	4.6 (3.6 – 5.6)	Reference	0.86 9
Positive	96.1 (88.3 – 100.0)	3.9 (0 – 11.7)	0.7 (-7.0, 8.3)	ext
				r a
Missing (n=1,600)	91.3 (89.3 – 93.3) 🧹	8.7 (6.7 – 10.7)		na
Dyslipidemia Measures				a
HDL (mg/dL) (n=4,889)				5
Mean (95%CI)	52.8 (51.8 – 53.9)	51.7 (48.9 – 54.5)	-1.1 (-3.5, 1.2)	0.330
				0.1460 by copyrigne including for use 0.688 including for use 0.688 v copyrigne including for use 0.686 v copyrigne including for use 0.866 v copyrigne inc
				Ű.
Normal	94.6 (93.5 - 95.7)	5.4(4.3-6.5)	Reference	0.113
Lower	93.6 (92.4 – 94.9)	6.4 (5.1 – 7.6)	1.0 (-0.3, 2.2)	4
Minging (n. 100)				0.614
$\frac{\text{Missing } (n=100)}{\text{Discussion}}$	91.8 (82.9 – 100.0)	8.2 (0 – 17.1)		
_DL ^h (mg/dL) (n=2,236)		440.4 (407.4 440.0)		<u>.</u>
Mean (95%CI)	114.8 (112.5 – 117.0)	113.1 (107.1 – 119.2)	-1.6 (-8.4, 5.1)	0.614
			Deference	ā a a a a
_DL levels	94.3 (92.8 - 95.8)	5.7 (4.2 – 7.2)	Reference	0.392
Normal (<130 mg/dL)	95.8 (94.6 - 97.2)	4.2(2.8-5.6)	-1.5 (-3.3, 0.4)	
Elevated (130 – 159 mg/dL)	94.5 (90.7 – 98.4)	5.4 (1.6 – 9.3)	-0.2 (-3.9, 3.4)	ari
High (≥160 mg/dL)				iec
Missing (n. 67)	99.5 (98.3 – 100.0)	0.5 (0 – 1.7)		'nn
Missing (n=67)				0.39 Similar technologyes. 0.18 Similar technologyes.
Total Cholesterol (mg/dL) (n=4,889)		106 0 (100 E 004 0)		0 4 0 9
Mean (95%CI)	194.2 (191.9 – 196.4)	196.8 (192.5 – 201.0)	2.6 (-1.3, 6.5)	53,01.U م
Total chalactoral laws				
Total cholesterol levels			Deference	0 700
Low (≤130 mg/dL)	93.3 (89.8 – 96.8) 94.5 (93.2 – 95.7)	6.7(3.2-10.2)		0.728
Normal $(131 - 199 \text{ mg/dL})$	94.5 (93.3 – 95.7)	5.5(4.2-6.7)	-1.3 (-5.6, 3.0)	
Elevated (≥200 mg/dL)	94.2 (82.9 – 100.0)	5.8 (4.4 – 7.2)	-0.9 (-4.9, 3.1)	
Minging (n. 100)				
Missing (n=100)	91.8 (82.9 – 100.0)	8.2 (0 – 17.1)		
Triglyceride ^h (mg/dL) (n=2,276)				

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	V	Veighted Prevalence, %	(95%CI)	
Characteristics	QFT Negative % (95% CI)	QFT Positive % (95% CI)	Mean/Prevalence Difference*	− P-Value (X²)†
	94.3 (93.3 – 95.3)	5.7 (4.7 – 6.7)	Percentage point (95%CI)	
Mean (95%CI)	129.6 (118.9 – 140.2)	123.4 (111.8 – 135.0)	-6.2 (-20.5, 8.1)	0.374
riglyceride levels			Deferrer	0 700
Optimal (<150 mg/dL) Elevated (150 – 199 mg/dL)	94.6 (93.0 – 96.2)	5.4 (3.8 -7.0) 5.1 (2.8 – 7.5)	Reference -0.3 (-3.1, 2.6)	0.796
High (≥200 mg/dL)	94.9 (92.5 – 97.2) 95.4 (93.6 – 97.2)	4.6 (2.8 – 7.5)	-0.9 (-3.2, 1.5)	
	30.4 (30.0 31.2)	4.0 (2.0 0.4)	0.0 (0.2, 1.0)	Protected
Missing (n=27)	100.00 (100.0 – 100.0)	0 (0 – 0)		lec
Any dyslipidemia ^{i&h} (n=2,277)				
No	94.4 (92.1 – 96.7)	5.6 (3.3 – 7.9)	Reference	0.6360 0.6360 0.63760 0.63760 0.63760 0.63760 0.63760 0.63760 0.63760 0.63760 0.7100 0.7100 0.7100 0.7100 0.7100 0.7100 0.710000000000
Yes	94.9 (93.6 – 96.2)	5.1 (3.8 – 6.4)	-0.5 (-3.0, 2.0)	(do
Missing (n=26)	100.0 (100.0 – 100.0)	0 (0 – 0)		Vriç
Statin prescription ^j (n=2,770)	100.0 (100.0 – 100.0)	0 (0 - 0)		<u> </u>
No	94.2 (92.7 – 95.6)	5.8 (4.4 – 7.3)	Reference	0.49
Yes	93.5 (91.8 – 95.2)	6.5 (4.7 – 8.2)	0.6 (-1.3, 2.6)	
			· · · · · ·	0.49 0.49 0.049 0.042 0.042
Missing (n=2,238)	94.7 (93.6 – 95.8)	5.3 (4.2 – 6.4)		j u
CHD ^k (n=4,712)				
No Yes	94.1 (93.0 – 95.1) 96 5 (94.7 – 98.3)	5.9 (4.9 – 7.0) 3 5 (1 7 – 5 3)	Reference	0.047
162	96.5 (94.7 – 98.3)	3.5 (1.7 – 5.3)	-2.4 (-4.6, - 0.2)	â
Missing (n=277)	97.8 (95.5 – 100.0)	2.2 (0 – 4.5)		-
Heart attack ^I (n=4,723)		(**)		
No	94.1 (93.1 – 95.1)	5.9 (4.9 – 6.9)	Reference	0.00
Yes	96.3 (94.5 – 98.1)	3.7 (1.9 – 5.5)	-2.2 (-3.6, -0.8)	Ċ
				0.0000 0.0000 0.04244
Missing (n=266)	98.1 (95.7 – 100.0)	1.9 (0 – 4.3)		<u> </u>
Stroke ^m (n=4,725) No	94.3 (93.2 – 95.3)	5.7 (4.7 – 6.8)	Reference	0 0 4 2
Yes	94.3 (93.2 – 95.3) 90.7 (86.4 – 94.9)	9.3 (5.1 – 13.6)	3.6 (-0.9, 8.0)	0.042
				a
Missing (n=264)	98.1 (95.7 – 100.0)	1.9 (0 – 4.3)		ity A
Abbreviations: BMI – body mass index; CHD – coronary he	· · ·			
poprotein; HIV – human immunodeficiency Survey; QFT - QuantiFERON Gold-In-Tube; Mean/prevalence difference was calculated with "reference" statement) P-values from Rao-Scott Chi-square tests, u P-values from t-tests Systolic ≥130mmHg and/or diastolic ≥80mm Survey participants answered "No" to the qu Survey participants answered "No" to the qu Survey participants answered "No" to the qu Survey participants answered "Not at all" to rou/has SP) smoked at least 100 cigarettes Survey participants answered "Every day" of question "(Have you/has SP) smoked at leas Survey participants answered "Yes" to the of 5 (for male) or more drinks of any kind of alc	by setting those without TBI	(i.e. OFT negative) as the	a referent group, unless indicate	
Diabetes was categorized according to HbA HDL level was using gender-specific cut-off lower" HDL was defined if HDL level was <4	1c levels and self-reported p s: "normal" HDL was defined 0 mg/dL for male or <50 mg,	revious type-2 diabetes m if HDL level was ≥40 mg/ /dL for female	ellitus diagnosis by health care /dL for male or ≥50 mg/dL for fe	providers male; and
LDL and triglyceride measurements were do hose who were fasting) was applied accordi Any dyslipidemia was defined as having eith	ngly			ariable (for

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		Weighted Prevalence, %		
Characteristics	QFT Negative % (95% CI)	QFT Positive % (95% CI)	Mean/Prevalence Difference*	P-Value: (X ²)†
Survey participants answered "Yes" t	94.3 (93.3 – 95.3) to the question "Has a doctor or oth	5.7 (4.7 - 6.7) er health professional ev	Percentage point (95%CI) ver told (vou/SP) that (vou/s/he)	had coronary
eart disease?"				
Survey participants answered "Yes" to ttack (also called myocardial infarctic		er health professional ev	er told (you/SP) that (you/s/he) h	had a heart
Survey participants answered "Yes"		ner health professional e	ver told (you/SP) that (you/s/he)	had a
troke?"				had a Protected
old indicates that the finding is statis	stically significant at α =0.05			
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· · · ·		adult population, NH		
		Weighted Prevalence, %	(95%CI) Mean/Prevalence	- P-Value
Characteristics	No Hypertension % (95% CI)	Any Hypertension ^a % (95% CI)	Difference*	(X ²)†
	51.1 (47.4 – 54.8)	48.9% (45.2 – 52.6)	Percentage point (95%CI)	(**)
QFT result				-
Negative	51.7 (47.9 – 55.5)	48.3 (44.5 – 52.1)	Reference	<0.00
Positive Age, years	41.5 (35.5 – 47.6)	58.5 (52.4 - 64.5)	10.2 (5.0, 15.4)	
Mean (95%CI)	38.9 (37.3 – 40.6)	54.3 (52.8 – 55.7)	15.3 (14.0, 16.6)	ت 0.00×
	00.0 (01.0 10.0)	01.0 (02.0 00.1)	10.0 (11.0, 10.0)	, o
Age group				CC
Quartile 1 (18 – 31)	80.8 (78.6 – 83.1)	19.2 (16.9 – 21.4)	Reference	<0.0Œ
Quartile 2 (32 – 47)	57.5 (52.3 – 62.7)	42.5 (37.3 – 47.7)	23.4 (18.6, 28.1)	ng
Quartile 3 (48 – 62)	38.0 (34.4 – 41.7)	62.0 (58.3 – 65.6)	42.8 (37.9, 47.7)	Int,
Quartile 4 (>62)	23.0 (18.9 – 27.1)	77.0 (72.9 – 81.1)	57.8 (53.1, 62.5)	v copyright, incipating v.0.000 v.0.000
18 – 49	57.1 (53.1 – 61.1)	42.9 (38.9 – 46.9)	Reference	<u>0</u> 40.0>
≥50	34.2 (30.2 – 38.3)	65.8 (61.7 – 69.8)	22.9 (17.6, 28.2)	
Sex		()	- (-,,	-
Male	47.7 (43.2 – 52.2)	52.3 (47.8 – 56.8)	Reference	0.00¥
Female	54.4 (50.4 – 58.4)	45.6 (41.6 – 49.6)	-6.7 (-10.9, -2.5)	uses
Race			Deference	es So oc
Hispanic Non Hispania white	61.3(55.8 - 66.8)	38.7 (33.2 – 44.2)	Reference	<0.00
Non-Hispanic white Non-Hispanic black	49.6 (44.7 – 54.4) 43.6 (39.9 – 47.4)	50.4 (45.6 – 55.3) 56.4 (52.6 – 60.1)	11.7 (5.3, 18.2) 17.7 (11.8, 23.5)	<0.00 Pelated
Other race	43.0 (39.9 – 47.4) 56.5 (51.5 – 61.5)	43.5 (38.5 – 48.5)	4.8 (-2.2, 11.7)	a +
Education (n=4,725)				o
Less than 9 th grade	39.0 (31.3 – 46.9)	61.0 (53.3 – 68.7)	Reference	<0.00 <0.00
9-11 th grade	42.3 (36.9 – 47.6)	57.7 (52.3 – 63.1)	-3.2 (-13.4, 6.9)	ar
High school graduate	45.5 (40.9 – 50.1)	54.5 (49.9 – 59.1)	-6.5 (-14.9, 2.0)	IQ O
Some college	51.7 (46.3 – 57.0)	48.3 (42.9 – 53.7)	-12.7 (-20.9, -4.5)	data
College graduate or above	55.3 (48.9 – 61.5)	44.7 (38.4 – 51.1)	-16.2 (-25.5, -7.0)	a n
Missing (n=264)	86.7 (81.8 – 91.5)	13.3 (8.5 – 18.2)		ININ
Ratio of family income to poverty (n=4,593)		10.0 (0.0 10.2)		r mining,
Mean (95%CI)	2.8 (2.6 – 3.1)	2.9 (2.7 – 3.1)	0.1 (-0.1, 0.3)	0.439
		· · · ·		1
0-0.99	55.8 (49.1 – 62.5)	44.2 (37.5 – 50.9)	Reference	0.43 g
1 – 1.99	49.6 (43.3 – 55.9)	50.4 (44.1 – 56.7)	6.2 (-0.5, 12.9)	jur
2 – 2.99	49.4 (43.7 – 55.0)	50.6 (45.0 - 56.3)	6.4 (-2.4, 15.3)	ġ,
3 – 3.99	53.5 (48.6 – 58.4)	46.5 (41.6 – 51.4)	2.3 (-4.9, 9.5)	anc
4 – 4.99 ≥5	47.6 (39.8 – 55.0) 50.9 (43.0 – 58.7)	52.4 (44.6 – 60.2) 49.1 (41.3 – 57.0)	8.2 (-2.7, 19.0) 4.9 (-3.5, 13.4)	<u>s</u>
<u>د</u> ن	00.9 (40.0 – 00.7)	49.1 (41.3 – 57.0)	4.9 (-0.0, 10.4)	E
Missing (n=396)	49.4 (39.9 – 58.8)	50.6 (41.2 - 60.1)		0.43ming, and similar
Foreign born (n=5,019)	(/	· · · · · /		Tec
No	49.2 (45.9 – 52.6)	50.8 (47.4 – 54.1)	Reference	<0.00
Yes	60.1 (54.7 – 65.5)	39.9 (34.5 – 45.3)	-10.8 (-14.5, -7.2)	ec团ologies
Missing (n. 2)		20.4(0.04.0)		libe
$\frac{Missing(n=2)}{PMI_k kg(m^2(n=4.020))}$	70.6 (8.7 – 100.0)	29.4 (0 – 91.3)		<u> </u>
BMI, kg/m² (n=4,930) Mean (95%CI)	27.2 (26.7 – 27.8)	30.2 (29.7 – 30.8)	3.0 (2.4, 3.7)	<0.001
Mouri (307001)	21.2(20.1 - 21.0)	JU.2 (23.1 - JU.0)	5.0(2.4, 5.7)	\U.UU
BMI categories				
Underweight (<18.5 kg/m ²)	68.6 (61.2 – 76.0)	31.4 (24.0 - 38.8)	-1.2 (-9.3, 6.9)	<0.001
Normal (18.5 – 24.9 kg/m ²)	67.4 (62.8 – 72.0)	32.6 (28.0 – 37.2)	Reference	
Overweight (25 – 29.9 kg/m ²)	49.8 (46.2 – 53.4)	50.2 (46.6 – 53.8)	17.6 (14.4, 20.9)	
Obese (≥30 kg/m²)	38.0 (33.6 – 42.5)	62.0 (57.5 - 66.4)	29.4 (23.3, 35.5)	

	V	Veighted Prevalence, %		_
Characteristics	No Hypertension % (95% CI)	Any Hypertension ^a % (95% Cl)	Mean/Prevalence Difference [*]	P-Value (X ²)†
	51.1 (47.4 – 54.8)	48.9% (45.2 – 52.6)	Percentage point (95%CI)	
Missing (n=59)	26.1 (7.3 – 45.0)	73.9 (55.0 – 92.7)		
Smoking status (n=4,722)				
Never smokers ^b	54.4 (50.5 - 58.4)	45.6 (41.6 – 49.5)	Reference	<0.001
Past smokers ^c	37.2 (31.6 – 42.8)	62.8 (57.2 – 68.4)	17.3 (12.6, 21.9)	Pro
Current smokers ^d	52.7 (48.4 – 57.1)	47.3 (42.9 – 51.6)	1.7 (-3.8, 7.1)	Protectec
Missing (n=267)	86.2 (81.0 - 91.4)	13.8 (8.6 – 19.0)		ted
Heavy alcohol drinking (n=3,891)			- /	, py
No	41.1 (36.5 – 45.7)	58.9 (54.3 – 63.5)	Reference	<0.00
Yes ^e	52.4 (48.3 – 56.5)	47.6 (43.9 – 51.7)	-11.3 (-14.9, -7.7)	эру
Missing (n=1,122)	52.9 (47.6 – 58.2)	47.1 (41.8 – 52.4)		oygopyright ⊲0.00
HbA1c, %				
Mean (95%CI)	5.4 (5.4 – 5.5)	5.9 (5.8 – 5.9)	0.4 (0.4, 0.5)	<0.00
Diabetes categories ^f				luair
Normal	59.9 (55.8 – 64.0)	40.1 (36.0 – 44.2)	Reference	<0.00
Prediabetes	40.3 (37.1 – 43.5)	59.7 (56.5 – 62.9)	19.6 (15.8 – 23.4)	
Diabetes	19.1 (16.5 – 21.8)	80.9 (78.2 – 83.5)	40.8 (37.3 – 44.3)	,
HIV co-infection status (n=3,389)				e coes
Negative	60.7(57.3 - 64.2)	39.3 (35.8 – 42.7)		0.22 2
Positive	78.4 (54.8 – 100.0)	21.6 (0 – 45.2)	-17.7 (-43.6, 8.3)	late
Missing (n=1,600)	25.3 (21.7 – 28.9)	74.7 (71.1 – 78.3)		
Dyslipidemia Measures				
HDL (mg/dL) (n=4,889)				X
Mean (95%CI)	53.2 (52.1 – 54.3)	52.3 (51.0 – 53.6)	-0.9 (-2.0, 0.1)	0.08 6
HDL levels ^g				a 0
Normal	53.1 (48.9 – 57.3)	46.9 (42.7 – 51.1)	Reference	<0.00
Lower	47.1 (43.5 – 50.7)	52.9 (49.3 – 56.5)	6.0 (2.4, 9.6)	-0.04g
				nın
Missing (n=100)	37.0 (25.2 – 48.7)	63.0 (51.3 – 74.8)		gui
LDL ^h (mg/dL) (n=2,236)				¥
Mean (95%CI)	113.2 (110.5 – 115.8)	116.4 (113.0 – 119.8)	3.2 (-1.1, 7.6)	0.135 0.135 0.136 0.016
LDL levels				ain
Normal (<130 mg/dL)	53.7 (48.5 – 58.8)	46.3 (41.2 – 51.5)	Reference	0.01
Elevated (130 – 159 mg/dL)	55.8 (48.7 – 62.9)	44.2 (37.1 – 51.3)	-2.1 (-11.3, 7.1)	0.0 igu
High (≥160 mg/dL)	38.7 (28.1 – 49.3)	61.3 (50.7 – 71.9)	15.0 (4.7, 25.3)	ina
				SI
Missing (n=67)	31.7 (19.9 – 43.5)	68.3 (56.5 – 80.1)		and similar
Total Cholesterol (mg/dL) (n=4,889) Mean (95%CI)	100.2 (197.7 102.9)	109 6 (104 7 202 4)	8.3 (3.4, 13.2)	۳ ۳ ۵ ۵۵
Mean (95%CI)	190.3 (187.7 – 192.8)	198.6 (194.7 – 202.4)	0.3 (3.4, 13.2)	0.00
Total cholesterol levels				0.000 。 - 0.00 - 0.000 - 0.00 - 0.000 - 0.00 - 0.00 - 0.000 - 0.00
Low (≤130 mg/dL)	50.7 (44.3 - 57.0)	49.3 (43.0 – 55.7)	Reference	<0.00
Normal (131 – 199 mg/dL)	55.3 (50.9 – 59.8)	44.7 (40.2 – 49.1)	-4.7 (-10.6, 1.3)	Qie
Elevated (≥200 mg/dĽ)	46.4 (41.1 – 51.8)	53.6 (48.2 – 58.9)	4.2 (-3.3, 11.7)	ŝ
- ·			-	
Missing (n=100)	37.0 (25.2 – 48.7)	63.0 (51.3 – 74.8)		
Triglyceride ^h (mg/dL) (n=2,276)		140.0 /404.0 400.0		.0.004
Mean (95%CI)	111.5 (105.4 – 117.6)	148.8 (134.6 – 162.9)	37.3 (26.3, 48.2)	<0.001
Triglyceride levels				
Optimal (<150 mg/dL)	57.9 (54.2 – 61.6)	42.1 (38.4 – 45.8)	Reference	<0.001
/	•••• (••• • ••••)			

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		Weighted Prevalence, %		_
Characteristics	No Hypertension % (95% CI)	Any Hypertension ^a % (95% CI)	Mean/Prevalence Difference [*]	P-Value (X ²)†
	51.1 (47.4 – 54.8)	48.9% (45.2 – 52.6)	Percentage point (95%CI)	
Elevated (150 – 199 mg/dL)	41.8 (34.1 – 49.5)	58.2 (50.5 - 65.9)	16.1 (9.8, 22.5)	
High ($\geq 200 \text{ mg/dL}$)	28.7 (21.8 – 35.6)	71.3 (64.4 – 78.2)	29.2 (22.4, 36.1)	
	2017 (2110 0010)	71.0 (01.1 70.2)	20.2 (22.1, 00.1)	
Missing (n=27)	25.7 (6.7 – 44.8)	74.3 (55.2 – 93.3)		
Any dyslipidemia ^{i&h} (n=2,277)		· · · · · ·		ד
No	61.0 (56.7 – 65.4)	39.0 (34.6 – 43.3)	Reference	<0.00
Yes	47.4 (41.9 – 52.8)	52.6 (47.2 - 58.1)	13.7 (7.7, 19.6)	ect
l				<0.00ected
Missing (n=26)	24.6 (6.0 – 43.2)	75.4 (56.8 – 94.0)		0
Statin prescription ^j (n=2,770)				C
No	44.8 (40.0 – 49.6)	55.2(50.4 - 60.0)	Reference	
Yes	20.6 (16.0 – 25.2)	79.4 (74.8 – 84.0)	24.2 (17.6, 30.9)	<0.00
	60.8 (66.6.72.0)	20 2 (27 0 22 4)		/ cop⊠ignt, <0.00 <
Missing (n=2,238) CHD ^k (n=4,712)	69.8 (66.6 – 73.0)	30.2 (27.0 – 33.4)		;
	50.9 (47.2 – 54.6)	49.1 (45.4 – 52.8)	Reference	
No Yes	15.3 (5.9 – 24.8)	49.1 (45.4 – 52.8) 84.7 (75.2 – 94.1)	35.6 (25.0, 46.1)	<0.00E
	10.0 (0.0 - 24.0)	07.1 (10.2 - 34.1)	(20.0, +0.1)	ŋ
Missing (n=277)	85.6 (80.4 – 90.8)	14.4 (9.2 – 19.6)		<0.00 ang to
Heart attack ^l (n=4,723)		<u> </u>		
No	50.8 (47.1 – 54.5)	49.2 (45.5 – 52.9)	Reference	 0.00>
Yes	20.9 (11.6 - 30.2)	79.1 (69.8 – 88.4)	29.9 (18.5, 41.4)	
			· · ·	relate
Missing (n=266)	86.1 (80.7 – 91.5)	13.9 (8.5 – 19.3)		are
Stroke ^m (n=4,725)				
No	50.9 (47.3 – 54.4)	49.1 (45.6 – 52.7)	Reference	<0.00
Yes	15.6 (8.8 – 22.4)	84.4 (77.6 – 91.2)	35.3 (28.1, 42.5)	ext
		121 (0 4 47 0)		<0.00text and
Missing (n=264) Abbreviations:	86.9 (82.1 – 91.6)	13.1 (8.4 – 17.9)		ā
BMI – body mass index; CI – confidence i	nterval: HDL – high-density line	protein: LDL – low-densit	v lipoprotein: NHANES – Nation	al Health
and Nutrition Examination Survey; QFT -			, , , , ,	a
*Mean/prevalence difference was calculat	ed by setting those without TBI	(i.e., QFT negative) as th	e referent group, unless indicate	d otherw
(with "reference" statement)				, Al
[†] P-values from Rao-Scott Chi-square test	s, unless indicated otherwise			
[‡] P-values from t-tests		is of high black second		all
Systolic ≥ I 30mmHg and/or diastolic ≥80	mmrg or any previous diagnos	is of high blood pressure l	by nealth providers	nır
	to the question "(Do you/door	Smokeu at least 100 clgare	2" and "Ves" to the question "/U	
^o Survey participants answered "No" to the	to the question (D0 you/uoes	or phow shoke dyarelles		
^o Survey participants answered "No" to the ^c Survey participants answered "Not at all" vou/has SP) smoked at least 100 cigarett.	es in life?			9
^a Survey participants answered "No" to the ^c Survey participants answered "Not at all" you/has SP) smoked at least 100 cigarette ^d Survey participants answered "Every day	es in life? /" or "Some days" to the questi	on "(Do vou/does SP) now	smoke cigarettes?" and "Yes" to	the 🗸
^b Survey participants answered "No" to the ^c Survey participants answered "Not at all" you/has SP) smoked at least 100 cigarette ^d Survey participants answered "Every day guestion "(Have you/has SP) smoked at least	es in life? " or "Some days" to the questic east 100 cigarettes in life?	on "(Do you/does SP) now	smoke cigarettes?" and "Yes" to	the s
^b Survey participants answered "No" to the ^c Survey participants answered "Not at all" you/has SP) smoked at least 100 cigarette ^d Survey participants answered "Every day question "(Have you/has SP) smoked at le ^e Survey participants answered "Yes" to th	es in life? " or "Some days" to the questic east 100 cigarettes in life? e question "Was there ever tim	on "(Do you/does SP) now e or times in (vour/SP's) li	smoke cigarettes?" and "Yes" to fe when (you/he/she) drank 4 (fo	o the
^b Survey participants answered "No" to the ^c Survey participants answered "Not at all" you/has SP) smoked at least 100 cigarette ^d Survey participants answered "Every day question "(Have you/has SP) smoked at le ^e Survey participants answered "Yes" to th 5 (for male) or more drinks of any kind of	es in life? " or "Some days" to the questic east 100 cigarettes in life? e question "Was there ever tim alcoholic beverage almost ever	on "(Do you/does SP) now e or times in (your/SP's) li y day?"	smoke cigarettes?" and "Yes" to fe when (you/he/she) drank 4 (fo	o the single of
^b Survey participants answered "No" to the ^c Survey participants answered "Not at all" you/has SP) smoked at least 100 cigarette ^d Survey participants answered "Every day question "(Have you/has SP) smoked at le ^e Survey participants answered "Yes" to th 5 (for male) or more drinks of any kind of ^f Diabetes was categorized according to H	es in life? " or "Some days" to the questic east 100 cigarettes in life? e question "Was there ever tim alcoholic beverage almost ever bA1c levels and self-reported p	on "(Do you/does SP) now e or times in (your/SP's) li y day?" previous type-2 diabetes m	smoke cigarettes?" and "Yes" to fe when (you/he/she) drank 4 (fo nellitus diagnosis by health care (o the single or female) providers
^f Diabetes was categorized according to H ^g HDL level was using gender-specific cut-	bA1c levels and self-reported p offs: "normal" HDL was defined	y day : previous type-2 diabetes m d if HDL level was ≥40 mg/	r smoke cigarettes?" and "Yes" to fe when (you/he/she) drank 4 (fo nellitus diagnosis by health care ∣ /dL for male or ≥50 mg/dL for fer	o the strain of
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^f Diabetes was categorized according to H ^g HDL level was using gender-specific cut- "lower" HDL was defined if HDL level was ^h LDL and triglyceride measurements were	bAlc levels and self-reported p offs: "normal" HDL was defined <40 mg/dL for male or <50 mg done among a subset of surve	y day : previous type-2 diabetes m d if HDL level was ≥40 mg, u/dL for female	nellitus diagnosis by health care ∣ /dL for male or ≥50 mg/dL for fer	providers nale; and
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¹ Diabetes was categorized according to H ⁹ HDL level was using gender-specific cut- "lower" HDL was defined if HDL level was ^h LDL and triglyceride measurements were those who were fasting) was applied accord ⁱ Any dyslipidemia was defined as having e	bAlc levels and self-reported p offs: "normal" HDL was defined <40 mg/dL for male or <50 mg done among a subset of surve ordingly either elevated LDL, total chole	y day : previous type-2 diabetes m d if HDL level was ≥40 mg, µ/dL for female ey participants who were f sterol, triglyceride, or lowe	nellitus diagnosis by health care ∣ /dL for male or ≥50 mg/dL for fer asting and appropriate weight va er HDL levels	providers nale; and ariable (for
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"lower" HDL was defined if HDL level was hLDL and triglyceride measurements were those who were fasting) was applied accc Any dyslipidemia was defined as having e Taken statin in the past 30 days prior to s kSurvey participants answered "Yes" to the heart disease?"	bA1c levels and self-reported p offs: "normal" HDL was defined < <40 mg/dL for male or <50 mg e done among a subset of surve ordingly either elevated LDL, total chole survey date, survey participants e question "Has a doctor or oth	y day? previous type-2 diabetes m d if HDL level was ≥40 mg, y/dL for female ey participants who were find sterol, triglyceride, or lowe were also asked to show her health professional events	nellitus diagnosis by health care /dL for male or ≥50 mg/dL for fer asting and appropriate weight va er HDL levels medicine container to surveyor/e er told (you/SP) that (you/s/he) ha	providers nale; and ariable (for enumerato ad coronal
⁵ Ciol male of more drifts of any kind of ⁶ Diabetes was categorized according to H ⁹ HDL level was using gender-specific cut- "lower" HDL was defined if HDL level was ^h LDL and triglyceride measurements were those who were fasting) was applied accor ¹ Any dyslipidemia was defined as having e ¹ Taken statin in the past 30 days prior to s ^k Survey participants answered "Yes" to the heart disease?"	bA1c levels and self-reported p offs: "normal" HDL was defined < <40 mg/dL for male or <50 mg e done among a subset of surve ordingly either elevated LDL, total chole survey date, survey participants e question "Has a doctor or oth	y day? previous type-2 diabetes m d if HDL level was ≥40 mg, y/dL for female ey participants who were find sterol, triglyceride, or lowe were also asked to show her health professional events	nellitus diagnosis by health care /dL for male or ≥50 mg/dL for fer asting and appropriate weight va er HDL levels medicine container to surveyor/e er told (you/SP) that (you/s/he) ha	providers nale; and ariable (for enumerato ad coronal

			Weighted Prevalence, %		
Charac	teristics	No Hypertension % (95% CI)	Any Hypertension ^a % (95% CI)	Mean/Prevalence Difference [*]	P-Value: (X ²) [†] Protected by copyright, including for uses related to text and data mining, Al
ⁿ Survey participants a	nswered "Yes" to th	51.1 (47.4 – 54.8) be question "Has a doctor or o	48.9% (45.2 – 52.6) other health professional eve	Percentage point (95%Cl) er told (you/SP) that (you/s/he)	had a
stroke?"					
Bold indicates that the	e finding is statistica	ally significant at α =0.05			
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 Table S3. Weighted prevalence of various hypertension classifications by interferon gamma tuberculosis an Egen responses among representative of civilian, non-institutionalized US adult population, NHANES 2011-2012

Hypertension Measures Primary study outcome Any hypertension indication ^a Measured blood pressure categories	QFT Negative N=4510 94.3% (93.3 – 95.2) 48.3 (44.5, 52.1)	Ag-NIL Low (<4 IU/ml) N=299 4.0% (3.2 – 4.7)	ositive ⊊ Values Higkar (≥4 JU/ml) 4 = 1 \$0 1.7% (1.7 = 2.3)	Low Ag-NIL vs. QFT (-)	evalence Difference (95%Cl High Ag-NIL vs. QFT (-)) High vs. Low Ag-NI
Primary study outcome Any hypertension indication ^a	N=4510 94.3% (93.3 – 95.2)	Ag-NIL Low (<4 IU/ml) N=299 4.0% (3.2 – 4.7)	<u>Values ⊃ ⊃</u> Higk (≥4 NU/ml) N=1 ≩ 0	Low Ag-NIL vs. QFT (-)	High Ag-NIL vs. QFT (-)	High vs. Low Ag-NI
Primary study outcome	94.3% (93.3 – 95.2)	N=299 4.0% (3.2 – 4.7)	ŭN=1 ≩ 0	Low Ag-NIL vs. QFT (-)	High Ag-NIL vs. QFT (-)	High vs. Low Ag-NI
ny hypertension indication ^a	48.3 (44.5, 52.1)					
ny hypertension indication ^a	48.3 (44.5, 52.1)					
		57.6 (48.7, 66.6)	60.4 63.6 67.7)	9.4 (1.6, 17.1)	12.1 (3.6, 20.5)	2.7 (-10.1, 15.5)
			T a v			(- /)
Normal blood pressure ^b	47.9 (44.6, 51.2)	35.6 (25.1, 46.1)	39.5 02 2 2 49.7)	-12.3 (-22.7, -1.9)	-8.4 (-18.1, 1.2)	3.8 (-9.7, 17.4)
Borderline hypertension ^c	17.6 (15.9, 19.3)	21.1 (14.2, 27.9)	17.7 19.8 , 25.1)	3.4 (-3.0, 9.9)	0.1 (-7.5, 7.6)	-3.4 (-13.9, 7.2
Hypertension ^d	34.5 (31.8, 37.2)	43.3 (34.0, 52.7)	42.8 3 3 8 . 5 . 52.1)	8.8 (-0.4, 18.1)	8.4 (-1.4, 18.2)	-0.5 (-14.6, 13.7)
Stage 1 hypertension ^e	24.2 (21.9, 26.5)	28.8 (18.9, 38.8)	33.2 223 414.1)	4.6 (-5.7, 14.9)	9.0(-2.7, 20.7)	4.4 (-10.2, 19.0)
Stage 2 hypertension ^f	10.3 (8.9, 11.7)	14.5 (10.3, 18.7)	39.5 29.5 17.7 19.5 29.5 17.7 19.5 29.5 19.5	4.2 (-0.3, 8.7)	-0.6 (-5.2, 3.9)	-4.9 (-9.0, -0.7)
Appertension Diagnosis						
Previously diagnosed hypertension ^g	30.3 (27.1, 33.6)	35.8 (28.3, 43.3)	44.2 3 36. 2 , 52.2)	5.4 (-2.5, 13.4)	13.9 (5.0, 22.7)	8.4 (-4.7, 21.6)
Self-reported current use of anti-hypertension medication ^h	86.3 (82.7, 90.0)	95.0 (90.7, 98.9)	94.4 5 7.7 100.0)	8.5 (2.3, 14.6)	8.1 (-0.6, 16.8)	-0.6 (-7.8, 6.9)
Undiagnosed hypertension ⁱ	18.0 (15.8, 20.2)	21.9 (13.6, 30.3)	16.2 (12. 👖 20.3)	3.9 (-4.8, 12.7)	-1.8 (-7.1, 3.4)	-5.8 (-12.7, 4.8)
Typertension Control [†]	· · · · ·		• IA	• • •	• • •	
Controlled hypertension without medications ⁱ	11.8 (9.5, 14.0)	3.5 (1.2, 5.7)	8.3 5 0.0 <mark>2</mark> 17.0)	-8.3 (-11.4, -5.2)	-3.5 (-12.8, 5.8)	4.8 (-4.7, 14.3)
Controlled hypertension with medications ^k	33.9 (28.8, 39.0)	36.6 (25.1, 48.2)	31.4 317 3; 44.9)	2.9 (-10.4, 15.9)	-2.5 (-15.1, 10.2)	-5.2 (-22.5, 12.1)
Uncontrolled hypertension without medications ¹	15.2 (12.0, 18.5)	7.3 (2.6, 12.0)	21.28(7.9234.7)	-8.0 (-13.6, -2.3)	6.1 (-8.3, 20.4)	14.0 (-0.9, 27.2)
Uncontrolled hypertension with medications ^m	39.1 (35.7, 42.6)	52.6 (40.8, 64.4)	39.0 (30.7, 47.3)	13.5 (-0.2, 27.1)	-0.1 (-9.5, 9.2)	-13.6 (-28.9, 1.7)
Estimated by subtracting TB antigen value by TB Nil control value (LBX Calculated among those with a previous diagnosis of hypertension by h Systolic ≥130mmHg and/or diastolic ≥80mmHg or any previous diagnos Systolic <120 mmHg and diastolic <80 mmHg Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmHg or dias Systolic 130-139 mmHg or diastolic 80-89 mmHg Systolic ≥140 mmHg or diastolic ≥90 mmHg Systolic ≥140 mmHg or diastolic ≥90 mmHg Survey participants answered "yes" to the question "(Have you/has SP) Among those who answered "yes" to "Because of (your/SP's) (high bloo ou/Is SP) now taking prescribed medicine (for high blood pressure/hyp Elevated blood pressure levels (Systolic ≥130mmHg or diastolic ≥80mm	nealthcare providers (n=1,711) sis of high blood pressure by h stolic ≥80mmHg)) ever been told by a doctor or od pressure/hypertension), (ha ertension)?" nHg) with no prior diagnosis of	rother health profession ave you, has s/he) ever	been told to take presci	ibed medicine?", survey part		to the question "(Are

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	ig en	
	¹ Having systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg without a record of taking medications to lower blood pressure levels	
	^m Having systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg with a record of taking medications to lower blood pressure levels	
	Bold indicates that the finding is significant at $\alpha = 0.05$	
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 Table S4. Crude and adjusted associations between interferon gamma tuberculosis antigen responses
 and adjusted associations between interferon gamma tuberculosis antigen responses

 US adult population, NHANES 2011 – 2012
 and adjusted associations between interferon gamma tuberculosis antigen responses

		Unadjusted Estimates	Prevalence F		Adjusted Estimates*	
Stratification Variables	Low Ag-NIL vs. QFT (-)	High Ag-NIL vs. QFT (-)	ਰੋੁ High vs.≟ow_Ag-NIL	Low Ag-NIL vs. QFT (-)	High Ag-NIL vs. QFT (-)	High vs. Low Ag-N
Primary study outcome	ge()		se 2			
Any hypertension indication ^a	1.19 (1.04 – 1.36)	1.25 (1.08 – 1.45)	1.05 (0 🕺 – 🛐 1.30)	0.99 (0.86 - 1.15)	1.04 (0.93 – 1.16)	1.05 (0.85 – 1.29)
Measured blood pressure categories						Υ
Normal blood pressure ^b	0.74 (0.56 – 0.99)	0.82 (0.64 - 1.05)	1.11 (000 5.1 1.59) 0.84 (014 5.1 1.59) 0.99 (015 1.37) 1.15 (000 5.1 1.37) 1.15 (000 5.1 1.37)	0.89 (0.66 - 1.21)	0.99 (0.80 - 1.24)	1.12 (0.76 – 1.63
Borderline hypertension ^c	1.20 (0.88 – 1.62)	1.00 (0.66 – 1.54)	0.84 (048-51.46)	1.12 (0.82 – 1.54)	0.94 (0.61 – 1.45)	0.84 (0.47 – 1.50
Hypertension ^d	1.26 (1.01 – 1.56)	1.24 (0.98 – 1.57)	0.99 (0 2 5 -1.37)	1.05 (0.84 – 1.32)	1.04 (0.87 – 1.24)	0.99 (0.72 – 1.34
Stage 1 hypertension ^e	1.19 (0.83 - 1.77)	1.37 (0.96 – 1.97)	1.15 (0 2 2 - 51.85)	1.06 (0.73 – 1.55)	1.22 (0.89 – 1.66)	1.15 (0.72 – 1.82
Stage 2 hypertension ^f	1.41 (1.02 – 1.95)	0.94 (0.59 – 1.50)	0.67 (00455-50.99)	1.03 (0.74 – 1.44)	0.70 (0.40 – 1.23)	0.67 (0.43 – 1.0
Hypertension Diagnosis						
Previously diagnosed hypertension ^g	1.18 (0.94 – 1.48)	<u> </u>	1.24 (0 8.6–0 1.72)	0.93 (0.74 – 1.16)	1.16 (0.97 – 1.38)	1.25 (0.93 – 1.66
Self-reported current use of anti-hypertension medication ^h	1.10 (1.03 – 1.18)	1.09 (0.99 – 1.20)	1.00 (03)2-61.08)	1.07 (1.00 – 1.14)	1.07 (0.98 – 1.17)	1.00 (0.92 - 1.09
Undiagnosed hypertension ⁱ	1.22 (0.81 – 1.83)	0.90 (0.66 – 1.23)	0.74 (0347 - 31.17)	1.12 (0.73 – 1.70)	0.82 (0.60 – 1.12)	0.73 (0.46 – 1.17
Hypertension Control [†]						
Controlled hypertension without medications ^j	0.30 (0.15 – 0.58)	0.70 (0.23 - 2.12)	2.37 (0362-29.12)	0.53 (0.28 – 1.00)	0.97 (0.39 – 2.39)	1.83 (0.62 – 5.3
Controlled hypertension with medications ^k	1.08 (0.75 – 1.55)	0.93(0.62 - 1.39)	0.86 (0,51 -51.44)	1.01 (0.70 – 1.46)	0.89 (0.59 - 1.35)	0.88 (0.52 – 1.50
Uncontrolled hypertension without medications ¹	0.48 (0.24 - 0.94)	1.40 (0.70 – 2.81)	2.93 (1.34 - 6.40)	0.61 (0.31 – 1.21)	1.56 (0.70 – 3.47)	2.57 (1.14 – 5.7
Uncontrolled hypertension with medications ^m	1.34 (1.02 – 1.77)	1.00 (0.79 – 1.27)	0.74 (0253 -31.03)	1.22 (0.92 – 1.63)	0.98 (0.75 – 1.27)	0.80 (0.57 – 1.1
Abbreviations:						
[†] Calculated among those with a previous diagnosis of hypertens ^a Systolic ≥130mmHg and/or diastolic ≥80mmHg or any previous ^b Systolic <120 mmHg and diastolic <80 mmHg ^c Systolic 120-129 mmHg and diastolic <80 mmHg ^d Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmHg ^e Systolic 130-139 mmHg or diastolic 80-89 mmHg ^f Systolic ≥140 mmHg or diastolic ≥90 mmHg ^g Survey participants answered "yes" to the question "(Have you/ ^h Among those who answered "yes" to "Because of (your/SP's) (I you/Is SP) now taking prescribed medicine (for high blood press ⁱ Elevated blood pressure levels (Systolic ≥130mmHg or diastolic ⁱ Having systolic blood pressure <130 mmHg and a diastolic blood ^k Having systolic blood pressure ≥130 mmHg or diastolic blood pressure	diagnosis of high blood pres g or diastolic ≥80mmHg) has SP) ever been told by a high blood pressure/hyperter ure/hypertension)?" ≥80mmHg) with no prior dia d pressure <80 mmHg with od pressure <80 mmHg with	doctor or other health providers doctor or other health profes ision), (have you, has s/he) e gnosis of hypertension by he ut a record of taking medication	ever been told to bake pres ealth care providers ions to lower blord pressu is to lower blood pressure	cribed medicine?", survey pa re levels levels		s" to the question "(A
^m Having systolic blood pressure ≥130 mmHg or diastolic blood p	oressure ≥80 mmHg with a re	ecord of taking medications to	o lower blood pre≩sure leve G T LT A	els		
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	able S5. The crude and adjusted prevalence odds ratios of any hypertension stratified by race, body mass and foreign-born status, among representative of ivilian, non-institutionalized US adult population, NHANES 2011 – 2012	f

		Unweighted	Weighted	<u>ia</u> 75 n 1 Pr ev ale}dce	Statistical	Prevalen	
Stratification Variables	QFT Status	frequency	Prevalence of	Differegce	interaction	Crude	Adjusted [†]
otratineation variables		Hypertension*/Total	Hypertension* (95%CI)	(ହୁ <u>ଟି</u> %ପି) ଜୁନ	p-values	cPR (95%Cl)	aPR (95%CI)
All cohort	Negative	2294/4510	48.3 (44.5 – 52.1)	Revierence	NA	Reference	Reference
	Positive	286/479	58.5 (52.4 - 64.5)	10.2 🔂 🖉 🕺 15.4)		1.21 (1.10 – 1.33)	1.01 (0.92 – 1.10
Stratified by age quartiles [‡]				at			
Quartile 1 (18 – 31)	Negative	253/1256	19.2 (16.9 – 21.5)	Rode 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0.6374	Reference	Reference
	Positive	6/40	18.2 (0 – 37.5)	-1.0 (æ͡͡͡ 🛱 7 🎝 18.7)		0.95 (0.32 – 2.81)	0.81 (0.25 – 2.64
Quartile 2 (32 – 47)	Negative	512/1186	42.8 (37.8 – 47.8)	Reference	_	Reference	Reference
	Positive	32/94	36.7 (20.0 - 52.4)	-6.1 (~19.8, 7.5) Redeve dece		0.86 (0.59 – 1.25)	0.87 (0.59 - 1.26
Quartile 3 (48 – 62)	Negative	678/1033	61.5 (58.0 - 65.0)	Redeve		Reference	Reference
	Positive	105/166	67.5 (55.0 – 80.1)	6.0 (🔁 🖉 , 📓 8.0)		1.10 (0.92 – 1.31)	1.03 (0.88 – 1.21
Quartile 4 (>62)	Negative	851/1035	76.7 (72.3 – 81.1)	Reference	—	Reference	Reference
	Positive	143/179	80.2 (72.9 – 87.5)	3.5 (= 1 , = 2 .1)		1.05 (0.94 – 1.17)	1.03 (0.91 – 1.17
Stratified by age group				nin			
18 – 49	Negative	1568/3454	42.5 (38.5 - 46.4)	Reference	0.9998	Reference	Reference
	Positive	175/307	51.1 (43.4 – 58.9)	8.7 (2 .5, <mark>4</mark> 4.8)		1.20 (1.07 – 1.36)	0.95 (0.84 – 1.08
50+	Negative	726/1056	65.2 (61.2 - 69.2)	Reference	_	Reference	Reference
	Positive	111/172	72.7 (61.4 – 84.0)	7.5 (🔂 .1, 🚽 8.1)		1.11 (0.96 – 1.29)	1.07 (0.93 – 1.24
Stratified by race						· · ·	
Hispanic	Negative	374/864	36.9 (31.4 - 42.5)	Reference	0.1584	Reference	Reference
·	Positive	67/158	51.2 (42.0 – 60.4)	14.3 (7.3 <mark>,2</mark> 1.3)		1.39 (1.20 – 1.60)	0.98 (0.86 – 1.11
Non-Hispanic White	Negative	947/1769	49.9 (45.0 - 54.8)	Reference		Reference	Reference
	Positive	47/71	67.0 (55.3 – 78.7)	17.1 🕊 5.7 🔁 8.6)		1.34 (1.12 – 1.60)	1.08 (0.91 – 1.27
Non-Hispanic Black	Negative	711/1196	55.7 (51.8 – 59.7)	Reference		Reference	Reference
	Positive	80/115	64.6 (52.0 – 77.2)	8.9 (🛱.9,🔁1.6)		1.16 (0.95 – 1.42)	0.86 (0.71 - 1.05
Other Race/Ethnicity	Negative	262/681	42.7 (37.5 – 47.9)	Reference		Reference	Reference
	Positive	68/135	48.4 (41.3 – 55.6)	5.7 (ၝ .0, 鬟 2.4)		1.13 (0.98 – 1.31)	0.88 (0.71 – 1.09
Stratified by body mass index car	tegory			no		· · ·	
Underweight (BMI <18.5 kg/m ²)	Negative	28/96	29.9 (22.4 - 37.5)	Regerence	0.1194	Reference	Reference
	Positive	7/11	50.9 (10.6 – 91.2)	21.0 (🛱 0.5×62.6)		1.70 (0.71 – 4.05)	0.71 (0.34 – 1.51
Normal (BMI 18.5 – 24.9 kg/m ²)	Negative	478/1367	31.5 (26.9 - 36.1)	Reference		Reference	Reference
	Positive	75/149	49.2 (36.8 – 61.7)	9.2) 17.7 (6.3		1.56 (1.23 – 1.98)	1.24 (1.00 – 1.52
Overweight (BMI 25 – 29.9 kg/m ²)	Negative	709/1400	49.7 (46.2 - 53.2)	Reference	_	Reference	Reference
	Positive	96/160	59.3 (46.0 – 72.6)	9.6 (-2.9 ,ਉ 2.2)		1.19 (0.97 – 1.48)	0.98 (0.81 – 1.20
Obese (BMI ≥30 kg/m²)	Negative	1040/1592	61.6 (57.2 – 66.1)	Refere		Reference	Reference
	Positive	107/155	67.5 (57.9 – 77.1)	5.9 (-2.5, 5 4.3)		1.10 (0.97 – 1.24)	0.98 (0.89 – 1.08
Stratified by foreign born status			. ,	en (· /	·
US Born	Negative	1793/3341	50.2 (46.8 - 53.7)	Reference	0.1385	Reference	Reference
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		Unweighted	Weighted	Preyalenace	Statistical	Prevalen	ce Ratios
Stratification Variables	QFT Status	frequency	Prevalence of	Differeace	interaction	Crude	Adjusted [†]
Stratification variables	QFT Status	Hypertension*/Total	Hypertension* (95%CI)	(ଅନ୍ଥି% ପ୍ର ଁ)	p-values	cPR (95%CI)	aPR (95%CI)
	Positive	120/172	65.6 (56.1 - 75.1)	15.4 9 5.8, 3 25.0)		1.31 (1.12 – 1.52)	1.05 (0.92 - 1.2
Foreign Born	Negative	500/1167	37.7 (31.9 – 43.4)	Regere Bce	_	Reference	Reference
-	Positive	166/307	51.3 (45.4 – 57.1)	13.6⊈9.3, 47.9)		1.36 (1.22 – 1.51)	1.05 (0.92 – 1.2
Stratified by current smoking s	tatus			2 N ses			
No	Negative	627/954	61.8 (56.0 - 67.7)	Refere	0.0886	Reference	Reference
	Positive	95/130	76.2 (66.8 – 85.6)	14.4 🏹 🕂 宁 4.5)		1.23 (1.07 – 1.42)	1.09 (0.93 – 1.2
Yes	Negative	439/851	47.2 (42.5 - 52.0)	Reference	_	Reference	Reference
	Positive	56/101	47.5 (34.4 – 60.7)	Redenie Boce -0.3 (# 223 14.9)		1.01 (0.74 – 1.37)	0.89 (0.69 - 1.1
Stratified by diabetes status			· · ·			· · ·	·
Euglycemic	Negative	1083/2764	39.6 (35.4 - 43.8)	Re xe gegce	0.1235	Reference	Reference
	Positive	114/223	50.6 (42.6 – 58.5)	11.0 🛱 📆 🕺 8.9)		1.28 (1.08 – 1.51)	1.01 (0.86 – 1.1
Pre-diabetes	Negative	689/1102	59.8 (56.6 - 63.0)	Refe	-	Reference	Reference
	Positive	83/141	57.9 (44.2 – 71.6)	-1.9 (ລີ ຮັດ ີ 6		0.97 (0.76 – 1.23)	0.95 (0.76 – 1.1
Diabetes	Negative	522/644	81.1 (78.3 – 83.9)	Reference	_	Reference	Reference
	Positive	89/115	78.6 (68.7 – 88.5)	-2.5 🤁 13. 6 , 8.0)		0.97 (0.85 – 1.11)	0.94 (0.82 – 1.0
Stratified by HIV Status				2i ñ		x b	•
HIV negative	Negative	1226/3130	39.1 (35.5 - 42.6)	R éf erence	<0.001	Reference	Reference
	Positive	102/243	43.2 (34.8 – 51.6)	4.1 (≱ .3 <mark>,9</mark> 2.5)		1.11 (0.91 – 1.35)	0.93 (0.81 – 1.0
HIV positive	Negative	4/15	18.4 (0 – 39.0)	Reference	_	Reference	Reference
•	Positive	1/1	100.0(100.0 - 100.0)	81.6.6300 = 100.0		5.43 (1.92 – 15.36)	6.24 (1.79 – 21.7
aPR – adjusted prevalence ratio; Systolic ≥130mmHg and/or diast Adjusted for age (continuous) an Adjusted for gender	CI – Confidence i olic ≥80mmHg or a	nterval; PR – prevalence any previous diagnosis o	ratio; QFT – QuantiFER(f high blood pressure by	DN-TB Ggjd he Tube; U health providers	JS – United Sta	ates	
[†] Adjusted for age (continuous) an [‡] Adjusted for gender	d gender			1 sim	h/		
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 Table S6. Weighted prevalence of various hypertension classifications by confirmed tuberculosis infection spectrum of civilian, non-institutionalized US adult population, NHANES 2011-2012

		for SConfi	rmed TB Infection S N=4,266	tatus	
Hypertension Measures	Confi			iscordant TST and Q	FT
	Negative N=3706	Pos¥tive N=₫-901 2.1% (⊉4क्र-₹.8)	TST [*] – and QFT + N=177	TST + and QFT – N=193	Any Discordance N=370
	92.2% (90.5 – 93.9)	2.1% (124 ਤੋਂ 7.8)	2.5 (1.4 – 3.5)	3.2 (2.5 – 4.00)	5.7% (4.6 – 6.8)
Primary study outcome		60.8 (51 6 4 4 6 6 6 6 6 6 6 6 6 6			50 7 (40 0 04 0
Any hypertension indication ^a (n=2,250/4,266)	49.6 (45.7 – 53.5)		50.5 (38.9 - 62.2)	54.4 (43.5 - 65.4)	52.7 (43.9 – 61.6
Aeasured blood pressure categories			40.0 (40.0 50.7)		440/050 500
Normal blood pressure ^b (n=1,914)	47.0 (42.9 – 51.1)	36.6 (27,00 \$5.5) 15.3 (8.3 \$22.3) 48.1 (386 \$5.5) 7.6)	49.8 (40.9 – 58.7)	39.6 (26.1 – 53.0)	44.0 (35.2 – 52.9
Borderline hypertension ^c (n=714)	17.8 (15.5 – 20.0)	15.3 (8. 3 % 22 .3)	16.3(8.2 - 24.4)	25.1 (14.7 – 35.5)	21.3 (13.4 – 29.1
Hypertensiond (n=1,638/4,266)	35.2 (32.3 – 38.1)	48.1 (38 b ∋ b /.b)	33.9 (25.4 – 42.4)	35.3 (26.9 – 43.7)	34.7 (28.3 – 41.1
Stage 1 hypertension ^e (n=1121)	24.9 (22.5 – 27.3)	37.0 (28 5 6 65.4) 11.1 (6.2 - 16.1)	25.4 (16.7 – 34.1)	24.0 (12.6 – 35.4)	24.6 (16.3 – 32.9
Stage 2 hypertension ^f (n=517)	10.3 (8.9 – 11.7)	<u> </u>	8.5 (3.3 – 13.7)	11.3 (4.0 – 18.5)	10.1 (5.5 – 14.6)
Previously diagnosed hypertension ^g (n=1,496/4,266)	30.9 (27.5 – 34.3)	35.8 (2756 – 44.0)	29.4 (17.9 – 40.8)	37.1 (25.9 – 48.4)	33.8 (27.0 – 40.6
Self-reported current use of anti-hypertension medication ^h (n=1,292/1,496)	86.0 (82.2 – 89.9)	90.2(79.7 - 100.0)	29.4 (17.9 – 40.8) 81.5 (65.8 – 97.1)	98.6 (96.0 – 100.0)	92.5 (87.4 – 97.5
Undiagnosed hypertension ⁱ (n=754/4,266)	18.7 (16.4 – 21.0)	90.2 (79.7 – 1 0.0) 25.2 (18 2 – 3 2.3)	21.4 (12.2 – 30.6)	17.3 (6.1 – 28.5)	19.1 (12.2 – 25.9
Hypertension Control (n=1,496)	10.7 (10.4 - 21.0)	$\frac{20.2(10 - \sqrt{20.3})}{5}$	21.4 (12.2 - 30.0)	17.3 (0.1 – 20.3)	19.1 (12.2 - 25.8
Controlled hypertension without medications ⁱ (n=1,286)	11.8 (9.6, 13.9)	6.9 (0.9, 150)	13.5 (1.6, 25.4)	5.4 (1.0, 9.8)	8.4 (3.5, 13.3)
Controlled hypertension with medications' ($n=79$)	34.8 (29.2, 40.4)	28.9 (1 8 2, 4 .6)	43.6 (20.8, 66.4)	46.1 (34.0, 58.2)	45.2 (35.4, 55.0)
Uncontrolled hypertension without medications ¹ (n=51)	15.0 (11.5, 18.4)	17.2 (57, 28.7)	18.9 (6.1, 29.7)	5.4 (0.3, 10.5)	10.1 (5.5, 14.7)
Uncontrolled hypertension with medications ^m (n=80)	38.5 (34.7, 42.2)	47.0 (3622, 57.8)	25.0 (12.3, 37.7)	43.1 (28.9, 57.3)	36.3 (26.4, 46.2)
Abbreviations:	00.0 (01.17, 12.2)		20.0 (12.0, 01.17)	10.1 (20.0, 07.0)	00.0 (20.1, 10.2)
CI – confidence interval; QFT – QuantiFERON-TB Gold In-Tube; TST – tubercu	ılin skin test	simil			
		iia 🎈			
TST positive was defined as skin induration ≥5mm among HIV-positive individu	uals or >10mm among H	-IIV negative (following	NHANES analytical	notes). Induration <5m	m (for HIV-positive
ndividuals) or ≤10mm (for HIV-negative individuals) was considered negative	J	C, ≤		····, ····	(- F
		May			
Systolic ≥130mmHg and/or diastolic ≥80mmHg or any previous diagnosis of hi	gh blood pressure by he	ealth providers 🗙			
Systolic <120 mmHg and diastolic <80 mmHg	5 I J	· O -			
Systolic 120-129 mmHg and diastolic <80 mmHg		2025 ies.			
Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmHg or diastolic ≥8	0mmHg)	Ű			
Systolic 130-139 mmHg or diastolic 80-89 mmHg	0,	2 <u>4</u>			
Systolic ≥140 mmHg or diastolic ≥90 mmHg		Del			
Survey participants answered "yes" to the question "(Have you/has SP) ever boressure?"	een told by a doctor or o	other health proession	nal that (you/s/he) had	d hypertension, also ca	lled high blood
		ve vou has s/h	been told to take pre	scribed medicine?" s	irvev narticinants
Among those who answered "ves" to "Because of (your/SP's) (high blood pres	sure/nyneriensioni ina				
Among those who answered "yes" to "Because of (your/SP's) (high blood pres also answered "yes" to the question "(Are you/Is SP) now taking prescribed me					avey participante

BMJ Open Elevated blood pressure levels (Systolic ≥130mmHg or diastolic ≥80mmHg) with no prior diagnosis of hypertension between the providers Having systolic blood pressure <130 mmHg and a diastolic blood pressure <80 mmHg without a record of taking medications to lower blood pressure levels Having systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg with a record of taking medications to lower blood pressure levels "Having systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg with a record of taking medications to lower blood pressure levels "Having systolic blood pressure ≥100 mmHg or diastolic blood pressure ≥80 mmHg with a record of taking medications to lower blood pressure levels "Having systolic blood pressure ≥100 mmHg or diastolic blood pressure ≥80 mmHg with a record of taking medications to lower blood pressure levels "Having systolic blood pressure ≥100 mmHg or diastolic blood pressure ≥80 mmHg with a record of taking medications to lower blood pressure levels Bold indicates that the finding is significant at α=0.05 Bold indicates that the fin	BMJ Open E 30 BMJ Open B 30	
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Bold indicates that the finding is significant at α=0.05	^k Having systolic blood pressure <130 mmHg and a diastolic blood pressure <80 mmHg without a record of taking medications to lower blood kHaving systolic blood pressure <130 mmHg and a diastolic blood pressure <80 mmHg with a record of taking medications to lower blood	l pressure levels
bownlos	Bold indicates that the finding is significant at α =0.05	
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 Table S7. Crude and adjusted associations between confirmed tuberculosis infection status and hypertensions
 among representative of civilian, non-institutionalized US adult

 population, NHANES 2011 – 2012
 among representative of civilian, non-institutionalized US adult

Prevalence Difference (95%CI) Adjusted PR (95%CI) Adjusted PR (95%CI) Confirmed TBLvs. Any Discordance confirmed TBLvs. <th con<="" th=""><th colspan="8">Prevalence Ratios (PR)</th></th>	<th colspan="8">Prevalence Ratios (PR)</th>	Prevalence Ratios (PR)							
Confirmed FBLvs. Any Discordance vs. non-TBI Confirmed TBLvs. Any Discordance vs. non-TBI Confirmed TBLvs. Any Discordance vs. non-TBI Primary study outcome Any hypertension floation* 11.3 (1.0, 21.5) 3.2 (5.1 - 11.5) 1.23 (1.69 ± 24.6) 1.06 (0.91 - 1.25) 1.08 (0.90 - 1.30) 0.98 (0.84 - 1.14) Measured blood pressure actegories 10.5 (1.94, 4.16) 3.0 (-12.5, 6.4) 0.78 (0.66 ± 56 ± 36) 0.99 (0.82 - 1.16) 0.89 (0.69 - 1.15) 1.03 (0.84 - 1.26) Borderline hypertension* 12.2 (2.8, 2.3.0) -0.5 (-7.1, 6.1) 1.37 (1.69 ± 7.7) 0.99 (0.82 - 1.19) 1.21 (0.98 - 1.42) 1.05 (0.61 - 1.52) Stage 1 hypertension* 12.4 (2.8, 2.3.0) -0.3 (-5.2, 4.7) 1.08 (0.69 ± 3.6) 0.99 (0.77 - 1.28) 1.03 (0.81 - 1.63) Stage 2 hypertension* 0.8 (4.1, 5.7) -0.3 (-5.2, 4.7) 1.08 (0.69 ± - 3.6) 0.99 (0.77 - 1.28) 1.03 (0.91 - 1.43) 1.03 (0.91 - 1.43) 1.03 (0.91 - 1.43) 1.03 (0.91 - 1.43) 1.03 (0.91 - 1.43) 1.03 (0.91 - 1.43) 1.09 (0.86 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.63) 1.03 (0.11 - 1.15) 1.03 (0.11 - 1.15) 1.03 (0.11 - 1.15) 1.03 (0.11 - 1.15) 1.03 (0.10 - 1.16)	Hypertension Measures	Prevalence Diffe	erence (95%CI)	<u> </u>			PR (95%CI)		
Primary study outcome 11.3 (1.0, 21.5) 3.2 (-5.1 - 11.5) 1.23 (1.69 - 1.25) 1.06 (0.91 - 1.25) 1.08 (0.90 - 1.30) 0.98 (0.84 - 1.14) Measured blood pressure categories -10.5 (-19.4, -1.6) 3.0 (-12.5, 6.4) 0.78 (0.69 - 1.25) 1.06 (0.91 - 1.25) 1.08 (0.90 - 1.30) 0.98 (0.84 - 1.14) Moral blood pressure' -24 (-95, 4.6) 3.5 (-4.1, 1.11) 0.86 (0.95 - 3.2) 1.20 (0.84 - 1.71) 0.82 (0.51 - 1.32) 1.15 (0.81 - 1.63) Hypertension* 12.9 (2.8, 23.0) -0.5 (-7.1, 6.1) 1.37 (1.96 - 1.79) 0.98 (0.85 - 1.48) 0.39 (0.80 - 1.59) 0.88 (0.53 - 1.48) 0.89 (0.82 - 1.14) 0.99 (0.71 - 1.38) 1.37 (1.06 - 1.77) 0.93 (0.66 - 1.32) 0.84 (0.52 - 1.42) Mage 2 hypertension* 0.98 (0.81 - 1.36) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.23) 0.48 (0.52 - 1.42) Mage 2 hypertension* 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.23) 0.48 (0.52 - 1.42) Mage 2 hypertension* 0.99 (0.77 - 1.28) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.23) 0.48 (0.52 - 1.42) Mage 2 hypertension* 0.99 (0.77 - 1.28) 0.99 (0.77 - 1.28) 0.99 (0.77 - 1.28) 0.99 (0.77 - 1.28) 0.08 (0.52 - 1.42) Mage 2 hypertension* 0.99 (0.77				Confirmged T\$3I vs.	Any Discordance	Confirmed TBI vs.	Any Discordance		
Any hypertension indication* 11.3 (1.0, 21.5) 3.2 (5.1 - 11.5) 1.23 (1.963 2 4.6) 1.06 (0.91 - 1.25) 1.08 (0.90 - 1.30) 0.98 (0.84 - 1.14) Measured blood pressure categories -10.5 (-19.4, -1.6) 3.0 (-12.5, 6.4) 0.78 (0.603 2 9.99) 0.94 (0.76 - 1.16) 0.89 (0.69 - 1.15) 1.03 (0.84 - 1.26) Borderline hypertension* 12.9 (2.8, 23.0) -5.5 (-4.1, 11.1) 0.86 (0.45 2, 4.6) 1.37 (1.69 3, 70) 0.99 (0.82 - 1.19) 1.21 (0.98 - 1.49) 0.91 (0.75 - 1.10) Stage 1 hypertension* 12.1 (2.8, 21.5) -0.2 (-8.5, 8.0) 1.49 (1.156 2 8.40) 0.99 (0.71 - 1.38) 1.37 (1.66 - 1.32) 0.98 (0.60 - 1.59) 0.88 (0.53 - 1.42) 0.99 (0.77 - 1.28) 0.80 (0.53 - 1.42) 0.86 (0.52 - 1.42) Previously diagnosed hypertension* 4.9 (-3.0, 12.7) 2.9 (-5.0, 10.7) 1.60 (0.94 - 3.28) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.23) 1.00 (0.81 - 1.23) 1.00 (0.81 - 1.23) 1.00 (0.81 - 1.23) 1.00 (0.81 - 1.23) 1.00 (0.81 - 1.23) 1.00 (0.81 - 1.23) 1.00 (0.85 - 1.42) 1.00 (0.86 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.23) 1.00 (0.85 - 1.42) 1.00 (0.85 - 1.42) 1.00 (0.85 - 1.42) 1.00 (0.85 - 1.42) 1.00 (0.86 - 1.32) 1.00 (0.86 - 1.32) 1.00 (0.86 - 1.32) <td< td=""><td>Primary study outcome</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Primary study outcome								
Normal blood pressure* -10.5 (-19.4, -1.6) 3.0 (-12.5, 6.4) 0.78 (0.40, § 9.99) 0.94 (0.76 - 1.6) 0.89 (0.89 - 1.75) 1.03 (0.84 - 1.26) Borderline hypertension* 12.9 (2.8, 23.0) -0.5 (-7.1, 6.1) 1.37 (1.169 - 9.77) 0.93 (0.52 - 1.10) 1.21 (0.98 - 1.48) 0.94 (0.75 - 1.16) 1.37 (1.06 - 1.77) 0.93 (0.52 - 1.13) 1.51 (0.81 - 1.63) Stage 1 hypertension* 12.2 (2.8, 23.0) -0.2 (-8.5, 8.0) 1.49 (1.19, 9.9, 9.70) 0.99 (0.82 - 1.19) 1.21 (0.98 - 1.48) 0.94 (0.75 - 1.16) 0.93 (0.52 - 1.42) Hypertension* 0.8 (4.1, 5.7) -0.3 (-5.2, 4.7) 1.08 (0.99 - 9.68) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.23) Self-reported current use of anti-hypertension medication* 4.9 (-3.0, 12.7) 2.9 (-5.0, 10.7) 1.16 (0.90 - 9.7) 1.02 (0.77 - 1.50) 1.26 (0.97 - 1.40) 0.98 (0.65 - 1.41) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.23) Undiagnosed hypertension* 4.9 (-4.2, 4.4) -3.3 (-8.6, 2.0) 0.99 (0.77 - 1.50) 1.26 (0.97 - 1.42) 4.9 (-4.0, 5.6) (0.6 - 1.10) 1.26 (0.97 - 1.42) 4.9 (-4.0, 5.6) (0.6 - 1.47) 1.03 (0.91 - 1.18) 1.06 (0.65 - 1.41) 1.03 (0.91 - 1.28) 1.26 (0.97 - 1.42) 1.00 (0.81 - 1.23) 1.50 (0.95 - 1.20) 1.50 (0.56 - 1.41)		11.3 (1.0, 21.5)	3.2 (-5.1 – 11.5)	1.23 (1.05 로 1.46)	1.06 (0.91 – 1.25)	1.08 (0.90 – 1.30)	0.98 (0.84 - 1.14)		
Normal blood pressure* 10.5 (-19.4, -1.6) 3.0 (-12.5, 6.4) 0.78 (0.40, 59, 9.3) 0.94 (0.76 - 1.6) 0.89 (0.69 - 1.75) 1.03 (0.84 - 1.26) Borderline hypertension* 12.9 (2.8, 23.0) -0.5 (-7.1, 6.1) 1.37 (1.409, 9.70) 0.99 (0.82 - 1.19) 1.21 (0.98 - 1.48) 0.91 (0.75 - 1.16) 0.82 (0.51 - 1.32) 1.15 (0.81 - 1.63) Stage 1 hypertension* 12.2 (2.8, 23.0) -0.2 (-8.5, 8.0) 1.49 (1.49, 9.4) 0.99 (0.82 - 1.19) 1.21 (0.98 - 1.48) 0.91 (0.75 - 1.16) Stage 1 hypertension* 0.8 (4.1, 5.7) -0.3 (-5.2, 4.7) 1.08 (0.99 - 9.68) 0.99 (0.86 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.23) Previously diagnosed hypertension* 4.9 (-3.0, 12.7) 2.9 (-5.0, 10.7) 1.16 (0.95 - 3.44) 1.09 (0.86 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.23) Undiagnosed hypertension* 4.9 (-4.2, 4.4) -3.3 (-8.6, 2.0) 0.59 (0.59 - 3.12) 1.07 (1.01 - 1.15) 1.03 (0.91 - 1.18) 1.08 (0.65 - 1.41) Uncontrolled hypertension without medications* -5.9 (-18, 6, 8.8) 10.4 (-6.8, 2.7) 1.05 (0.95 - 3.12) 1.05 (0.95 - 3.12) 1.26 (0.97 - 1.26) 1.26 (0.97 - 1.65) Uncontrolled hypertension with medications* -5.9 (-14.2, 4.4) -3.3 (-8.6, 2.0)<	Measured blood pressure categories			с с te					
Borderline hypertension ⁴ -2.4 (-9.5, 4.6) -3.5 (-4.1, 11.1) 0.86 (0.87) (0.84 - 1.71) 0.82 (0.51 - 1.32) 1.15 (0.81 - 1.63) Stage 1 hypertension ⁴ 12.1 (2.8, 21.5) -0.2 (-8.5, 8.0) 1.97 (1.69) (3.70) 0.99 (0.71 - 1.38) 1.37 (1.60 - 1.77) 0.93 (0.66 - 1.32) Stage 2 hypertension ⁴ 0.8 (4.1, 5.7) -0.3 (-5.2, 4.7) 1.08 (0.69) (-9, 66) 0.98 (0.60 - 1.59) 0.88 (0.53 - 1.48) 0.86 (0.52 - 1.42) Hypertension ⁴ 4.9 (-3.0, 12.7) 2.9 (-5.0, 10.7) 1.16 (0.89) (-9, 66) 0.98 (0.60 - 1.59) 0.88 (0.53 - 1.48) 0.86 (0.65 - 1.41) Hypertension ⁴ 4.9 (-3.0, 12.7) 2.9 (-5.0, 10.7) 1.16 (0.89) (-9, 66) 0.98 (0.67 - 1.50) 1.00 (0.81 - 1.63) <	Normal blood pressure ^b	-10.5 (-19.4, -1.6)	3.0 (-12.5, 6.4)	0.78 (0.🏹 🤶 9.99)	0.94 (0.76 – 1.16)	0.89 (0.69 – 1.15)	1.03 (0.84 - 1.26)		
Hypertension ^a 12.9 (2.8, 23.0) -0.2 (-7.1, 6.1) 1.37 (1.69 g.70) 0.99 (0.82 - 1.19) 1.21 (0.98 - 1.49) 0.91 (0.75 - 1.10) Stage 1 hypertension ^a 12.1 (2.8, 21.5) -0.2 (-8.5, 8.0) 1.49 (176 g.8, 97.0) 0.98 (0.60 - 1.59) 0.88 (0.53 - 1.48) 0.86 (0.52 - 1.42) Hypertension 0.8 (-4.1, 5.7) -0.3 (-5.2, 4.7) 1.08 (0.69 - 4.68) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.23) Stepertension ^a 4.9 (-3.0, 12.7) 2.9 (-5.0, 10.7) 1.16 (0.57 - 4.10) 1.03 (0.08 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.23) Undiagnosed hypertension ^a 4.9 (-4.2, 4.4) 1.65 (-0.3, 13.3) 0.4 (-6.9, 7.7) 1.32 (1.09 - 1.77) 1.22 (0.97 - 1.64) 0.96 (0.65 - 1.41) Undiagnosed hypertension without medications ⁴ -4.9 (-14.2, 4.4) -3.3 (-8.6, 2.0) 0.55 (0.8 - 3.21) 0.07 (0.0 - 1.50) 1.26 (0.97 - 1.64) 0.96 (0.65 - 1.41) Controlled hypertension without medications ⁴ -5.9 (-18.6, 6.8) 10.4 (-0.6, 21.4) 0.83 (0.59 - 9.28) 1.30 (1.00 - 1.69) 0.81 (0.53 - 1.22) 1.26 (0.97 - 1.65) 1.26 (0.97 - 1.65) 1.26 (0.97 - 1.65) 1.26 (0.97 - 1.65) 1.26 (0.97 - 1.65) 1.26 (0.97 - 1.65) 1.26 (0.97 - 1.65) 1.26 (0.97 - 1.65) 1.		-2.4 (-9.5, 4.6)	3.5 (-4.1, 11.1)	0.86 (0. 959 3 .36)	1.20 (0.84 – 1.71)	0.82 (0.51 – 1.32)	1.15 (0.81 - 1.63)		
Stage 1 hypertension* 12.1 (2.8, 21.5) -0.2 (-8.5, 8.0) 1.49 (1.142 (-8.94) 0.99 (0.71 - 1.38) 1.37 (1.06 - 1.77) 0.93 (0.66 - 1.32) Previously diagnosed hypertension* 0.8 (4.1, 5.7) -0.3 (-5.2, 4.7) 1.08 (0.99 - 4.6) 0.98 (0.60 - 1.59) 0.88 (0.53 - 1.48) 0.66 (0.52 - 1.42) Previously diagnosed hypertension* 4.9 (-3.0, 12.7) 2.9 (-5.0, 10.7) 1.16 (0.93 - 4.4) 1.09 (0.86 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.33) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.33) 0.99 (0.77 - 1.28) 1.00 (0.65 - 1.42) Unalignosed hypertension 4.9 (-3.0, 12.7) 2.9 (-5.0, 10.7) 1.35 (1.02 - 37.77) 1.02 (0.70 - 1.50) 1.26 (0.97 - 1.64) 0.96 (0.65 - 1.42) Unalignosed hypertension with medications* -5.9 (-1.8, 6.8) 0.4 (-6.8, 1.4) -3.3 (-8.6, 2.0) 0.59 (0.81 - 0.32) 0.85 (0.27 - 2.70) 0.85 (0.54 - 1.51) Controlled hypertension with medications* -5.9 (-1.8, 6.8) 1.04 (-0.6, 2.1.4) 3.3 (-8.6, 2.0) 0.59 (0.81 (-3.2) 0.85 (0.27 - 2.70) 0.85 (0.48 - 1.53) Uncontrolled hypertension with medications* -5.9 (-1.8, 6.8) 1.04 (-0.3, 5.4) 1.15 (0.97 - 2.33) 0.68 (0.42 - 1.10) 1.32 (0.68 - 2.58) 0.70 (0.41 - 1.18) Un	Hypertension ^d	12.9 (2.8, 23.0)	-0.5 (-7.1, 6.1)	1.37 (1.편 🗳 🕱 70)	0.99 (0.82 - 1.19)	1.21 (0.98 – 1.49)	0.91(0.75 - 1.10)		
Stage 2 hypertension'0.8 (4.1, 5.7)-0.3 (-5.2, 4.7)1.08 (0.69)4.9 (0.60, -1.59)0.88 (0.53 - 1.48)0.86 (0.52 - 1.42)Hypertension Diagnosis4.9 (-3.0, 12.7)2.9 (-5.0, 10.7)1.16 (0.93)-3.4411.09 (0.86 - 1.38)0.99 (0.77 - 1.28)1.00 (0.81 - 1.23)Self-reported current use of anti-hypertension medication'4.2 (-8.1, 16.5)6.4 (0.6, 12.3)1.05 (0.61)-3.2011.07 (1.01 - 1.15)1.03 (0.91 - 1.18)1.08 (1.01 - 1.16)Undiagnosed hypertension6.5 (-0.3, 13.3)0.4 (-6, 9.7.7)1.35 (1.08)-3.2771.02 (0.70 - 1.50)1.26 (0.97 - 1.64)0.96 (0.48 - 1.53)Controlled hypertension without medications'-4.9 (-14.2, 4.4)-3.3 (-8.6, 2.0)0.59 (0.57 - 2.28)1.30 (1.00 - 1.69)0.81 (0.53 - 1.22)1.26 (0.97 - 1.64)Uncontrolled hypertension with medications'-5.9 (-18.6, 6.8)10.4 (-0.6, 21.4)0.83 (0.55 - 3.28)1.30 (1.00 - 1.69)0.81 (0.53 - 1.22)1.26 (0.97 - 1.65)Uncontrolled hypertension with medications'2.3 (-9.7, 14.2)-2.2 (-12.4, 8.1)1.22 (0.97 - 1.53)1.32 (0.68 - 2.58)0.70 (0.41 - 1.18)Uncontrolled hypertension with medications'8.5 (-3.4, 20.4)-2.2 (-12.4, 8.1)1.22 (0.97 - 1.52)1.20 (0.91 - 1.58)1.27 (1.05 - 1.54)Abbreviations:Cl - confidence interval; PR – prevalence ratio; TBI – tuberculosis infection9.6 (-3.7, 14.2)-2.6 (-1.4, 9.6)-2.6 (-1.4, 9.6)'Systolic 120 mmHg and diastolic <80 mmHg	Stage 1 hypertension ^e			1.49 (1. 🛱 🦉 🕱 94)	0.99 (0.71 – 1.38)	1.37 (1.06 – 1.77)	0.93 (0.66 – 1.32)		
Hypertension Diagnosis 4.9 (-3.0, 12.7) 2.9 (-5.0, 10.7) 1.16 (0.9) -3.44 1.09 (0.86 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.23) Self-reported current use of anti-hypertension medication ¹ 4.2 (-8.1, 16.5) 6.4 (0.6, 12.3) 1.05 (0.9) -3.20 1.07 (1.01 - 1.15) 1.26 (0.97 - 1.28) 0.99 (0.77 - 1.28) 0.09 (0.65 - 1.41) Hypertension Control ¹ 6.5 (-0.3, 13.3) 0.4 (-6.9, 7.7) 1.35 (1.09 - 3.27) 1.02 (0.70 - 1.50) 1.26 (0.97 - 1.64) 0.96 (0.65 - 1.41) Hypertension without medications ¹ -4.9 (-14.2, 4.4) -3.3 (-8.6, 2.0) 0.59 (0.5) -9.22) 1.30 (1.00 - 1.69) 0.85 (0.27 - 2.70) 0.85 (0.48 - 1.53) Controlled hypertension with medications ¹ 2.3 (-9.7, 1.4.2) -4.9 (-10.3, 5.4) 1.16 (0.5) -9.22) 1.30 (1.00 - 1.69) 0.81 (0.53 - 1.22) 1.26 (0.97 - 1.65) Uncontrolled hypertension with medications ¹ 2.3 (-9.7, 1.4.2) -4.9 (-10.3, 5.4) 1.15 (0.5) -9.23) 0.30 (1.00 - 1.69) 0.81 (0.53 - 1.22) 1.26 (0.97 - 1.65) 1.20 (0.91 - 1.58) 1.27 (1.05 - 1.54) Abbreviations: Col confidence interval; PR – prevalence ratio; TBI – tuberculosis infection No.4 (0.71 - 1.25) 1.20 (0.91 - 1.58) 1.27 (1.05 -				1.08 (0.09 - 4.68)					
Previously diagnosed hypertension ^a 4.9 (-3.0, 12.7) 2.9 (-5.0, 10.7) 1.16 (0.32 - 3.44) 1.09 (0.86 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.23) Undiagnosed hypertension ^b 4.2 (-8.1, 16.5) 6.4 (0.6, 12.3) 1.05 (0.97 - 2.20) 1.07 (1.01 - 1.15) 1.03 (0.91 - 1.23) Undiagnosed hypertension ^b 4.2 (-8.1, 16.5) 6.4 (0.6, 12.3) 1.05 (0.97 - 1.64) 0.96 (0.65 - 1.41) Hypertension Control [†] -4.9 (-14.2, 4.4) -3.3 (-8.6, 2.0) 0.59 (0.38 - 7.7) 1.02 (0.70 - 1.50) 0.85 (0.48 - 1.53) Controlled hypertension with medications ⁴ -5.9 (-18.6, 6.8) 10.4 (-0.6, 2.1.4) 0.88 (0.542.6) 1.30 (1.00 - 1.69) 0.81 (1.53 - 1.22) 0.85 (0.48 - 1.53) Uncontrolled hypertension without medications ⁴ 2.3 (-9.7, 14.2) -4.9 (-10.3, 5.4) 1.15 (0.87 - 3.33) 0.68 (0.42 - 1.10) 1.32 (0.68 - 2.58) 0.70 (0.41 - 1.8) Uncontrolled hypertension with medications ^m 8.5 (-3.4, 20.4) -2.2 (-12.4, 8.1) 1.22 (0.38 - 5(8) 0.94 (0.71 - 1.25) 1.20 (0.91 - 1.58) 1.27 (1.05 - 1.54) Abbreviations: Confidence interval; PR - prevalence ratio; TBI - tuberculosis infection Models adjusted for age and gender Models adjusted for age and gender Systolic 2100 mmHg and diastolic <80 m							,		
Self-reported current use of anti-hypertension medication ^h 4.2 (-8.1, 16.5) 6.4 (0.6, 12.3) 1.05 (0.97 - 1.50) 1.03 (0.91 - 1.16) 1.08 (1.01 - 1.16) 0.96 (0.65 - 1.41) Hypertension Control [†] 6.5 (-0.3, 13.3) 0.4 (-6.9, 7.7) 1.35 (1.9 - 7.7) 1.02 (0.70 - 1.50) 1.26 (0.97 - 1.64) 0.96 (0.65 - 1.41) Hypertension with medications ¹ -4.9 (-14.2, 4.4) -3.3 (-8.6, 2.0) 0.59 (0.8 - 2.10) 0.72 (0.39 - 1.32) 0.85 (0.27 - 2.70) 0.85 (0.48 - 1.53) Uncontrolled hypertension with medications ¹ -5.9 (-18.6, 6.8) 1.04 (-0.6, 7.1 4) 0.83 (0.54 - 4.2) 1.20 (1.00 - 1.69) 0.81 (0.53 - 1.22) 1.26 (0.97 - 1.64) 0.85 (0.48 - 1.53) Uncontrolled hypertension with medications ¹ 2.3 (-9.7, 14.2) -4.9 (-10.3, 5.4) 1.15 (0.97 - 9.33) 0.68 (0.42 - 1.10) 1.32 (0.68 - 2.58) 0.70 (0.41 - 1.16) Abbreviations: C1 - confidence interval; PR – prevalence ratio; TBI – tuberculosis infection 8.5 (-3.4, 20.4) -2.2 (-12.4, 8.1) 1.22 (0.97 - 9.33) 0.68 (0.42 - 1.10) 1.32 (0.91 - 1.58) 1.27 (1.05 - 1.54) Models adjusted for age and gender		4,9 (-3,0, 12,7)	2,9 (-5,0, 10,7)	1.16 (0.53 – 3.44)	1.09 (0.86 - 1.38)	0,99 (0,77 – 1.28)	1.00 (0.81 – 1.23)		
Undiagnosed hypertension 6.5 (-0.3, 13.3) 0.4 (-6.9, 7.7) 1.35 (1.09 - ₹.77) 1.02 (0.70 - 1.50) 1.26 (0.97 - 1.64) 0.96 (0.65 - 1.41) Hypertension Control* -4.9 (-14.2, 4.4) -3.3 (-8.6, 2.0) 0.59 (0.85 - 3.10) 0.72 (0.39 - 1.32) 0.85 (0.27 - 2.70) 0.85 (0.48 - 1.53) Controlled hypertension with medications ^k -5.9 (-18.6, 6.8) 10.4 (-0.6, 21.4) 0.83 (0.55 - 3.28) 1.30 (1.00 - 1.69) 0.81 (0.53 - 1.22) 1.26 (0.97 - 1.64) 0.97 (0.48 - 1.53) Uncontrolled hypertension with medications ^k -5.9 (-18.6, 6.8) 10.4 (-0.6, 21.4) 0.83 (0.55 - 3.28) 1.30 (1.00 - 1.69) 0.81 (0.53 - 1.22) 1.26 (0.97 - 1.65) Uncontrolled hypertension with medications ^m 2.3 (-9.7, 14.2) -4.9 (-10.3, 5.4) 1.15 (0.97 - 3.33) 0.68 (0.42 - 1.10) 1.32 (0.68 - 2.58) 0.70 (0.41 - 1.18) Uncontrolled hypertension with medications ^m 8.5 (-3.4, 20.4) -2.2 (-12.4, 8.1) 1.22 (0.94 - 45.8) 0.94 (0.71 - 1.25) 1.20 (0.91 - 1.58) 1.27 (1.05 - 1.54) Abbreviations: C1 - confidence interval; PR - prevalence ratio; TBI - tuberculosis infection 1.20 (0.91 - 1.58) 1.27 (1.05 - 1.54) Yostolic 120 mmHg and/idatolic >80 mmHg Systolic 120-129 mmHg and diastolic >80 mmHg Systolic 2130 mm				1.05 (0.92) - 3.20)					
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	Models adjusted for age and gender Calculated among those with a previous diagnosis of hyperten Systolic ≥130mmHg and/or diastolic ≥80mmHg or any previou Systolic <120 mmHg and diastolic <80 mmHg Systolic 120-129 mmHg and diastolic <80 mmHg Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmH Systolic 130-139 mmHg or diastolic 80-89 mmHg Systolic ≥140 mmHg or diastolic ≥90 mmHg Survey participants answered "yes" to the question "(Have you Among those who answered "yes" to "Because of (your/SP's) o the question "(Are you/Is SP) now taking prescribed medicine Elevated blood pressure levels (Systolic ≥130mmHg or diastolic	sion by healthcare provi s diagnosis of high blood lg or diastolic ≥80mmHg //has SP) ever been told (high blood pressure/hyp e (for high blood pressur c ≥80mmHg) with no pri	d pressure by health pro by a doctor or other he pertension), (have you, re/hypertension)?" or diagnosis of hyperte	ealth professiona has s/he) ever been tolo nsion by health ware pro	to take prescribed me				

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^I Having systolic blood pressure ≥130 mmHg or diastolic b ^m Having systolic blood pressure ≥130 mmHg or diastolic	blood pressure \ge 80 mmHg without a record of taking medications blood pressure \ge 80 mmHg with a record of taking medications t	onderve	blood pressure levels	
Bold indicates that the finding is significant at α =0.05			5176 on	
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 Table S8. Sensitivity analysis to account for misclassification of covariates and different ways to handle the second provide the association between tuberculosis infection and hypertension among representative of civilian, non-institutionalized US adult population, NHANES 2011-2012

 Models
 Covariate(s) included in the model

		g for	Adjusted Pr	revalence Ratios
Models	Covariate(s) included in the model	QFT Resutt	A (Age, continuous)	B (Age Group - Quartiles)
		es Ma	aPR (95%CI)	aPR (95%CI)
Model 1	Age	Negativen <u>a</u>	Reference	Reference
		Positive	1.02 (0.93 – 1.13)	1.03 (0.93 – 1.14)
Model 2	Age, sex	Negative 2 2	Reference	Reference
		Positive S U Negative S	1.01 (0.92 – 1.10)	1.01 (0.91 – 1.13)
Model 3	Age, sex, BMI	Negative s	Reference	Reference
		Positive 85	1.02 (0.92 – 1.13)	1.03 (0.93 – 1.15)
Model 4	Age, sex, income to poverty ratio	Negative	Reference	Reference
		Positive 🕺 🗍 🔒	1.00 (0.91 – 1.09)	1.01 (0.91 – 1.12)
Model 5	Age, sex, country of birth	Negative on Positive	Reference	Reference
		Positive 🖥	1.05 (0.96 – 1.14)	1.07 (0.97 – 1.19)
Model 6	Age, sex, income to poverty ratio, country of birth, BMI 🧹 🚫	Negative 🗧	Reference	Reference
		Positive 🖥	1.05 (0.95 – 1.17)	1.08 (0.97 – 1.21)
Model 7	Age, sex, income to poverty ratio, country of birth, BMI, current	Negative -	Reference	Reference
	smoking status	Positive 🖁	1.05 (0.93 – 1.17)	1.07 (0.93- 1.24)
Model 8	Age, sex, income to poverty ratio, country of birth, BMI, current	Negative 🛃	Reference	Reference
	smoking status, type-2 diabetes mellitus status, HIV status	Positive 3	1.03 (0.99 – 1.08)	1.04 (0.99 – 1.08)
Model 9	Age, sex, income to poverty ratio, country of birth, BMI, type-2	Negative	Reference	Reference
	diabetes mellitus status, HIV status	Positive	1.04 (0.90 – 1.20)	1.05 (1.00 – 1.09)
Model 10*	Age, sex, race, education attainment level, country of birth, type-2	Negative Positive	Reference	Reference
	diabetes mellitus, BMI, smoking	Positivë 👼	1.01 (0.97 – 1.06)	1.04 (0.99 – 1.09)
Model 11	Age, sex, race, education attainment level, country of birth, type-2	Negati¥e ⊵	Reference	Reference
	diabetes mellitus status, self-reported previous diagnosis of	Positive, 2025	1.00 (0.96 – 1.05)	1.03 (0.98 – 1.08)
	coronary heart disease, heart attack, and stroke			
Model 12	Age, sex, race, education attainment level, country of birth, type-2	Negative 🚆	Reference	Reference
	diabetes mellitus status, self-reported previous diagnosis of	Positive	1.01 (0.96 – 1.05)	1.04 (0.99 – 1.08)
	coronary heart disease, heart attack, and stroke, BMI, smoking	par		
Model 13	Age, sex, race education attainment level, country of birth, type-2	Negative 🚽	Reference	Reference
	diabetes mellitus status, self-reported previous diagnosis of	Positive 🚆	1.07 (0.97 – 1.18)	1.09 (1.00 – 1.18)
	coronary heart disease, heart attack, stroke, BMI, current smoking	G		

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status, heavy alcohol consumption, any dyslipidemia, statin prescription, HIV status	
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	Item No	Recommendation	Page No
Title and abstract	1	(<i>a</i>) Indicate the study's design with a commonly used term in the title or the abstract	1
		(<i>b</i>) Provide in the abstract an informative and balanced summary of what was done and what was found	3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5-6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of	6
		recruitment, exposure, follow-up, and data collection	
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection	6
1	-	of participants	
Variables	7	Clearly define all outcomes, exposures, predictors, potential	7-8
		confounders, and effect modifiers. Give diagnostic criteria, if applicable	
Data sources/	8*	For each variable of interest, give sources of data and details of	7-8
measurement		methods of assessment (measurement). Describe comparability of	
		assessment methods if there is more than one group	
Bias	9	Describe any efforts to address potential sources of bias	9
Study size	10	Explain how the study size was arrived at	Figur
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If	8-9
		applicable, describe which groupings were chosen and why	
Statistical methods	12	(<i>a</i>) Describe all statistical methods, including those used to control for confounding	8-9
		(b) Describe any methods used to examine subgroups and interactions	9
		(c) Explain how missing data were addressed	9
		(<i>d</i>) If applicable, describe analytical methods taking account of sampling strategy	8-9
		(e) Describe any sensitivity analyses	9
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers	9
-		potentially eligible, examined for eligibility, confirmed eligible,	
		included in the study, completing follow-up, and analysed	
		(b) Give reasons for non-participation at each stage	9
		(c) Consider use of a flow diagram	22
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical,	9
		social) and information on exposures and potential confounders	
		(b) Indicate number of participants with missing data for each variable	9
		of interest	
Outcome data	15*	Report numbers of outcome events or summary measures	9
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted	10
		estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	

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		(b) Report category boundaries when continuous variables were	7-8
		categorized	
		(c) If relevant, consider translating estimates of relative risk into	NA
		absolute risk for a meaningful time period	
Other analyses	17	Report other analyses done-eg analyses of subgroups and interactions,	10-12
		and sensitivity analyses	
Discussion			
Key results	18	Summarise key results with reference to study objectives	12
Limitations	19	Discuss limitations of the study, taking into account sources of potential	14-15
		bias or imprecision. Discuss both direction and magnitude of any	
		potential bias	
Interpretation	20	Give a cautious overall interpretation of results considering objectives,	15
		limitations, multiplicity of analyses, results from similar studies, and	
		other relevant evidence	
Generalisability	21	Discuss the generalisability (external validity) of the study results	15
Other information			
Funding	22	Give the source of funding and the role of the funders for the present	16
		study and, if applicable, for the original study on which the present	
		article is based	

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

BMJ Open

Tuberculosis infection and hypertension: Prevalence estimates from the US National Health and Nutrition Examination Survey

Journal:	BMJ Open
Manuscript ID	bmjopen-2023-075176.R2
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Complete List of Authors:	Salindri, Argita; Stanford University School of Medicine, Department of Medicine Auld, Sara; Emory University School of Medicine, Division of Pulmonary and Critical Care Medicine; Emory University School of Public Health, Department of Epidemiology Gujral, Unjali; Emory University School of Public Health, Hubert Department of Global Health Urbina, Elaine; University of Cincinnati College of Medicine, Department of Pediatrics Andrews, Jason R; Stanford University School of Medicine, Division of Infectious Diseases and Geographic Medicine, Department of Medicine Huaman, Moises; University of Cincinnati College of Medicine, Department of Internal Medicine Magee, Matthew J.; Emory University School of Public Health, Hubert Department of Global Health; Emory University School of Public Health, Hubert Department of Epidemiology
Primary Subject Heading :	Infectious diseases
Secondary Subject Heading:	Public health, Epidemiology
Keywords:	Hypertension < CARDIOLOGY, Tuberculosis < INFECTIOUS DISEASES, Public health < INFECTIOUS DISEASES, EPIDEMIOLOGY





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3 4	1	Title Page
5	2	Prepared according to manuscript instructions for BMJ Open (original research)
6 7	3	Version: R2.Nov 9, 2023
8	4	
9 10	5	Title: Tuberculosis infection and hypertension: Prevalence estimates from the US National
11	6	Health and Nutrition Examination Survey
12 13	7	
14 15	8	Authors:
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42 43	26	*Equal contribution
44 45	27	
45 46	28	Main Article word count: 3740/4000
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49	30	Key points: 37/40
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52 53	32	References: 45/40
55 54	33	Keywords: latent tuberculosis infection, interferon- γ response, hypertension
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60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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3 4	35	Summary:
5	36	The prevalence of hypertension was high (59%) among adults with tuberculosis infection in the
6 7	37	U.S. In addition, we found that the prevalence of hypertension was significantly higher among
8 9	38	adults with positive QFT without established hypertension risk factors.
10	39	
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48 ABSTRACT

49 Objectives: Tuberculosis infection (TBI) is marked by dynamic host-pathogen interactions with 50 persistent low-grade inflammation and is associated with increased risk of cardiovascular 51 diseases (CVD) including acute coronary syndrome, myocardial infarction, and stroke. However, 52 few studies assess the relationship between TBI and hypertension, an intermediate of CVD. We 53 sought to determine the association between TBI and hypertension using data representative of 54 the adult US population.

Methods: We performed cross-sectional analyses using data from the 2011–2012 US National Health and Nutrition Examination Survey (NHANES). Eligible participants included adults with valid QuantiFERON-TB Gold In-Tube (QFT-GIT) test results who also had blood pressure measures and no history of TB disease. TBI was defined by a positive QFT-GIT. We defined hypertension by either elevated measured blood pressure levels (i.e., systolic ≥130mmHg or diastolic \geq 80mmHq) or known hypertension indications (i.e., self-reported previous diagnosis or use of antihypertensive medications). Analyses were performed using robust quasi-Poisson regressions and accounted for the stratified probability sampling design of NHANES. Results: The overall prevalence of TBI was 5.7% (95%CI 4.7-6.7) and hypertension was present among 48.9% (95%CI 45.2–52.7) of participants. The prevalence of hypertension was higher among those with TBI (58.5%, 95%CI 52.4–64.5) than those without TBI (48.3%, 95%CI 44.5–52.1) (prevalence ratio [PR]=1.2, 95%CI 1.1–1.3). However, after adjusting for confounders, the prevalence of hypertension was similar for those with and without TBI (adjusted PR=1.0, 95%CI 0.9 –1.1). The unadjusted prevalence of hypertension was higher among those with TBI vs. no TBI, especially among individuals without CVD risk factors including those with normal BMI (PR=1.6, 95%CI 1.2-2.0), euglycemia (PR=1.3, 95%CI 1.1-1.5), or non-smokers (PR = 1.2, 95%Cl 1.1–1.4).

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2 3 4	72	Conclusions: More than half of adults with TBI in the US had hypertension. Importantly, we
5 6	73	observed a relationship between TBI and hypertension among those without established CVD
7 8	74	risk factors.
9 10	75	
11 12	76	Strengths and limitations
13 14	77	Strengths:
15	78	- These analyses were conducted using data representative of civilian, non-
16 17	79	institutionalized US adults, and thus, provide a robust population estimate of the
18 10	80	prevalence of latent tuberculosis infection and hypertension in the US
19 20	81	 Comprehensive definitions and different cut-offs of hypertension were used (i.e.,
21 22	82	measured blood pressure level, previous diagnosis hypertension by healthcare
23	83	providers) to model the association between latent tuberculosis infection and
24 25	84	hypertension
26	85	Limitations:
27 28	86	Our findings may not be representative to other regions with higher burdens of
29	87	tuberculosis
30 31	88	 The cross-sectional study design of NHANES prevented us from assessing the
32 33	89	temporal relationship between latent tuberculosis infection and hypertension
33 34	90	
35 36	50	
 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 		
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INTRODUCTION

About one-guarter of the world's population (~2 billion) has been infected to Mycobacterium tuberculosis (Mtb). [1] Among individuals infected with the bacteria, 5-10% are at risk of developing TB disease at some point in their life. [2 3] Tuberculosis infection (TBI), or most commonly known as latent tuberculosis infection or LTBI, is increasingly recognized as a heterogenous clinical state in which some individuals have dynamic host-pathogen interactions with persistent low-grade inflammation. This immune dysregulation has been associated with an increased risk of cardiovascular diseases (CVD) including acute coronary syndromes, myocardial infarction, and stroke. [1 4-12] This convergence of TBI and CVD risk poses a particular challenge for low- and middle-income countries where TBI is most prevalent and incidence of chronic non-communicable diseases, including CVD, is increasing rapidly. [13 14] Improved understanding of the impact of TBI on CVD risk is vital in settings where TBI and CVD are highly co-prevalent in order to design public health intervention programs aiming to reduce the burden of two diseases. Epidemiologic data from observational cohort studies support an increased risk of CVD among people with TB disease. [8-12] Several studies also indicated that hypertension, an established intermediate of CVD, may be more common among patients with TB disease compared to non-TB controls. [8 11 14-16] Furthermore, CVD was the leading contributor to post-TB mortality, accounting for 15 – 26% of deaths among TB survivors in a recent systematic review and meta-analysis. [17] In addition to these associations between TB disease and CVD. recent observational studies have found an association between TBI and various CVDs

including acute myocardial infarction and coronary artery disease. [9 18 19] However, studies
 assessing the association between TBI and hypertension remain limited.

To date, few studies have evaluated the relationship between TBI and hypertension. One cohort study from a large metropolitan healthcare system in the U.S. reported that

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116	individuals with TBI had greater incidence of hypertension compared to those without TBI and
117	that rates were highest among those untreated for TBI. [5] Furthermore, it is unknown whether
118	the quantitative measures of IGRA, which may indicate the underlying mycobaterial burden and
119	has been associated with increased risks of progression to TB disease, [20-23] is associated
120	with hypertension. Improved understanding of the association between TBI, quantitative
121	measures of IGRA, and and hypertension may clarify the role that TB prevention efforts in
122	reducing the burden of CVD, both in the U.S. and globally.
123	Given existing knowledge gaps, we aimed to estimate the association between TBI and
124	hypertension prevalence. We also investigated whether the magnitude of host immune
125	responses to Mtb was associated with hypertension among those with positive IGRA test
126	results.
127	
128	METHODS
129	Study Design and Eligible Participants
130	We performed an analysis of cross-sectional data from the 2011 – 2012 US National
131	Health and Nutrition Examination Survey (NHANES), [24] the most recent NHANES cycle
132	released that includes measures of TBI. NHANES is a study led by the US Centers for Disease
133	Control and Prevention (CDC) which aims to assess the health and nutritional status of non-
134	institutionalized civilians representative of the US population using a complex, stratified,
135	multistage probability cluster sampling design. NHANES collects demographic and health
136	information using questionnaires administered by trained interviewers and standardized physical
137	examinations performed in mobile examination centers. Eligible NHANES participants for our
138	analyses were adults (≥18 years) with valid TBI test results and blood pressure measurements,
139	and no history of TB disease (Figure 1).
140	
141	Study Measures and Definitions
	6

Our primary study outcome, any hypertension, was defined as having either (1) "measured hypertension," defined as an average systolic blood pressure level of ≥130 mmHg or diastolic blood pressure level of \geq 80 mmHg across three consecutive measurements, or (2) a self-reported previous hypertension diagnosis by a health care provider or current use of antihypertensive medications (i.e., known hypertension). We categorized measured blood pressure levels into "normal" (i.e., systolic <120mmHg and diastolic <80mmHg), "borderline hypertension" (i.e., systolic 120-129mmHg and diastolic <80mmHg), "stage 1 hypertension" (i.e., systolic 130 – 139mmHg or diastolic 80-89mmHg), and "stage 2 hypertension" (i.e., systolic ≥140mmHg or diastolic ≥90mmHg) according to American College of Cardiology/American Heart Association guidelines. [25] Among participants with a prior diagnosis of hypertension, we classified blood pressure as "controlled" (systolic <130 mmHg and diastolic <80 mmHg) or "uncontrolled" (systolic ≥130mmHg or diastolic ≥80mmHg) with or without a self-reported use of antihypertensive medications. Our primary study exposure, TBI, was defined by a positive QuantiFERON-TB Gold In Tube or QFT test, an in-vitro laboratory test to detect TB infection by measuring cell-mediated immune responses to TB-specific antigens. [26 27] Individuals with indeterminate test results were excluded from our analyses. For those with a positive QFT, we also extracted the quantitative results and defined the IFN- γ TB antigen response by subtracting TB NIL control values from TB antigen values (i.e., Ag-NIL values). To express IFN-y TB antigen responses, instead of using the traditional manufacturer cut-off of ≥ 0.35 , we used the 4.00 cut-off as previous studies showed that individuals with Aq-NIL values \geq 4.00 are at greater risk from developing TB disease. [20 22 23] Thus, in our analyses, Ag-NIL values were categorized as "low" (<4 IU/ml) or "high" (≥4 IU/ml). For a sensitivity analysis, we performed a subgroup analysis of participants with both QFT and tuberculin skin test (TST) results. We defined "confirmed TB infection" when both TST and QFT results were positive and "no TB infection" if

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both TST and QFT results were negative. Participants with discordant TST and QFT results (i.e., TST negative and QFT positive, TST positive and QFT negative) were classified as "any discordance."

Other important covariates, including age, sex, race, educational attainment, income to poverty ratio, country of birth, body mass index (BMI), diabetes mellitus status, HIV status, lipid profile, self-reported smoking behavior, alcohol consumption, statin prescription, and previous diagnosis of coronary heart disease, myocardial infarction, or stroke were also abstracted. We classified BMI as "underweight" (BMI <18.5 kg/m²), "normal" (BMI 18.5 – 24.9 kg/m²), "overweight" (BMI 25 – 29.9 kg/m²), and obese (BMI ≥30kg/m²). [28] As NHANES grouped individuals aged \geq 80 years in one category, we divided age into quartile ranges and grouped as "quartile 1 (18 – 31 years)", "quartile 2 (32 – 47 years)", "quartile 3 (48 – 62 years)", and "(263) (262.Ch Patient and Public Involvement None Statistical Analysis

We estimated weighted prevalence and 95% confidence intervals (CI) to determine the burden of TBI and hypertension in the US adult population. Rao-Scott Chi-square tests were used to assess the bivariate association between participants' demographic and clinical characteristics, TBI, Ag-NIL values, and hypertension. Multivariable robust Poisson regression with guasi-likelihood was used to estimate the association between TBI and hypertension, expressed in prevalence ratios (PRs) and 95% CI. The same regression approach was used to estimate the association between Ag-NIL responses and hypertension. In addition to prevalence ratios, we also estimated prevalence differences (PDs) and their 95%CI. Covariates included in

the multivariable models were based on bivariate associations (Table S1 and S2), established risk factors reported in previously published studies, and directed acyclic graphs (DAG). [29] Briefly, we identified potential confounders using bivariate associations and previously published literature, which then mapped into a DAG to determine inclusion in the final model. To account for the missingness of key covariates in the final adjusted model, we assigned aberrant values to any missing information to avoid deletion. We also assessed interaction between TBI and hypertension by participant characteristics (i.e., age, BMI, glycemic status, smoking status) on the additive (prevalence difference) and multiplicative (prevalence ratio) scales by including the cross-product terms within multivariable models. All analyses were performed using SAS Survey Analysis PROCs (SAS version 9.4; Cary, North Carolina) and survey package in R and accounted for the weighted stratified probability sample design of NHANES by applying weight (WTMEC2YR), cluster (SDMVPSU), and strata (SDMVSTRA) variables (samples of analytic codes are provided in Table S3). Taylor Series Linearization was used to produce design-adjusted standard errors and a two-sided p-value less than 0.05 considered statistically significant in all analyses. Subgroup and Sensitivity Analyses Sub-group analyses were conducted using an analytic approach with "domain" variables created to indicate sub-populations of interest. [30 31] Subgroup analyses were performed among those with previously diagnosed hypertension to determine the association between TBI (including Ag-NIL values) and controlled hypertension. Sensitivity analyses were performed to quantify systematic errors due to a) TBI misclassification, b) hypertension misclassification, c) covariate misspecification in multivariable models, and d) the classification of age as a confounder. To account for errors resulting from TBI misclassification, we ran additional models with confirmed TB infection as the exposure. To address potential biases due to hypertension misclassification, we ran an additional analysis using the prior hypertension clinical cut off. [25]

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3 4	218	In this additional model, we defined any hypertension as having (1) an average systolic blood	
5 6 7 8	219	pressure level of ≥140 mmHg or diastolic blood pressure level of ≥90 mmHg across three	
	220	consecutive measurements, or (2) a self-reported previous hypertension diagnosis by a health	i
9 10	221	care provider or current use of antihypertensive medications. To quantify errors due to covaria	te
11 12	222	misspecification, we ran multiple robust Poisson models with different sets of covariates and	
13 14	223	observed changes in prevalence ratios estimates across models. To account for the	
15 16	224	confounding effect of age, we ran multiple iterations of robust Poisson models with different	
17 18	225	forms of age measures (i.e., continuous and age quartiles).	
19 20 21	226		
22 23	227	RESULTS	
24 25	228	Study population	
26 27 28 29 30 31	229	In NHANES 2011 – 2012, 9,338 participants were surveyed and examined (response	
	230	rate of 69.5%), 60.1% (5,615/9,338) of whom were ≥18 years old (Figure 1). Among included	
	231	adults, 259 did not have valid blood pressure measurements. Of those with valid blood pressu	re
32 33	232	measurements, 32 had a previous diagnosis of TB disease and 335 had a missing QFT, with	
34 35	233	4,989 participants meeting eligiblity for this analytic cohort. The weighted prevalence of TBI in	
36 37 38	234	the cohort was 5.7% (95% confidence interval [CI] 4.7–6.7) and any hypertension was presen	ıt
38 39 40	235	for 48.9% (95%Cl 45.2 – 52.7) of participants (Table 1).	
41 42	236		
43 44	237	Associations between tuberculosis infection and hypertension	
45 46	238	The prevalence of any hypertension was higher among those with TBI (58.5%, 95% CI	
47 48	239	52.4 – 64.5) than those without TBI (48.3%, 95%CI 44.5 – 52.1) (prevalence difference [PD]	
49 50	240	10.2%, 95%CI 5.0 – 15.4) (Table 1). After adjusting for potential confounders including age	
51 52	241	(continuous), sex, race, educational attainment level (as a proxy of socioeconomic status),	
53 54	242	country of birth, diabetes mellitus status, BMI, and smoking status, the prevalence of any	
55 56	243	hypertension was similar among those with and without TBI (adjusted prevalence ratio [aPR]	
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3 4	244	1.0, 95%CI 1.0 – 1.1). The association between TBI and hypertension was similar when	
5 6	245	examining the two components used to define our primary outcome (i.e., measured	
7 8	246	hypertension and self-reported hypertension/use of antihypertensive medications) both in the	!
9 10	247	crude and adjusted models (Table 1).	
11 12	248		
13 14	249	Association between Ag-NIL values and hypertension	
15 16	250	The prevalence of any hypertension was highest among those with TBI and high Ag-N	٩IL
17 18 19	251	values (60.4%, 95%CI 53.0 – 67.7) compared to those with TBI and low Ag-NIL values (57.66	%,
20 21	252	95%CI 48.7 - 66.6) or those without TBI (48.3%, 95%CI 44.5 - 52.1) (Table S4). After adjust	ing
22 23	253	for age and gender, however, the prevalence of any hypertension was similar among the thre	e
24 25	254	QFT groups being compared (Table S5). Similar trends were also observed for the association	ons
26 27	255	between Ag-NIL values and both measured hypertension and self-reported previous diagnosi	is
28 29	256	of hypertension (Figure 2).	
30 31	257		
32 33	258	Interaction analyses: established hypertension risk factors and HIV	
34 35	259	We observed relationships between TBI and hypertension among participants without	[
36 37 28	260	established hypertension risk factors who would be considered at lower risk for CVD. For	
38 39 40	261	example, comparing individuals with and without TBI, the crude prevalence ratios of any	
40 41 42	262	hypertension was substantially higher among those with normal BMI (crude prevalence ratio	
43 44	263	[cPR] 1.6, 95%CI 1.2 – 2.0), euglycemia (cPR 1.3, 95%CI 1.1 – 1.5), and non-smoking (cPR	
45 46	264	1.2, 95%CI 1.1 – 1.5) groups (Figure 3) compared to those with or BMI \geq 25 kg/m ² , pre-	
47 48	265	diabetes/diabetes or smokers. However, after adjusting for age and gender, the association	
49 50	266	between TBI and hypertension among these groups were attenuated. Additionally, product	
51 52	267	terms for BMI, glycemic level, and smoking status were non-significant on the adjusted	
53 54	268	prevalence ratio scale (p>0.05) (Table S6).	
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1 2		
3 4 5 6 7 8 9 10	269	We also found that the association between TBI and hypertension may be different
	270	across HIV status. For instance, the crude prevalence difference of any hypertension comparing
	271	those with TBI to those without TBI was 4.1 percentage points (95%CI -4.3 – 12.5) among those
	272	without HIV infection and 81.6 percentage points (95%CI 61.0 – 100.0) among those with HIV
11 12	273	infection.
13 14	274	
15 16	275	Subgroup and sensitivity analyses
17 18	276	From subgroup analyses conducted among those with known hypertension, the
19 20 21	277	prevalence of controlled hypertension without medications was significantly lower among those
21 22 23	278	with positive QFT (5.2%, 95%CI 2.0 – 8.3) compared to those with negative QFT (11.8%,
24 25	279	95%Cl 9.5 – 14.0), although the association was no longer significant after adjusting for key
26 27	280	confounders (aPR 0.6, 95%CI 0.4 – 1.1) (Table 2). Conversely, the prevalence of uncontrolled
28 29 30 31 32 33	281	hypertension with medications, the more severe form of hypertension, although non-significant,
	282	were slightly higher among those with positive QFT compared to those with negative QFT
	283	(Figure 2).
34 35	284	In models with confirmed TB infection (i.e., positive QFT and positive TST) as the study
 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 	285	exposure, the prevalence of any hypertension was highest among those with confirmed TB
	286	infection (60.8%, 95%CI 51.4 – 70.3) compared to those with no TB infection (49.6%, 95%CI
	287	45.7 – 53.5) or those with discordant TST and QFT results (52.7%, 95%CI 43.9 – 61.6) (p=0.12)
	288	(Table S7). We observed similar trends in the crude and adjusted associations between TBI and
	289	hypertension when we used both QFT and TST (Table S8) vs. QFT alone to define TBI. Results
	290	from models that used prior clinical cut-offs to define hypertension (systolic blood pressure level
	291	of ≥140 mmHg or diastolic blood pressure level of ≥90 mmHg) were similar to results from
	292	models with current hypertension definitions (aPR _{prior} =1.01, 95%CI 0.97 – 1.06 vs.
	293	aPR _{current} =0.94, 95%CI 0.89 – 1.00) (data not shown). Results from sensitivity analyses to
	294	quantify bias due to covariate misspecification in the multivariable models indicated that
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prevalence ratios of any hypertension comparing those with positive QFT to those with negative
QFT were similar when age was treated continuously or grouped in quartiles (ranged from 1.0 –
1.1) (Table S9).

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299 DISCUSSION

Using data representative of US adult population, we found a high prevalence of hypertension (i.e., nearly 1 out of 2) in the 2011 - 2012 NHANES cycle. We reported similar adjusted prevalence of hypertension among individuals with or without TBI. In our study, individuals with positive QFT and high Ag-NIL values were more likely to have any hypertension, but less likely to have the more severe form of hypertension (i.e., uncontrolled hypertension without medications). We also observed that the association between TBI and hypertension was more common among individuals without established hypertension risk factors. Collectively, our results provide preliminary epidemiologic evidence suggesting that hypertension, a well-established intermediate for CVD, was more common among individuals with TBI than those without TBI in the US populations. Our finding suggesting that hypertension is more common among individuals with TBI than those without TBI is consistent with previous studies, although the prevalence were similar after adjusting for key confounders. Our null adjusted findings may indicate that the association between TBI and hypertension among NHANES cohort were confounded by demographic characteristics (e.g., age, sex). In contrast, a retrospective cohort study conducted among 5,185 individuals with TBI and healthy controls using data from a large metropolitan healthcare system in the US reported a higher hazard rates of hypertension incidence (defined by ICD-9 codes) among those with TBI (defined by ICD-9 codes and tuberculin skin test/IFN- γ release assay) compared to healthy controls without TBI (HR 2.0, 95%CI 1.6 - 2.5). [5] In addition, a cross-

s sectional study conducted among 2,351 TST-positive individuals in South India reported a

⁵⁶ 320 slightly higher prevalence of hypertension (defined as systolic >130 mmHg) among those with

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confirmed TBI (defined as TST and QFT positive) (15%) compared to those latent TB negative
(12%) (aOR 1.18, 95%CI 1.0 – 1.56). [32] Unlike the two studies mentioned above, we used a
more comprehensive definition of hypertension by combining objectively measured blood
pressure levels (systolic and diastolic) and known hypertension indications (i.e., previous
hypertension diagnosis or self-reported use of antihypertensive medications) to avoid potential
misclassification.

327 Despite our null findings, we identified several plausible mechanisms that may explain 328 how TBI may be associated with hypertension. First, underlying pathophysiology related to 329 chronic inflammation, even at relatively low levels, is linked to hypertension and therefore the proinflammatory state that accompanies TBI may increase blood pressure. [33 34] Second, TBI 330 may be a proxy of other key factors related to social position which in turn impact hypertension 331 332 risk. Hypertension is known to be multifactorial spanning from the group or community to the 333 individual. Several physical, social, political, and environments risk factors that may influence 334 hypertension were not fully accounted for in our analyses (e.g., stress, family history, diet, lifestyle, physical activity, geographical delineation, illicit drug use, access to healthcare, or 335 336 insurance coverage). If some of these variables are associated with TBI, it is plausible that our 337 reported estimates are distorted due to residual confounding effects. Further studies utilizing 338 social ecological models and longitudinal designs are warranted to better understand the true effect of TBI on hypertension. 339

Furthermore, we also reported that the prevalence of hypertension was highest among individuals with positive QFT and high Ag-NIL values, but we observed no dose-response relationship nor statistical significance after adjusting for key risk factors. TB infection has been associated with enhanced levels of systemic inflammation and immune activation, including increased expression of tumor necrosis factor (TNF)- α , interferons, and interlukin-6 (IL-6). [4-7] These chemokines and dysfunctional immune responses play an important role in the pathogenesis of hypertension and CVD. [35 36] Individuals with positive QFT and higher Ag-NIL

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values are more likely to develop to active TB [22 37] as they may have higher mycobacterial burden, [20] and thus, could potentially have higher degree of inflammation or immune responses to the bacterial infection. Interestingly, among those with previously diagnosed hypertension, we found that individuals with TBI may have more severe hypertension manifestation compared to those without TBI. This was indicated by the higher prevalence of uncontrolled hypertension without medications among those with TBI. However, the available data do not allow us to discern if these differences are due to clinical differences or access to care.

Our cross-sectional study design may not be the appropriate design to observe the expected associations or dose-response relationship between TBI, IFN- γ TB antigen responses, and hypertension. Furthermore, the time of TBI in the life-course may have different implications on TBI and hypertension association. In this NHANES cohort, the majority (>90%) of foreign born with positive QFT have stayed in the US for ≥5 years, and thus, we postulated that TBI happened before arriving in the US. It is plausible that these individuals are either in the latent or incipient stage where there is no to minimum bacteria replication, and thus, minimum pro-inflammatory responses. [38] Newly arrived immigrants may face higher level of stress with acculturation and other social-environmental pressures which could impact systemic inflammation, immune responses, and/or increased risks of hypertension. Prospective studies to follow individuals with recent TBI diagnosis are still warranted to determine the hypertension and CVD risk trajectories.

367 Interestingly, we observed associations between TBI and hypertension among those
 368 with normal BMI, euglycemic, and non-smokers without adjusting for potential confounders.
 369 These groups may be considered at lower risk of CVD. Although the associations were
 370 attenuated and non-significant after controlling for potential confounders, the prevalence of
 371 hypertension remained higher when comparing those with TBI than those without TBI among

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372	these groups. This further reinforces the premise that there is likely to be differing effects of TBI
373	on hypertension risk within subgroups. While the significant TBI-hypertension associations
374	observed among those with lower risk of CVD may be due to the larger sample sizes in
375	NHANES, these preliminary results suggest the need for mechanistic studies. Further clinical
376	investigations and modeling studies are needed to determine whether targeted TB preventive
377	treatment is effective to reduce the global burden of CVD among these groups.
378	Our study is subject to limitations. First, our TBI definition (i.e., according to QFT
379	positivity) may include a broad spectrum of individuals who may have cleared the infection,
380	have latent TB, incipient TB, or subclinical TB since no further clinical assessment was made
381	(e.g., symptom screening, chest X-ray, culture test). [39 40] Second, we could not determine the
382	temporal relationship between TBI and hypertension with the cross-sectional study design used
383	in the present paper. Third, we did not account for any record of hypertension prescription, or
384	other commonly prescribed medications that could potentially affect blood pressure levels.
385	Fourth, we defined some of our key variables (including hypertension status and hypertension
386	medication intake) with self-reported information that may be prone to recall bias and likely
387	included some misclassification. However, if misclassification of hypertension was non-
388	differential with respect to TBI, we expect any misclassification in our results would likely biased
389	towards the null. [41] Fourth, we did not estimate a) stratum specific prevalence ratios for HIV
390	and b) effects of HIV clinical information (e.g., CD4 counts) in our stratified models due to the
391	small, unweighted frequency of individuals with HIV infection. The wide confidence intervals
392	reported around our prevalence differences among HIV and non-HIV group also needs to be
393	interpreted with caution considering the low prevalence of HIV infection in the 2011-2012
394	NHANES cycle. Further clinical studies with larger sample size are still warranted to fully assess
395	the joint effect between HIV (including HIV clinical characteristics) and TBI, and its association
396	with hypertension. Last, this study was conducted using survey data representative of US adult
397	population but may not be generalizable to other regions with higher TB burdens. Furthermore,
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we used data from NHANES 2011 – 2012 and were not able to determine whether the prevalence of TB infection and hypertension reported in this study cycle is reflective of the current US population. An updated analysis to assess trends in the association across multiple NHANES cycles is warranted. In conclusion, we reported a higher prevalence of hypertension among individuals with positive QFT, although the association was non-significant after adjusting for key confounders. particularly age. To determine the direction of the association between TBI and hypertension, a prospective study following hypertension-free individuals at TBI diagnosis is warranted and would help establish the biological pathways regarding how TBI might increase the risk of CVD. Future prospective work should address the question whether individuals treated for LTBI have lower risk of hypertension. Importantly, our results underscore the need to screen for hypertension and other metabolic disorders among those with TBI, especially among those without traditional CVD risk factors; doing so may help prevent premature deaths attributed to TB and CVD.

DECLARATIONS AND ACKNOWLEDGMENTS

Competing interest

We have no conflict of interest to declare.

Ethical review statement

Following federal regulations, this work was determined as "non-human subject research" by the Institutional Review Boards (IRB) at Emory University, and thus, does not require IRB review.

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Author contributions

MAH, MJM, and ADS conceived the study design. ADS performed the analyses. ADS, MAH, and MJM wrote the first draft of the manuscript. SCA, UPG, EMU, and JRA assisted with further drafting and revisions of manuscripts. All authors reviewed and approved the final version of the manuscript.

Data Availability Statement

This work used publicly available data of the US National Health and Nutrition Examination Survey (NHANES) 2011 – 2012 that can be downloaded directly from CDC's webpage.

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Table 1

TABLE LEGENDS (p.24) Weighted prevalence and adjusted prevalence ratios of hypertension measures by QuantiFERON-TB Gold In-Tube status among US adults, NHANES 2011-2012 This table shows the prevalence of select hypertension measures in the overall adult cohort of NHANES 2011 – 2012 as well as stratified by their tuberculosis infection status. The crude measure of association was expressed as prevalence difference (PD), while the adjusted measure of association was expressed as prevalence ratio (PR). Table 2 (p.25) Weighted prevalence and adjusted prevalence ratios of controlled and uncontrolled hypertension by QuantiFERON-TB Gold In-Tube status among US adults with known hypertension, NHANES 2011-2012

This table summarizes findings on whether latent tuberculosis infection is associated with severe clinical manifestation of hypertension, indicated by elevated measured blood pressure levels with the use of antihypertensive medications among individuals with known hypertension indications (n=1,711)

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3		FIGURE LEGENDS
4 5 6 7 8	Figure 1	Flow chart depicting unweighted frequencies and percentages of participants included in the final analyses based on the eligibility criteria, NHANES 2011 – 2012
9 10 11 12 13 14		This study flow chart provides description of the stepwise exclusion of ineligible participants. From 9,338 individuals who completed NHANES interview and medical examination, we included 4,989 (53.4%) individuals in our primary analyses after excluding those who are <18 years old or those with a record of previous TB disease, or missing blood pressure data and QuantiFERON results
17 18	Figure 2	Crude and adjusted associations between QuantiFERON-TB Gold In-Tube results and select hypertension measures among US adults, NHANES 2011 – 2012
19 20 21 22 23 24 25 26 27 28		Circles in this panel of figures indicate point estimates from the robust Poisson models, expressed as prevalence ratios with the colored bands indicating the accompanying 95% confidence intervals. The vertical dashed line on the x axis value of 1 marks the study null value (i.e., β estimates=0 or prevalence ratio=1.00), suggesting no association. The top panel figures were produced from analyses performed among eligible participants (n=4,989). The lower panel figures were produced from analyses performed among a subset of participants with known hypertension indication(n=1,711)
29 30 31 32	Figure 3	Relationship between positive QuantiFERON-TB result and hypertension: Stratified by demographic and clinical characteristics among US adults, NHANES 2011 – 2012
33 34 35 36 37 38 39 40		This figure shows results from the analyses with statistical interaction term included in the robust Poisson models to evaluate the joint effect between tuberculosis infection and other key risk factors on hypertension. We selected these "moderator" variables by identifying common risk factors for cardiovascular diseases from published studies (e.g., age, race, body mass index, country of birth, smoking status, and diabetes status).
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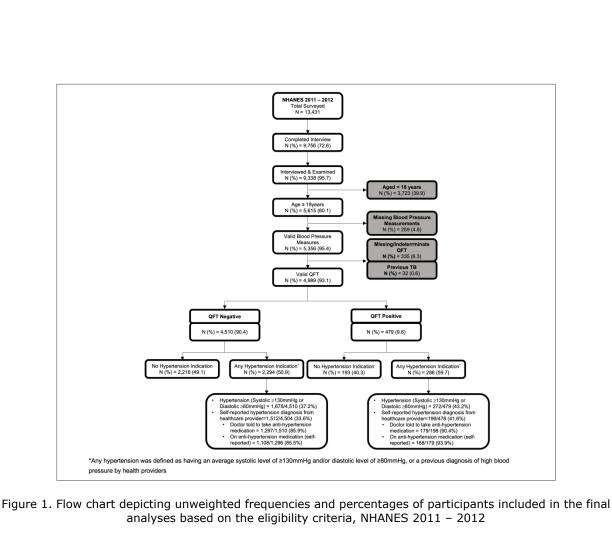
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 Table 1. Weighted prevalence and adjusted prevalence ratios of hypertension measures by QuantiFERGIN-34B
 Gold In-Tube status

 among US adults, NHANES 2011-2012
 Weighted Prevalence of Hypertension
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among US adults, NHANES 2011-2012	W	leighted Prevalenc	e of Hypertension	<u> </u>	
Hypertension Measures	Total	among QFT (-)	among QFT (+)	Prevalence Difference*	aPR† (95% CI)
	N=4,989	94.3 (93.3, 95.3)	5.7 (4.7, 6.7)	Percentage Dint (95%CI)	
Primary study outcome					
Any hypertension indication ^a (n=2,580/4,989)	48.9 (45.2, 52.7)	48.3 (44.5, 52.1)	58.5 (52.4, 64.5)	10. 2 (ਸੂ. 1 , 15.4)	1.01 (0.97 – 1.06)
Neasured blood pressure				ed as n2 8.75(2€9≩15.5)	
Hypertension ^b (n=1,885/4,989)	35.0 (32.3, 37.6)	34.5 (31.8, 37.2)	43.2 (36.4, 49.9)	8.76(2.9215.5)	1.04 (0.97 – 1.12)
Stage 1 hypertension ^c (n=1273)	24.5 (22.4, 26.7)	24.2 (21.9, 26.5)		5.97 2.2 14.2)	1.13 (0.99 – 1.29)
Stage 2 hypertension ^d (n=612)	10.4 (9.1, 11.8)	10.3 (8.9, 11.7)	13.0 (9.1, 17.0)	2. 2. 2. 2. 2. 2. 2. 2. 2	0.88 (0.75 – 1.02)
ypertension Diagnosis			/		
Previously diagnosed hypertension ^e (n=1,711)	30.8 (27.7, 33.9)	30.3 (27.1, 33.6)		8.0 (2:4) 13.6)	0.97 (0.90 – 1.04)
Current use of anti-hypertension medication ^f (n=1,276)	86.9 (83.7, 90.1)	86.3 (82.7, 89.9)		8.4 (2.3 14.4)	1.13 (1.02 – 1.09)
Undiagnosed hypertension ^g (n=869) bbreviations: CI – confidence interval; QFT – QuantiFERO	18.1 (16.1, 20.2)	18.0 (15.8, 20.2)	20.2 (14.0, 26.4)	2.2 (-4 5, 8.9)	1.08 (0.91 – 1.28)
^b Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mm ^c Systolic 130-139 mmHg or diastolic 80-89 mmHg ^d Systolic ≥140 mmHg or diastolic ≥90 mmHg ^e Survey participants answered "yes" to the question "(Have yo called high blood pressure?" ^f Among those who answered "yes" to "Because of (your/SP's) survey participants also answered "yes" to the question "(Are ^g Elevated blood pressure levels (Systolic ≥130mmHg or diaston Bold indicates that the finding is significant at α=0.05	ou/has SP) ever bee) (high blood pressur you/Is SP) now takin	en told by a doctor of re/hypertension), (hang prescribed medic	ave you, has s/he) e ine (for high blood p	ever been teld to take prescrib pressure/hgpertension)?"	
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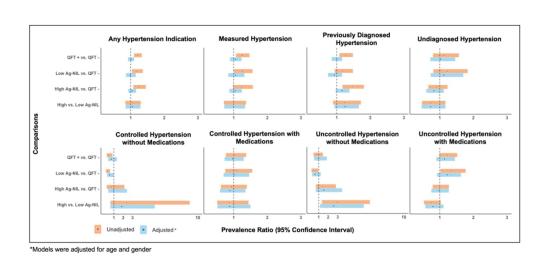
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Hypertension Controls	Total N=1,711	among QFT (-) 94.3 (93.3, 95.3)	among QFT (+) 5.7 (4.7, 6.7)	Mean/Prevalence Difference* Percentage point (95%CI)	aPR† (95% C
Controlled without medications ^a (n=308)	11.3 (9.2, 13.3)	11.8 (9.5, 14.0)	5.2 (2.0, 8.3)	-6.6 (-10.5 -2.9)	0.62 (0.36 – 1.
Controlled with medications ^b (n=838)	33.9 (29.1, 38.8)	33.9 (28.8, 40.0)	34.8 (25.5, 44.1)	0.9 (-9.0 10.5	1.10 (0.84 – 1.
Uncontrolled without medications ^c (n=127)	15.0 (12.0, 18.1)	15.2 (12.0, 18.5)	12.2 (5.5, 18.9)	-3.1 (-10 🔮, 🖪 🖣	0.80 (0.41 – 1.
Uncontrolled with medications ^d (n=438)	39.8 (36.7, 42.8)	39.1 (35.7, 42.6)	47.8 (40.1, 55.6)	8.7 (-1.0 🕅 🖁 4	1.16 (0.94 – 1.4
Abbreviations: CI – confidence interval; QFT	- QuantiFERON-TB	Gold In-Tube		1 to	
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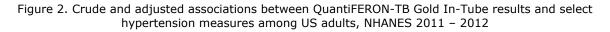


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Subgroup	Crude Estimates	Crude PR (95%CI)	Adjusted Estimates	Adjusted PR (95%
All Cohort	1944	1.21 (1.1, 1.33)	Here .	1.01 (0.92, 1.1)
Age Quartile				
Quartile 1 (18 - 31)	+	0.95 (0.32, 2.81)		0.81 (0.25, 2.64)
Quartile 2 (32 - 47)	⊢ ∎¦_+	0.86 (0.59, 1.25)	+- ■ ¹ /-+	0.87 (0.59, 1.26)
Quartile 3 (48 - 62)	h <mark>1</mark> ∎→1	1.1 (0.92, 1.31)	++-	1.03 (0.88, 1.21)
Quartile 4 (>62)	Here a	1.05 (0.94, 1.17)	+++	1.03 (0.91, 1.17)
Age Group				
18 - 49	He-H	1.2 (1.07, 1.36)	Her	0.95 (0.84, 1.08)
50+	H-H	1.11 (0.96, 1.29)	Hand	1.07 (0.93, 1.24)
Race				
Hispanic	+++	1.39 (1.2, 1.6)	H.	0.98 (0.86, 1.11)
Non-Hispanic White		1.34 (1.12, 1.6)	÷••	1.08 (0.91, 1.27)
Non-Hispanic Black	i¦ =→	1.16 (0.95, 1.42)	+ = 	0.86 (0.71, 1.05)
Other Race		1.13 (0.98, 1.31)	Hart I	0.88 (0.71, 1.09)
Body Mass Index				
Underweight (BMI <18.5 kg/m2)		→ 1.7 (0.71, 4.05)		0.71 (0.34, 1.51)
Normal (BMI 18.5 - 24.9 kg/m2)		1.56 (1.23, 1.98)		1.24 (1, 1.52)
Overweight (BMI 25 - 29.9 kg/m2)		1.19 (0.97, 1.48)	+ + +	0.98 (0.81, 1.2)
Obese (BMI ≥30 kg/m2)	(++	1.1 (0.97, 1.24)		0.98 (0.89, 1.08)
Country of Birth				
US born	++++	1.31 (1.12, 1.52)	++++	1.05 (0.92, 1.21)
Foreign born	+++	1.36 (1.22, 1.51)	Har-1	1.05 (0.92, 1.21)
Smoking status			1	,
Non-Smoker		1.23 (1.07, 1.42)	+	1.09 (0.93, 1.27)
Smoker		1.01 (0.74, 1.37)	Hall	0.89 (0.69, 1.14)
Diabetes Status		,		/
Euglycemic	++++	1.28 (1.08, 1.51)	+++	1.01 (0.86, 1.18)
Pre-diabetes	⊢ ∎→	0.97 (0.76, 1.23)	Hal-1	0.95 (0.76, 1.18)
Diabetes	Here	0.97 (0.85, 1.11)	Hand I	0.94 (0.82, 1.07)

Figure 3. Relationship between positive QuantiFERON-TB result and hypertension: Stratified by demographic and clinical characteristics among US adults, NHANES 2011 – 2012

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SUPPEMENTAL MATERIALS

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Supplemental	Materials
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Table S1. Weighted prevalence of and characteristics associated with tuberculosis infection among according to QuantiFERON-TB Gold In-Tube results among representative of civilian, non-institutionalized US adult population, NHANES 2011-2012 (COLUMN PERCENTAGE)

		ed Prevalence, % (95%)	CI)
Characteristics	QFT Negative	QFT Positive	Odds Ratio
	% (95% CI)	% (95% CI)	(95%CI)
	94.3 (93.3 – 95.3)	5.7 (4.7 – 6.7)	(337001)
Any hypertension indication ^a			
No	51.7 (47.9 – 55.5)	41.5 (35.5 – 47.6)	Reference
Yes	48.3 (44.5 – 52.1)	58.5 (52.5 – 64.5)	1.5 (1.2 – 1.
Age, years	· · · · ·	· · ·	-
Mean (95%CI)	46.0 (44.1 – 48.0)	53.2 (51.2 – 55.1)	7.1 (5.1, 9.2
Age groups			
Quartile 1 (18 – 31)	25.9 (20.9 – 30.9)	12.1 (8.1 – 16.2)	Reference
Quartile 2 (32 – 47)	28.6 (25.6 – 31.5)	22.1 (16.5 – 27.6)	1.6 (1.0 – 2.
Quartile 3 (48 – 62)	25.1 (22.2 – 27.9)	36.2 (28.0 – 44.5)	3.1 (1.7 – 5.0
Quartile 4 (>62)	20.4 (17.7 – 23.2)	29.5 (23.1 – 36.0)	3.1 (2.1 – 4.
18 – 49	74.3 (71.4 – 77.3)	65.9 (60.1 – 71.6)	Reference
≥50	25.7 (22.7 – 28.6)	34.1 (28.4 - 39.9)	1.5 (1.2 – 2.0
Sex	V		
Male	48.2 (46.6 – 49.8)	56.6 (50.5 - 60.7)	Reference
Female	51.8 (50.2 – 53.4)	43.4 (37.3 – 49.5)	0.7 (0.6 – 0.9
Race	6	. ,	-
Hispanic	13.4 (8.2 – 18.5)	31.1 (20.6 – 41.6)	Reference
Non-Hispanic white	68.6 (60.3 - 76.9)	37.0 (27.4 – 46.7)	0.2 (0.2 – 0.4
Non-Hispanic black	11.1 (6.1 – 16.1)	14.3 (8.8 – 19.8)	0.6(0.4 - 0.7)
Other race	7.0 (4.8 – 9.1)	17.6 (11.9 – 23.3)	1.1 (0.8 – 1.
Education (n=4,757)		11.0 (11.0 20.0)	1.1 (0.0 1.
Less than 9 th grade	4.8 (3.7 – 5.9)	16.7 (11.4 – 22.0)	Reference
9-11 th grade	10.5 (7.3 – 13.6)	13.7 (10.2 – 17.5)	0.4 (0.2 – 0.0
High school graduate			•
	19.7 (16.5 – 22.9)	24.2 (18.1 – 30.3)	0.4(0.2 - 0.0)
Some college	33.2 (29.8 – 36.5)	18.4 (12.8 – 23.9) 26.8 (18.7 – 24.8)	0.2 (0.1 – 0.3
College graduate or above	31.8 (26.3 – 37.3)	26.8 (18.7 – 34.8)	0.2 (0.2 – 0.4
Missing (n=264)	259	5	0.1 (0.0 – 0.3
Ratio of family income to poverty (n=4,623)	_00		
Mean (95%CI)	2.9 (2.7 – 3.1)	2.4 (2.1 – 2.7)	-0.5 (-0.9, -0.
	(•)	,	
0 – 0.99	17.0 (13.3 – 20.8)	25.1 (19.4 – 30.9)	Reference
1 – 1.99	20.7 (17.6 – 23.8)	28.4 (22.2 - 34.6)	0.9 (0.6 – 1.3
2 – 2.99	14.3 (11.8 – 16.7)	13.1 (6.6 – 19.6)	0.6 (0.3 – 1.3
3 – 3.99	12.6 (9.6 – 15.5)	9.3 (4.2 – 14.4)	0.5 (0.3 – 0.3
4 – 4.99	10.7 (6.2 – 13.2)	6.2 (.1 – 9.4)	0.4 (0.2 – 0.9
≥5	24.7 (19.8 – 29.6)	17.9 (10.5 – 25.6)	0.5 (0.3 – 0.
	2 (10.0 20.0)	11.0 (10.0 20.0)	
Missing (n=396)	344	52	1.0 (0.6 – 1.
Foreign born (n=4,987)			
No	84.7 (80.7 – 88.6)	50.2 (39.0 - 61.5)	Reference
Yes	15.3 (11.4 – 19.3)	49.8 (38.5 – 61.0)	5.5 (3.5 – 8.
Missing (n=2)	2	0	NA
BMI, kg/m ² (n=4,930)			
Mean (95%CI)	28.7 (28.2 – 29.1)	28.9 (27.8 – 30.1)	0.2 (-0.7, 1.2
· · · ·		, , ,	× ,
BMI categories			
Underweight (<18.5 kg/m ²)	1.8 (1.6 – 2.4)	2.2 (0.4 – 4.1)	1.2 (0.6 – 2.3

	Weight	ted Prevalence, % (95%C	;I)
Characteristics	QFT Negative % (95% CI)	QFT Positive % (95% Cl)	Odds Ratios (95%Cl)
Normal (19.5 $24.0 kg/m^2$)	94.3 (93.3 - 95.3)	5.7(4.7-6.7)	Reference
Normal $(18.5 - 24.9 \text{ kg/m}^2)$	29.8 (26.6 – 32.9) 33.6 (30.9 – 36.4)	31.6 (23.6 – 39.7)	
Overweight (25 – 29.9 kg/m²) Obese (≥30 kg/m²)	33.6 (30.9 – 36.4) 34.8 (31.7 – 37.8)	32.0 (25.3 – 38.7) 34.1 (25.8 – 42.4)	0.9 (0.6 – 1.3 0.9 (0.6 – 1.4
Obese (230 kg/iii)	54.8 (51.7 - 57.8)	54.1 (25.0 – 42.4)	0.9 (0.0 – 1.4
Missing (n=59)	55	4	0.7 (0.2 – 2.8
Smoking status (n=4,722)			
Never smokers ^b	56.5 (53.2 - 59.8)	48.7 (41.7 – 55.6)	Reference
Past smokers ^c	24.2 (21.3 – 27.2)	29.0 (22.5 – 35.5)	1.4 (0.9 – 2.1
Current smokers ^d	19.3 (16.9 – 21.6)	22.3 (16.4 – 28.3)	1.3 (0.9 – 2.1
Missing (n=267)	262	5	0.4 (0.1 – 1.3
Heavy alcohol drinking (n=3,867)	EUL		0.1 (0.1 1.0
No	14.7 (12.0 – 17.3)	14.0 (10.6 – 17.5)	Reference
Yes ^e	85.3 (82.7 – 88.0)	86.0 (82.5 – 89.4)	1.1 (0.8 – 1.4
	000	400	40/40 00
Missing (n=1,122) HbA1c, %	986	136	1.6 (1.2 – 2.3
Mean (95%CI)	5.6 (5.6 – 5.7)	5.9 (5.7 – 6.0)	0.3 (0.1, 0.4)
	0.0 (0.0 0.7)	0.0 (0.7 0.0)	0.0 (0.1, 0.4)
Diabetes categories ^f			
Normal	68.0 (65.7 – 70.3)	53.1 (46.9 – 59.4)	Reference
Prediabetes	21.5 (19.8 – 23.2)	25.3 (21.4 – 29.1)	1.5 (1.2 – 1.9
Diabetes	10.4 (8.8 – 12.1)	21.6 (15.9 – 27.3)	2.6 (1.7 – 4.0
HIV co-infection status (n=3,408)			Б (
Negative	99.6 (99.3 – 99.9)	99.7 (99.1 – 100.0)	Reference
Positive	0.4 (0.1 – 0.7)	0.3 (0.0 – 0.9)	0.8 (0.1 – 6.5
Missing (n=1,600)	1365	235	
Dyslipidemia Measures	C.		
HDL (mg/dL) (n=4,889)			
Mean (95%CI)	52.8 (51.8 – 53.9)	51.7 (48.9 – 54.5)	-1.1 (-3.5, 1.2
HDL levels ^g			
Normal	71.5 (68.0 – 75.0)	67.7 (61.1 – 74.4)	Reference
Lower	28.5 (25.0 – 32.0)	32.3 (25.6 – 38.9)	1.2 (1.0 – 1.5
	20.0 (20.0 02.0)	02.0 (20.0 00.0)	1.2 (1.0 1.0
Missing (n=100)	90	10	1.6 (0.5 – 4.9
LDL ^h (mg/dL) (n=2,236)			
Mean (95%CI)	114.8 (112.5 – 117.0)	113.1 (107.1 – 119.2)	-1.6 (-8.4, 5.1
LDL levels			
Normal (<130 mg/dL)	68.5 (66.4 – 70.5)	73.1 (65.6 – 80.5)	Reference
Elevated (130 – 159 mg/dL)	21.9 (19.9 – 24.0)	73.1 (05.6 – 80.5) 17.1 (10.9 – 23.4)	0.7 (0.5 – 1.1
High ($\geq 160 \text{ mg/dL}$)	9.6 (7.6 – 11.7)	9.8 (4.4 – 15.2)	1.0 (0.5 – 1.9
	9.0 (7.0 - 11.7)	3.0 (4.4 - 13.2)	1.0 (0.5 – 1.8
Missing (n=67)	66	1	0.1 (0.0 – 0.8
Total Cholesterol (mg/dL) (n=4,889)			
Mean (95%CI)	194.2 (191.9 – 196.4)	196.8 (192.5 – 201.0)	2.6 (-1.3, 6.5
Total cholesterol levels			
Low (≤130 mg/dL)	4.2 (3.4 – 5.1)	5.1 (2.1 – 8.1)	Reference
Normal (131 – 199 mg/dL)	53.8 (51.8 – 55.7)	51.7 (45.2 – 58.2)	0.8 (0.4 – 1.6
Elevated (≥200 mg/dL)	42.0 (39.9 – 44.1)	43.2 (37.2 – 49.2)	0.9 (0.4 – 1.7
$\frac{Missing(n=100)}{Trisk (a right)(n r$	90	10	1.2 (0.4 – 3.9
Triglyceride ^h (mg/dL) (n=2,276)	120 6 (110 0 140 2)	102 / (111 0 125 0)	62 (20 5 9
Mean (95%CI)	129.6 (118.9 – 140.2)	123.4 (111.8 – 135.0)	-6.2 (-20.5, 8.1

QFT Negative % (95% Cl) $94.3 (93.3 - 95.3)$ 74.9 (70.6- 79.1) 13.5 (11.1 - 15.9) 11.6 (8.0 - 15.3) 27 36.5 (33.8 - 39.2) 63.5 (60.8 - 66.2) 26 70.8 (67.6 - 74.0) 29.2 (26.0 - 31.4) 2058 96.9 (95.9 - 97.9) 3.1 (2.1 - 4.1) 270 96.8 (96.1 - 97.5) 3.2 (2.5 - 3.9) 261	$\begin{array}{r} \mbox{QFT Positive} \\ \mbox{\% (95\% Cl)} \\ \mbox{5.7 (4.7 - 6.7)} \\ \hline \mbox{76.9 (68.7 (85.1)} \\ \mbox{13.1 (6.5 - 19.7)} \\ \mbox{10.0 (5.8 - 14.1)} \\ \mbox{0} \\ \hline \mbox{0} \\ \mbox{39.0 (25.9 - 52.1)} \\ \mbox{71.0 (47.9 - 74.1)} \\ \mbox{0} \\ \hline \mbox{68.5 (60.7 - 76.2)} \\ \mbox{31.5 (23.8 - 39.3)} \\ \hline \mbox{180} \\ \hline \mbox{98.2 (97.0 - 99.3)} \\ \mbox{1.8 (0.7 - 3.0)} \\ \hline \mbox{7} \\ \hline \mbox{98.0 (97.0 - 98.9)} \\ \mbox{2.0 (1.1 - 3.0)} \\ \end{array}$	0.9 (0.5 – 1 0.8 (0.5 – 1 NA Referenc 0.9 (0.6 – 1 NA Referenc 1.1 (0.8 – 1 0.9 (0.6 – 1 Referenc 0.6 (0.3 – 1 0.4 (0.1 – 1 Referenc
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29.2 (26.0 - 31.4) 2058 $96.9 (95.9 - 97.9)$ $3.1 (2.1 - 4.1)$ 270 $96.8 (96.1 - 97.5)$ $3.2 (2.5 - 3.9)$	31.5 (23.8 - 39.3) 180 98.2 (97.0 - 99.3) 1.8 (0.7 - 3.0) 7 98.0 (97.0 - 98.9)	1.1 (0.8 – 1 0.9 (0.6 – 1 Reference 0.6 (0.3 – 1 0.4 (0.1 – 1 Reference
2058 96.9 (95.9 – 97.9) 3.1 (2.1 – 4.1) 270 96.8 (96.1 – 97.5) 3.2 (2.5 – 3.9)	180 98.2 (97.0 – 99.3) 1.8 (0.7 – 3.0) 7 98.0 (97.0 – 98.9)	0.9 (0.6 – 1 Reference 0.6 (0.3 – 1 0.4 (0.1 – 1 Reference
96.9 (95.9 – 97.9) 3.1 (2.1 – 4.1) 270 96.8 (96.1 – 97.5) 3.2 (2.5 – 3.9)	98.2 (97.0 – 99.3) 1.8 (0.7 – 3.0) 7 98.0 (97.0 – 98.9)	Reference 0.6 (0.3 – 1 <u>0.4 (0.1 – 1</u> Reference
3.1 (2.1 – 4.1) <u>270</u> 96.8 (96.1 – 97.5) 3.2 (2.5 – 3.9)	1.8 (0.7 – 3.0) 7 98.0 (97.0 – 98.9)	0.6 (0.3 – 1 0.4 (0.1 – 1 Reference
3.1 (2.1 – 4.1) <u>270</u> 96.8 (96.1 – 97.5) 3.2 (2.5 – 3.9)	1.8 (0.7 – 3.0) 7 98.0 (97.0 – 98.9)	0.6 (0.3 – 1 0.4 (0.1 – 1 Reference
270 96.8 (96.1 – 97.5) 3.2 (2.5 – 3.9)	7 98.0 (97.0 – 98.9)	0.4 (0.1 – 1 Reference
96.8 (96.1 – 97.5) 3.2 (2.5 – 3.9)	98.0 (97.0 – 98.9)	Reference
3.2 (2.5 – 3.9)		
3.2 (2.5 – 3.9)		
	2.0 (1.1 – 3.0)	0.6 (0.4 – 0
261		
	5	0.3 (0.1 – 1
97.3 (96.5 – 98.0)	95.5 (96.5 – 98.0)	Reference
2.7 (2.0 – 3.5)	4.5 (2.6 – 6.5)	1.7 (1.0 – 2
259	5	
nodeficiency virus; L		
any previous diagno		
estion "(Do you/does 00 cigarettes in life? e days" to the quest	s SP) now smoke cigarette tion "(Do you/does SP) nov	es?" and "Yes" to
as SP) smoked at le n "Was there ever tir more drinks of any k	east 100 cigarettes in life? me or times in (your/SP's) kind of alcoholic beverage	life when almost every da
nal" HDL was define	ed if HDL level was ≥40 mg	g/dL for male or
	QFT - QuantiFEROI indicated otherwise any previous diagno "(Have you/has SP estion "(Do you/doe 00 cigarettes in life? ne days" to the quest nas SP) smoked at le n "Was there ever the more drinks of any le els and self-reported mal" HDL was define	nodeficiency virus; LDL – low-density lipoprote QFT - QuantiFERON Gold-In-Tube; indicated otherwise any previous diagnosis of high blood pressure "(Have you/has SP) smoked at least 100 ciga estion "(Do you/does SP) now smoke cigarette 00 cigarettes in life? ne days" to the question "(Do you/does SP) now has SP) smoked at least 100 cigarettes in life? n "Was there ever time or times in (your/SP's) more drinks of any kind of alcoholic beverage els and self-reported previous type-2 diabetes in mal" HDL was defined if HDL level was ≥40 mg dDL level was <40 mg/dL for male or <50 mg/d nong a subset of survey participants who were

Any dyslipidemia was defined as having either elevated LDL, total cholesterol, triglyceride, or lower HDL levels Taken statin in the past 30 days prior to survey date, survey participants were also asked to show medicine container to surveyor/enumerator

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QFT Negative % (95% Cl) 94.3 (93.3 – 95.3) estion "Has a doctor or oth stion "Has a doctor or othe ardial infarction)?" estion "Has a doctor or oth	er health professional ev ner health professional e	Odds Rati (95%CI ver told (you/SP ver told (you/SP
estion "Has a doctor or oth stion "Has a doctor or othe ardial infarction)?" estion "Has a doctor or oth	er health professional ev er health professional ev ner health professional e	ver told (you/SP
ardial infarction)?" estion "Has a doctor or oth	ner health professional e	
ardial infarction)?" estion "Has a doctor or oth	ner health professional e	
estion "Has a doctor or oth	-	ever told (you/SF
gnificant at α=0.05		
gnificant at α=0.05		
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		/bmjopen.bmj.com/site/about/guidelines.xhtm

1 <i>i</i>		2012		
Characteristics	Weighted Prevalence, % (95%CI) No Hypertension Any Hypertension ^a Mean/Prevalence			
	% (95% CI) 51.1 (47.4 – 54.8)	% (95% CI) 48.9% (45.2 – 52.6)	Difference* Percentage point (95%CI)	P-Value (X²)†
QFT result	, í			т
Negative	51.7 (47.9 – 55.5)	48.3 (44.5 – 52.1)	Reference 10.2 (5.0, 15.4)	<0.00ପ୍ରୁ
Positive Age, years	41.5 (35.5 – 47.6)	58.5 (52.4 - 64.5)	10.2 (5.0, 15.4)	tect
Mean (95%CI)	38.9 (37.3 – 40.6)	54.3 (52.8 – 55.7)	15.3 (14.0, 16.6)	ې 0.004
				ē
Age group	90 9 (79 6 92 1)	10.2 (16.0 21.4)	Reference	√ copyright, i √0.00
Quartile 1 (18 – 31) Quartile 2 (32 – 47)	80.8 (78.6 – 83.1) 57.5 (52.3 – 62.7)	19.2 (16.9 – 21.4) 42.5 (37.3 – 47.7)	23.4 (18.6, 28.1)	^{20.0} ۲
Quartile 2 $(32 - 47)$ Quartile 3 $(48 - 62)$	38.0 (34.4 – 41.7)	62.0 (58.3 – 65.6)	42.8 (37.9, 47.7)	l Bi
Quartile $4 (>62)$	23.0 (18.9 – 27.1)	77.0 (72.9 – 81.1)	57.8 (53.1, 62.5)	ļ,
	20.0 (10.5 27.1)	11.0 (12.0 01.1)	07.0 (00.1, 02.0)	Inc
18 – 49	57.1 (53.1 – 61.1)	42.9 (38.9 - 46.9)	Reference	<0.00
≥50	34.2 (30.2 – 38.3)	65.8 (61.7 – 69.8)	22.9 (17.6, 28.2)	<0.000
Sex				Ū.
Male	47.7 (43.2 - 52.2)	52.3 (47.8 – 56.8)	Reference	0.00f
Female	54.4 (50.4 - 58.4)	45.6 (41.6 – 49.6)	-6.7 (-10.9, -2.5)	Sn
Race				es
Hispanic	61.3 (55.8 – 66.8)	38.7 (33.2 – 44.2)	Reference	<0.00
Non-Hispanic white	49.6 (44.7 – 54.4)	50.4 (45.6 – 55.3)	11.7 (5.3, 18.2)	lated
Non-Hispanic black	43.6 (39.9 – 47.4)	56.4 (52.6 – 60.1)	17.7 (11.8, 23.5)	ed
Other race	56.5 (51.5 – 61.5)	43.5 (38.5 – 48.5)	4.8 (-2.2, 11.7)	5
Education (n=4,725)			Deferrere	<0.004
Less than 9 th grade	39.0 (31.3 – 46.9)	61.0 (53.3 – 68.7)	Reference	¥00.0> ھ
9-11 th grade High school graduate	42.3 (36.9 – 47.6) 45.5 (40.9 – 50.1)	57.7 (52.3 – 63.1) 54.5 (49.9 – 59.1)	-3.2 (-13.4, 6.9) -6.5 (-14.9, 2.0)	ind
Some college	43.3 (40.9 – 30.1) 51.7 (46.3 – 57.0)	48.3 (42.9 – 53.7)	-12.7 (-20.9, -4.5)	a
College graduate or above	55.3 (48.9 – 61.5)	44.7 (38.4 – 51.1)	-16.2 (-25.5, -7.0)	ata
	00.0 (10.0 01.0)		10.2 (20.0, 1.0)	3
Missing (n=264)	86.7 (81.8 – 91.5)	13.3 (8.5 – 18.2)		
Ratio of family income to poverty (n=4,593)	· · · · ·			ĴĴ,
Mean (95%CI)	2.8 (2.6 – 3.1)	2.9 (2.7 – 3.1)	0.1 (-0.1, 0.3)	0.43 9
0 – 0.99	55.8 (49.1 – 62.5)	44.2 (37.5 – 50.9)	Reference	0.43
1 – 1.99	49.6 (43.3 – 55.9)	50.4 (44.1 – 56.7)	6.2 (-0.5, 12.9)	nır
2 – 2.99	49.4 (43.7 – 55.0)	50.6 (45.0 – 56.3)	6.4 (-2.4, 15.3)	ů,
3 – 3.99	53.5 (48.6 – 58.4)	46.5 (41.6 – 51.4) 🧹	2.3 (-4.9, 9.5)	an
4 – 4.99	47.6 (39.8 – 55.0)	52.4 (44.6 – 60.2)	8.2 (-2.7, 19.0)	a s
≥5	50.9 (43.0 – 58.7)	49.1 (41.3 – 57.0)	4.9 (-3.5, 13.4)	B
Missing (n=396)	49.4 (39.9 – 58.8)	50.6 (41.2 – 60.1)		0.43 0.43 milar
Foreign born (n=5,019)				tec
No	49.2 (45.9 – 52.6)	50.8 (47.4 – 54.1)	Reference	<0.00 Ŭ
Yes	60.1 (54.7 – 65.5)	39.9 (34.5 – 45.3)	-10.8 (-14.5, -7.2)	ō
	· · · · · ·			go
Missing (n=2)	70.6 (8.7 – 100.0)	29.4 (0 – 91.3)		· tec团ologies, <0.0团ologies,
BMI, kg/m² (n=4,930)				-
Mean (95%CI)	27.2 (26.7 – 27.8)	30.2 (29.7 – 30.8)	3.0 (2.4, 3.7)	<0.001
BMI categories				
Underweight (<18.5 kg/m ²)	68.6 (61.2 - 76.0)	31.4 (24.0 – 38.8)	-1.2 (-9.3, 6.9)	<0.001
Normal $(18.5 - 24.9 \text{ kg/m}^2)$	67.4 (62.8 – 72.0)	32.6(28.0-37.2)	Reference	
Overweight (25 – 29.9 kg/m²) Obese (≥30 kg/m²)	49.8 (46.2 – 53.4) 38.0 (33.6 – 42.5)	50.2 (46.6 – 53.8) 62.0 (57.5 – 66.4)	17.6 (14.4, 20.9) 29.4 (23.3, 35.5)	

		Veighted Prevalence, %		
Characteristics	No Hypertension % (95% CI)	Any Hypertension ^a % (95% CI)	Mean/Prevalence Difference [*]	P-Value (X ²)†
	51.1 (47.4 – 54.8)	48.9% (45.2 – 52.6)	Percentage point (95%CI)	(* <i>)</i> '
Missing (n=59)	26.1 (7.3 – 45.0)	73.9 (55.0 – 92.7)		
Smoking status (n=4,722)				
Never smokers ^b	54.4 (50.5 – 58.4)	45.6 (41.6 – 49.5)	Reference	<0.001
Past smokers ^c	37.2 (31.6 – 42.8)	62.8 (57.2 – 68.4)	17.3 (12.6, 21.9)	ד
Current smokers ^d	52.7 (48.4 – 57.1)	47.3 (42.9 – 51.6)	1.7 (-3.8, 7.1)	Protecte
Missing (n=267)	86.2 (81.0 - 91.4)	13.8 (8.6 – 19.0)		C
Heavy alcohol drinking (n=3,891)			- /	2
No	41.1(36.5 - 45.7)	58.9 (54.3 – 63.5) 47.6 (42.0 – 51.7)	Reference	<0.00
Yes ^e	52.4 (48.3 – 56.5)	47.6 (43.9 – 51.7)	-11.3 (-14.9, -7.7)	physic
Missing (n=1,122)	52.9 (47.6 – 58.2)	47.1 (41.8 – 52.4)		0.000 <0.000y119
HbA1c, %				
Mean (95%CI)	5.4 (5.4 – 5.5)	5.9 (5.8 – 5.9)	0.4 (0.4, 0.5)	<0.00
Diabetes categories ^f				
Normal	59.9 (55.8 – 64.0)	40.1 (36.0 – 44.2)	Reference	<0.00
Prediabetes	40.3 (37.1 – 43.5)	59.7 (56.5 – 62.9)	19.6 (15.8 – 23.4)	G
Diabetes	19.1 (16.5 – 21.8)	80.9 (78.2 - 83.5)	40.8 (37.3 – 44.3)	
HIV co-infection status (n=3,389)				0.222
Negative	60.7(57.3 - 64.2)	39.3 (35.8 – 42.7)	Reference	0.22 2
Positive	78.4 (54.8 – 100.0)	21.6 (0 – 45.2)	-17.7 (-43.6, 8.3)	Fiate
Missing (n=1,600)	25.3 (21.7 – 28.9)	74.7 (71.1 – 78.3)		
Dyslipidemia Measures				
HDL (mg/dL) (n=4,889) Mean (95%CI)	53.2 (52.1 – 54.3)	52.3 (51.0 – 53.6)	-0.9 (-2.0, 0.1)	א ר טאע
Mean (93 %CI)	33.2 (32.1 - 34.3)	52.5 (51.0 - 55.0)	-0.9 (-2.0, 0.1)	0.00
HDL levels ^g				0.08
Normal	53.1 (48.9 – 57.3)	46.9 (42.7 – 51.1)	Reference	<0.00
Lower	47.1 (43.5 – 50.7)	52.9 (49.3 – 56.5)	6.0 (2.4, 9.6)	
Missing (n=100)	37.0 (25.2 – 48.7)	63.0 (51.3 – 74.8)		
LDL^{h} (mg/dL) (n=2,236)				ç
Mean (95%CI)	113.2 (110.5 – 115.8)	116.4 (113.0 <mark>–</mark> 119.8)	3.2 (-1.1, 7.6)	0.135
				0.135 0.0135 0.01@
LDL levels				
Normal (<130 mg/dL)	53.7 (48.5 – 58.8)	46.3 (41.2 – 51.5)	Reference	0.01 @
Elevated (130 – 159 mg/dL) High (≥160 mg/dL)	55.8 (48.7 – 62.9) 38.7 (28.1 – 49.3)	44.2 (37.1 – 51.3) 61.3 (50.7 – 71.9)	-2.1 (-11.3, 7.1) 15.0 (4.7, 25.3)	a
	30.7 (20.1 - 49.3)	(0.17 - 1.00)	10.0 (4.7, 20.0)	2
Missing (n=67)	31.7 (19.9 – 43.5)	68.3 (56.5 – 80.1)		
Total Cholesterol (mg/dL) (n=4,889)				2
Mean (95%CI)	190.3 (187.7 – 192.8)	198.6 (194.7 – 202.4)	8.3 (3.4, 13.2)	0.002 <0.002 ev
Total cholesterol levels				
Low (≤130 mg/dL)	50.7 (44.3 – 57.0)	49.3 (43.0 - 55.7)	Reference	<0.00
Normal (131 – 199 mg/dL)	55.3 (50.9 - 59.8)	44.7 (40.2 – 49.1)	-4.7 (-10.6, 1.3)	alfi
Elevated (≥200 mg/dL)	46.4 (41.1 – 51.8)	53.6 (48.2 – 58.9)	4.2 (-3.3, 11.7)	Š
Missing (n=100)	37.0 (25.2 – 48.7)	63.0 (51.3 – 74.8)		
Triglyceride ^h (mg/dL) (n=2,276)				
Mean (95%CI)	111.5 (105.4 – 117.6)	148.8 (134.6 – 162.9)	37.3 (26.3, 48.2)	<0.001
Triglyceride levels				
Triglyceride levels Optimal (<150 mg/dL)	57.9 (54.2 – 61.6)	42.1 (38.4 – 45.8)	Reference	<0.00 [,]
	01.0 (07.2 - 01.0)	12.1 (00.7 TO.0)		-0.00

		Weighted Prevalence, %		_
Characteristics	No Hypertension % (95% CI)	Any Hypertension ^a % (95% Cl)	Mean/Prevalence Difference [*]	P-Value (X ²)†
	51.1 (47.4 – 54.8)	48.9% (45.2 – 52.6)	Percentage point (95%Cl)	(^)'
Elevated (150 – 199 mg/dL)	41.8 (34.1 – 49.5)	58.2 (50.5 – 65.9)	16.1 (9.8, 22.5)	
High (≥200 mg/dL)	28.7 (21.8 – 35.6)	71.3 (64.4 – 78.2)	29.2 (22.4, 36.1)	
Missing (n=27)	25.7 (6.7 – 44.8)	74.3 (55.2 – 93.3)		_
Any dyslipidemia ^{i&h} (n=2,277)		00.0 (04.0 40.0)	Defenses	
No Yes	61.0 (56.7 – 65.4) 47.4 (41.9 – 52.8)	39.0 (34.6 – 43.3) 52.6 (47.2 – 58.1)	Reference	<0.00
Tes	47.4 (41.9 – 52.6)	52.6 (47.2 – 58.1)	13.7 (7.7, 19.6)	<0.00
Missing (n=26)	24.6 (6.0 - 43.2)	75.4 (56.8 – 94.0)		2
Statin prescription ^j (n=2,770)				
No	44.8 (40.0 – 49.6)	55.2 (50.4 - 60.0)	Reference	Č
Yes	20.6 (16.0 – 25.2)	79.4 (74.8 – 84.0)	24.2 (17.6, 30.9)	<0.00
Missing (n. 2.228)				ر دەلەر 0.00 قارار.
Missing (n=2,238) CHD ^k (n=4,712)	69.8 (66.6 – 73.0)	30.2 (27.0 – 33.4)		,
No	50.9 (47.2 – 54.6)	49.1 (45.4 – 52.8)	Reference	-0 00-
Yes	15.3 (5.9 – 24.8)	84.7 (75.2 – 94.1)	35.6 (25.0, 46.1)	
				9
Missing (n=277)	85.6 (80.4 – 90.8)	14.4 (9.2 – 19.6)		<0.00
Heart attack ^I (n=4,723)	$\overline{\mathbf{N}}$			
No	50.8 (47.1 - 54.5)	49.2 (45.5 – 52.9)	Reference	<0.00
Yes	20.9 (11.6 – 30.2)	79.1 (69.8 – 88.4)	29.9 (18.5, 41.4)	
Missing (n-266)	86 1 (90 7 01 5)	13.9 (8.5 – 19.3)		reidte
<u>Missing (n=266)</u> Stroke ^m (n=4,725)	86.1 (80.7 – 91.5)	13.3 (0.3 – 19.3)		<u> </u>
No	50.9 (47.3 – 54.4)	49.1 (45.6 – 52.7)	Reference	-0.0Å
Yes	15.6 (8.8 – 22.4)	84.4 (77.6 – 91.2)	35.3 (28.1, 42.5)	
-		· (···································		2
Missing (n=264)	86.9 (82.1 – 91.6)	13.1 (8.4 – 17.9)		<0.00
Abbreviations:				<u> </u>
BMI – body mass index; CI – confidence i and Nutrition Examination Survey; QFT -			y iipoprotein, INHAINES – Nation	
and rutinion Examination Survey, QFT -				
*Mean/prevalence difference was calculate	ed by setting those without TB	l (i.e., QFT negative) as th	e referent group, unless indicate	d otherw
(with "reference" statement)			- • •	-
P-values from Rao-Scott Chi-square test	s, unless indicated otherwise			7
[‡] P-values from t-tests				2
¹ P-values from Rao-Scott Chi-square test: [‡] P-values from t-tests ^a Systolic ≥130mmHg and/or diastolic ≥80r ^b Survey participants answered "No" to the ^c Survey participants answered "Not at all" you/has SP) smoked at least 100 cigarette ^d Survey participants answered "Every day question "(Have you/has SP) smoked at le ^e Survey participants answered "Yes" to th ^f for male) or more drinks of any kind of	mmHg or any previous diagnos	is of high blood pressure b	by health providers	
"Survey participants answered "No" to the	e question "(Have you/has SP)	smoked at least 100 cigare	ettes in life?	Ģ
"Survey participants answered "Not at all"	to the question "(DO YOU/does	Sr) now smoke cigarettes	er and res to the question "(H	iave a
^d Survey participants answered "Every day	ro in inc : /" or "Some dave" to the questi	on "(Do vou/does SP) now	smoke cigarettes?" and "Ves" to	n the u
guestion "(Have vou/has SP) smoked at le	east 100 cigarettes in life?	UD yourdoes of HOW	Smoke organeties: and 185 li	
^e Survey participants answered "Yes" to th	e question "Was there ever tim	e or times in (vour/SP's) li	fe when (you/he/she) drank 4 (fo	or female
5 (for male) or more drinks of any kind of	alcoholic beverage almost ever	ry day?"	()	
5 (for male) or more drinks of any kind of a ^f Diabetes was categorized according to H ^g HDL level was using gender-specific cut-	bA1c levels and self-reported p	previous type-2 diabetes m	ellitus diagnosis by health care	providers
⁹ HDL level was using gender-specific cut-	offs: "normal" HDL was defined	d if HDL level was ≥40 mg	/dL for male or ≥50 mg/dL for fer	male; and
"lower" HDL was defined if HDL level was	<40 mg/dl for male or $<50 mg$	n/dl_for female		2
^h LDL and triglyceride measurements were	done among a subset of surv	ey participants who were f	asting and appropriate weight va	ariable (fo
those who were fasting) was applied acco		otorol triplus		ġ
ADV OVERING AND SEW EIMADIOUS	either elevated LDL, total chole			onumoret
	urvey date Survey Darticipants			
Taken statin in the past 30 days prior to s		or boalth profossional		
Taken statin in the past 30 days prior to s *Survey participants answered "Yes" to the		er health professional eve		
Taken statin in the past 30 days prior to s "Survey participants answered "Yes" to the heart disease?"	e question "Has a doctor or oth	·		
Taken statin in the past 30 days prior to s *Survey participants answered "Yes" to the heart disease?" 'Survey participants answered "Yes" to the	e question "Has a doctor or oth e question "Has a doctor or oth	·		
Taken statin in the past 30 days prior to s *Survey participants answered "Yes" to the heart disease?" 'Survey participants answered "Yes" to the	e question "Has a doctor or oth e question "Has a doctor or oth	·		
Taken statin in the past 30 days prior to s ^k Survey participants answered "Yes" to the heart disease?" ^l Survey participants answered "Yes" to the	e question "Has a doctor or oth e question "Has a doctor or oth	·		
Taken statin in the past 30 days prior to s *Survey participants answered "Yes" to the heart disease?" 'Survey participants answered "Yes" to the	e question "Has a doctor or oth e question "Has a doctor or oth	·		
ⁱ Taken statin in the past 30 days prior to s ^k Survey participants answered "Yes" to the	e question "Has a doctor or oth e question "Has a doctor or oth	·		

- 56
- 57
- 58

		Weighted Prevalence, %		_
Characteristic	s No Hypertension % (95% CI)	Any Hypertension ^a % (95% CI)	Mean/Prevalence Difference [*]	P-Value: (X ²) ⁺ had a Protected by copyright, including for uses related to text and data mining, Al
mQ	51.1 (47.4 – 54.8)	48.9% (45.2 - 52.6)	Percentage point (95%CI)	
"Survey participants answere stroke?"	d "Yes" to the question "Has a doctor or	other health professional eve	r told (you/SP) that (you/s/he) r	had a
Boid indicates that the finding	g is statistically significant at α =0.05			Pr
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 Table S3. Weighted prevalence of various hypertension classifications by interferon gamma tuberculosis and tuber

Pre- -ow Ag-NIL vs. QFT (-) 9.4 (1.6, 17.1) -12.3 (-22.7, -1.9) 3.4 (-3.0, 9.9) 8.8 (-0.4, 18.1) 4.6 (-5.7, 14.9) 4.2 (-0.3, 8.7) 5.4 (-2.5, 13.4) 8.5 (2.3, 14.6) 3.9 (-4.8, 12.7) -8.3 (-11.4, -5.2) 2.9 (-10.4, 15.9) -8.0 (-13.6, -2.3)	High Ag-NIL vs. QFT (-) 12.1 (3.6, 20.5) -8.4 (-18.1, 1.2) 0.1 (-7.5, 7.6) 8.4 (-1.4, 18.2) 9.0(-2.7, 20.7) -0.6 (-5.2, 3.9) 13.9 (5.0, 22.7) 8.1 (-0.6, 16.8) -1.8 (-7.1, 3.4) -3.5 (-12.8, 5.8) -2.5 (-15.1, 10.2)	High vs. Low Ag-N 2.7 (-10.1, 15.5) 3.8 (-9.7, 17.4) -3.4 (-13.9, 7.2 -0.5 (-14.6, 13.7) 4.4 (-10.2, 19.0) -4.9 (-9.0, -0.7) 8.4 (-4.7, 21.6) -0.6 (-7.8, 6.9) -5.8 (-12.7, 4.8)
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2.9 (-10.4, 15.9)		4.8 (-4.7, 14.3)
		-5.2 (-22.5, 12.1
	6.1 (-8.3, 20.4)	14.0 (-0.9, 27.2)
13.5 (-0.2, 27.1)	-0.1 (-9.5, 9.2)	-13.6 (-28.9, 1.7
d medicine?", survey partic		to the question "(Are
d	d medicine?", survey part vels	tension, also called high blood pressure?" d medicine?", survey participants also answered "yes" yels s

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1	y copyrig	
2		
3	^I Having systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg without a record of taking medications to lower blood pressure levels	
4 5	^m Having systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg with a record of taking medications to lower blood pressure levels	
5 б	Bold indicates that the finding is significant at α=0.05	
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 Table S4. Crude and adjusted associations between interferon gamma tuberculosis antigen responses
 and gypertension among representative of civilian, non-institutionalized

 US adult population, NHANES 2011 – 2012
 by the point (antion)

		Unadjusted Estimates	<u>a 5</u> Prevalence R	atio (95%CI)	Adjusted Estimates*	
Stratification Variables	Low Ag-NIL vs. QFT (-)	High Ag-NIL vs. QFT (-)	وَ`و High vs. <u>L</u> ow_Ag-NIL	Low Ag-NIL vs. QFT (-)	High Ag-NIL vs. QFT (-)	High vs. Low Ag-N
Primary study outcome		()	<u>s n</u>	<u> </u>		
Any hypertension indication ^a	1.19 (1.04 – 1.36)	1.25 (1.08 – 1.45)	1.05 (0 🕺 🐴 1.30)	0.99 (0.86 – 1.15)	1.04 (0.93 – 1.16)	1.05 (0.85 – 1.29
Measured blood pressure categories	· · ·		¥шо́		•	
Normal blood pressure ^b	0.74 (0.56 – 0.99)	0.82 (0.64 – 1.05)	1.11 (0 🛱 👸 – 1 .59)	0.89 (0.66 – 1.21)	0.99 (0.80 - 1.24)	1.12 (0.76 – 1.63
Borderline hypertension ^c	1.20 (0.88 – 1.62)	1.00 (0.66 – 1.54)	1.11 (000 10 10 10 10 10 10 10 10 10 10 10 10	1.12 (0.82 – 1.54)	0.94 (0.61 – 1.45)	0.84 (0.47 – 1.50
Hypertension ^d	1.26 (1.01 – 1.56)	1.24 (0.98 – 1.57)	0.99 (0 2 5 -1.37)	1.05 (0.84 – 1.32)	1.04 (0.87 – 1.24)	0.99 (0.72 – 1.34
Stage 1 hypertension ^e	1.19 (0.83 - 1.77)	1.37 (0.96 – 1.97)	1.15 (0 2 2 3 1.85)	1.06 (0.73 – 1.55)	1.22 (0.89 – 1.66)	1.15 (0.72 – 1.82
Stage 2 hypertension ^f	1.41 (1.02 – 1.95)	0.94 (0.59 – 1.50)	0.67 (0∰\$§0.99)	1.03 (0.74 – 1.44)	0.70 (0.40 – 1.23)	0.67 (0.43 – 1.05
Hypertension Diagnosis						- · · · · ·
Previously diagnosed hypertension ^g	1.18 (0.94 – 1.48)	1.46 (1.17 – 1.81)	1.24 (0 28 % - 6 1.72)	0.93 (0.74 – 1.16)	1.16 (0.97 – 1.38)	1.25 (0.93 – 1.66
Self-reported current use of anti-hypertension medication ^h	1.10 (1.03 – 1.18)	1.09 (0.99 – 1.20)	1.00 (0302-61.08)	1.07 (1.00 – 1.14)	1.07 (0.98 – 1.17)	1.00 (0.92 – 1.09
Undiagnosed hypertension ⁱ	1.22 (0.81 – 1.83)	0.90 (0.66 – 1.23)	0.74 (0347 - 31.17)	1.12 (0.73 – 1.70)	0.82(0.60 - 1.12)	0.73 (0.46 – 1.17
Hypertension Control [†]					/	
Controlled hypertension without medications ^j	0.30 (0.15 – 0.58)	0.70 (0.23 - 2.12)	2.37 (0 2 - 2 9.12)	0.53 (0.28 – 1.00)	0.97 (0.39 – 2.39)	1.83 (0.62 – 5.38
Controlled hypertension with medications ^k	1.08 (0.75 – 1.55)	0.93(0.62 - 1.39)	0.86 (051 -51.44)	1.01 (0.70 – 1.46)	0.89(0.59 - 1.35)	0.88 (0.52 – 1.50
Uncontrolled hypertension without medications ¹	0.48 (0.24 - 0.94)	1.40 (0.70 – 2.81)	2.93 (1.34 - 6.40)	0.61 (0.31 – 1.21)	1.56 (0.70 – 3.47)	2.57 (1.14 - 5.7)
Uncontrolled hypertension with medications ^m	1.34 (1.02 – 1.77)	1.00 (0.79 – 1.27)	0.74 (0953 - 1.03)	1.22 (0.92 – 1.63)	0.98 (0.75 – 1.27)	0.80 (0.57 – 1.1
Abbreviations:						
CI – confidence interval; QFT – QuantiFERON-TB Gold In-Tube			iopen.bmj.com/ on May ning, and similar techno			
			n.bmj.com/ on and similar te			
Models adjusted for age (continuous) and gender			a <u>3</u>			
[†] Calculated among those with a previous diagnosis of hypertens			sin g			
^a Systolic ≥130mmHg and/or diastolic ≥80mmHg or any previous	diagnosis of high blood pres	sure by health providers	i j			
^b Systolic <120 mmHg and diastolic <80 mmHg			ar			
^c Systolic 120-129 mmHg and diastolic <80 mmHg			n N			
^d Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmH	g or diastolic ≥80mmHg)		÷ >			
			5.8			
eSystolic 130-139 mmHg or diastolic 80-89 mmHg			nol			
^e Systolic 130-139 mmHg or diastolic 80-89 mmHg ^f Systolic ≥140 mmHg or diastolic ≥90 mmHg			log			
^e Systolic 130-139 mmHg or diastolic 80-89 mmHg ^f Systolic ≥140 mmHg or diastolic ≥90 mmHg ^g Survey participants answered "yes" to the question "(Have you/			<u>ح</u> م کے sional that (مجن sional that (مجن sional that (مجنع) sional that (مجنع) sional that (مجنع) had l			
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^e Systolic 130-139 mmHg or diastolic 80-89 mmHg ^f Systolic ≥140 mmHg or diastolic ≥90 mmHg ^g Survey participants answered "yes" to the question "(Have you/ ^h Among those who answered "yes" to "Because of (your/SP's) (you/Is SP) now taking prescribed medicine (for high blood press Elevated blood pressure levels (Systolic ≥130mmHg or diastolic)	nigh blood pressure/hyperten ure/hypertension)?" ≥80mmHg) with no prior dia	ision), (have you, has s/he) e gnosis of hypertension by he	ional that (ஜwu/ஆhe) had l ver been told to کھke preso ع alth care providogs	cribed medicine?", survey pa		s" to the question "(A
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^e Systolic 130-139 mmHg or diastolic 80-89 mmHg ^f Systolic ≥140 mmHg or diastolic ≥90 mmHg ^g Survey participants answered "yes" to the question "(Have you/ ^h Among those who answered "yes" to "Because of (your/SP's) (you/Is SP) now taking prescribed medicine (for high blood press ⁱ Elevated blood pressure levels (Systolic ≥130mmHg or diastolic ⁱ Having systolic blood pressure <130 mmHg and a diastolic blood ^k Having systolic blood pressure <130 mmHg and a diastolic blood	nigh blood pressure/hyperten ure/hypertension)?" ≥80mmHg) with no prior dia d pressure <80 mmHg with a od pressure <80 mmHg with a	ision), (have you, has s/he) e gnosis of hypertension by he ut a record of taking medicati a record of taking medication	sional that (ஜාu/ஆ)e) had l ver been told to bake preso ath care providers ons to lower blogd pressu s to lower blood pressue l	ribed medicine?", survey pa re levels evels		s" to the question "(A
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 Table S5. The crude and adjusted prevalence odds ratios of any hypertension stratified by race, body mass and category, and foreign-born status, among representative of civilian, non-institutionalized US adult population, NHANES 2011 – 2012

			Weighted	vdin	Prevalen	ce Ratios	O (and a d a d
		Unweighted	Prevalence of	Prevalence	Crude	Adjusted [†]	Statistical
Stratification Variables	QFT Status	frequency	Hypertension*	(95%CI)	cPR (95%CI)	aPR (95%CI)	interaction p
		Hypertension*/Total	(95%Cl)				values [¶]
All cohort	Negative	2294/4510	48.3 (44.5 – 52.1)	konserver 10 militær	Reference	Reference	NIA
	Positive	286/479	58.5 (52.4 – 64.5)	10.2 (5 8, 15.4)	1.21 (1.10 – 1.33)	1.01 (0.92 – 1.10)	NA
Stratified by age quartiles [‡]				atra	•		
Quartile 1 (18 – 31)	Negative	253/1256	19.2 (16.9 – 21.5)	Keve B nce	Reference	Reference	
	Positive	6/40	18.2 (0 – 37.5)	-1.0 d -2 0, 7, 18.7)	0.95 (0.32 – 2.81)	0.81 (0.25 – 2.64)	
Quartile 2 (32 – 47)	Negative	512/1186	42.8 (37.8 – 47.8)	Reference	Reference	Reference	
	Positive	32/94	36.7 (20.0 – 52.4)	-6. 46 8 6. 7.5)	0.86 (0.59 - 1.25)	0.87 (0.59 - 1.26)	
Quartile 3 (48 – 62)	Negative	678/1033	61.5 (58.0 - 65.0)	-6. 🛱 🙆 🧟 6, 7.5) Beere Bance	Reference	Reference	0.6316
	Positive	105/166	67.5 (55.0 – 80.1)	6.0 . (- 5 . .), 18.0)	1.10 (0.92 – 1.31)	1.03 (0.88 – 1.21)	
Quartile 4 (>62)	Negative	851/1035	76.7 (72.3 – 81.1)		Reference	Reference	
	Positive	143/179	80.2 (72.9 – 87.5)	3.5 (-5.4, 12.1)	1.05 (0.94 – 1.17)	1.03 (0.91 – 1.17)	
Stratified by age group	1 001110				1.00 (0.01 1.11)	1.00 (0.01 1.11)	
18 – 49	Negative	1568/3454	42.5 (38.5 - 46.4)	<u> </u>	Reference	Reference	
	Positive	175/307	51.1 (43.4 – 58.9)	8.7 (2.5 14.8)	1.20 (1.07 – 1.36)	0.95 (0.84 – 1.08)	
50+	Negative	726/1056	65.2 (61.2 - 69.2)		Reference	Reference	0.9998
001	Positive	111/172	72.7 (61.4 – 84.0)	7.5 (-3. 4, 18.1)	1.11 (0.96 – 1.29)	1.07 (0.93 – 1.24)	
Stratified by race	TOSITIVE	111/172	12.1 (01.4 - 04.0)	<u> 2. 5</u>	1.11 (0.30 - 1.23)	1.07 (0.33 - 1.2+)	
Hispanic	Negative	374/864	36.9 (31.4 – 42.5)	Eefe ence	Reference	Reference	
lispanic	Positive	67/158	51.2 (42.0 – 60.4)	14.3 (7.3, 21.3)	1.39 (1.20 – 1.60)	0.98 (0.86 – 1.11)	
Non-Hispanic White	Negative	947/1769	49.9 (45.0 – 54.8)		Reference	Reference	
	Positive	47/71	49.9 (45.0 – 54.8) 67.0 (55.3 – 78.7)	17. 9 . (5.7, 28.6)	1.34 (1.12 – 1.60)	1.08 (0.91 – 1.27)	
Non-Hispanic Black		711/1196	55.7 (51.8 – 59.7)		Reference	Reference	0.1584
	Negative Positive			8.9 ² (-3.9, 21.6)			
Other Race/Ethnicity		<u>80/115</u> 262/681	<u>64.6 (52.0 – 77.2)</u> 42.7 (37.5 – 47.9)	<u> </u>	1.16 (0.95 – 1.42) Reference	0.86 (0.71 – 1.05) Reference	
	Negative	68/135		5.7 G(-1. 5 , 12.4)			
	Positive	68/135	48.4 (41.3 – 55.6)	<u> </u>	1.13 (0.98 – 1.31)	0.88 (0.71 – 1.09)	
Stratified by body mass index category	NL C	00/00	00.0 (00.4 07.5)	Beference	D (D (
Underweight (BMI <18.5 kg/m ²)	Negative	28/96	29.9 (22.4 – 37.5)		Reference	Reference	
	Positive	7/11	50.9 (10.6 - 91.2)	21.0 5 (-20 <u>8</u> 5, 62.6)	1.70 (0.71 – 4.05)	0.71 (0.34 – 1.51)	
Normal (BMI 18.5 – 24.9 kg/m²)	Negative	478/1367	31.5 (26.9 – 36.1)	Reference	Reference	Reference	
-	Positive	75/149	49.2 (36.8 – 61.7)	17.7 (6 .a , 29.2)	1.56 (1.23 – 1.98)	1.24 (1.00 – 1.52)	0.1194
Overweight (BMI 25 – 29.9 kg/m²)	Negative	709/1400	49.7 (46.2 – 53.2)	Reference	Reference	Reference	
	Positive	96/160	59.3 (46.0 - 72.6)	9.6 (-2.8, 22.2)	1.19 (0.97 – 1.48)	0.98 (0.81 – 1.20)	
Obese (BMI ≥30 kg/m²)	Negative	1040/1592	61.6 (57.2 – 66.1)	Reference	Reference	Reference	
	Positive	107/155	67.5 (57.9 – 77.1)	5.9 (-2. 5 , 14.3)	1.10 (0.97 – 1.24)	0.98 (0.89 – 1.08)	
Stratified by foreign born status				int			
US Born	Negative	1793/3341	50.2 (46.8 – 53.7)	Reference	Reference	Reference	0.1385
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Unweighted frequency Hypertension*/Total 120/172 500/1167 166/307 627/954	Weighted Prevalence of Hypertension* (95%Cl) 65.6 (56.1 – 75.1) 37.7 (31.9 – 43.4) 51.3 (45.4 – 57.1) 61.8 (56.0 – 67.7)	Prevalence 15% (5%, 25.0) Befegence 13.8 (9, 3, 17.9)	Prevalence Crude cPR (95%CI) 1.31 (1.12 – 1.52) Reference 1.36 (1.22 – 1.51)	Adjusted [†] aPR (95%CI) 1.05 (0.92 – 1.21) Reference 1.05 (0.92 – 1.21)	Statistical interaction p values 1
Hypertension*/Total 120/172 500/1167 166/307 627/954	(95%Cl) 65.6 (56.1 – 75.1) 37.7 (31.9 – 43.4) 51.3 (45.4 – 57.1)	15% (5.8), 25.0) Refe g nce	cPR (95%CI) 1.31 (1.12 – 1.52) Reference	aPR (95%Cl) 1.05 (0.92 – 1.21) Reference	•
500/1167 166/307 627/954	37.7 (31.9 – 43.4) 51.3 (45.4 – 57.1)	Refe	Reference	Reference	
166/307 627/954	51.3 (45.4 – 57.1)				
627/954		13. g (9. 3 , 17.9)	<u>1.36 (1.22 – 1.51)</u>		
	61.9 (EC.067.7)	õ '•		1.00 (0.92 - 1.21)	
		š Z			
		R efe e nce	Reference	Reference	
95/130	76.2 (66.8 – 85.6)	14. 🙇 🛺 🧕, 24.5)	1.23 (1.07 – 1.42)	1.09 (0.93 – 1.27)	0.0886
439/851	47.2 (42.5 – 52.0)	Reperce	Reference	Reference	0.0000
56/101	47.5 (34.4 – 60.7)	-0.3 	1.01 (0.74 – 1.37)	0.89 (0.69 – 1.14)	
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					0.1235
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89/115	78.6 (68.7 - 88.5)	-2. 2 (-1 3 (0, 8.0)	0.97 (0.85 – 1.11)	0.94 (0.82 – 1.07)	
1000/0100	00.4 (05.5 40.0)				
					NA§
4/15 1/1	18.4 (0 – 39.0) 100.0 (100.0 – 100.0)				
1/1	10000000000 = 1000000000000000000000000	<u>81.6</u> ₿ 61. @ 100.0)	NA§	NA§	
	56/101 1083/2764 114/223 689/1102 83/141 522/644 89/115 1226/3130 102/243 4/15	1083/2764 39.6 (35.4 - 43.8) 114/223 50.6 (42.6 - 58.5) 689/1102 59.8 (56.6 - 63.0) 83/141 57.9 (44.2 - 71.6) 522/644 81.1 (78.3 - 83.9) 89/115 78.6 (68.7 - 88.5) 1226/3130 39.1 (35.5 - 42.6) 102/243 43.2 (34.8 - 51.6)	1083/2764 39.6 (35.4 - 43.8) 50.6 (42.6 - 58.5) 11 9 (3.9) 114/223 50.6 (42.6 - 58.5) 11 9 (3.9) 18.9) 689/1102 59.8 (56.6 - 63.0) Reference 83/141 57.9 (44.2 - 71.6) -1.91 (3.5) 522/644 81.1 (78.3 - 83.9) Reference 89/115 78.6 (68.7 - 88.5) -2.2 (-130, 8.0) 1226/3130 39.1 (35.5 - 42.6) Reference 102/243 43.2 (34.8 - 51.6) 4.12 (-4.3, 12.5)	1083/2764 39.6 (35.4 - 43.8) Reference Reference 114/223 50.6 (42.6 - 58.5) 119 (3.9, 18.9) 1.28 (1.08 - 1.51) 689/1102 59.8 (56.6 - 63.0) Reference Reference 83/141 57.9 (44.2 - 71.6) -1.99 (3.6, 11.8) 0.97 (0.76 - 1.23) 522/644 81.1 (78.3 - 83.9) Reference Reference 89/115 78.6 (68.7 - 88.5) -2.5 (-130, 8.0) 0.97 (0.85 - 1.11) 1226/3130 39.1 (35.5 - 42.6) Reference Reference 102/243 43.2 (34.8 - 51.6) 4.12 - 4.3, 12.5) NA§	1083/2764 39.6 (35.4 - 43.8) Reference Reference Reference 114/223 50.6 (42.6 - 58.5) 11 9 (3.9, 18.9) 1.28 (1.08 - 1.51) 1.01 (0.86 - 1.18) 689/1102 59.8 (56.6 - 63.0) Reference Reference Reference 83/141 57.9 (44.2 - 71.6) -1.91 (2.5, 11.8) 0.97 (0.76 - 1.23) 0.95 (0.76 - 1.18) 522/644 81.1 (78.3 - 83.9) Reference Reference Reference 89/115 78.6 (68.7 - 88.5) -2.2 (-130, 8.0) 0.97 (0.85 - 1.11) 0.94 (0.82 - 1.07) 1226/3130 39.1 (35.5 - 42.6) Reference Reference Reference 102/243 43.2 (34.8 - 51.6) 4.12 - 4.3, 12.5) NA [§] NA [§]

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 Table S6. Weighted prevalence of various hypertension classifications by confirmed tuberculosis infection setup.
 Setup.

 population, NHANES 2011-2012
 Description of civilian, non-institutionalized US adult

			hted Prevalence (95 rmed TB Infection S N=4,266		
Hypertension Measures	Confirmed 5 N Discordant TST and QFT				
	Negative N=3706	Pos⊮tive≩ N⊒ <u>ī</u> 90	TST [*] – and QFT + N=177	TST + and QFT – N=193	Any Discordance N=370
	92.2% (90.5 – 93.9)	<u>2.1% (144 7 2.8)</u>	2.5 (1.4 – 3.5)	3.2 (2.5 – 4.00)	5.7% (4.6 - 6.8)
Primary study outcome Any hypertension indication ^a (n=2,250/4,266)		60.8 (51 6 1			ED 7 (40 0 61 6
	49.6 (45.7 – 53.5)		50.5 (38.9 - 62.2)	54.4 (43.5 - 65.4)	52.7 (43.9 – 61.6
Neasured blood pressure categories Normal blood pressure ^b (n=1,914)	470 (400 51 1)		40.0 (40.0 50.7)	20 6 (26 4 52 0)	44.0 (35.2 – 52.9
Borderline hypertension ^c (n=714)	47.0 (42.9 – 51.1) 17.8 (15.5 – 20.0)	30.0 (2/.000 €0.0) 15 0 (0 0 0 0 0 0)	49.8 (40.9 – 58.7) 16.3 (8.2 – 24.4)	39.6 (26.1 – 53.0)	
Hypertensiond (n=1,638/4,266)	35.2 (32.3 – 38.1)		33.9 (25.4 – 42.4)	25.1 (14.7 – 35.5) 35.3 (26.9 – 43.7)	21.3 (13.4 – 29.1 34.7 (28.3 – 41.1
Stage 1 hypertension ^e (n=1121)	24.9 (22.5 – 27.3)	40.1(300 - 107.0)	25.4 (16.7 – 34.1)	24.0 (12.6 – 35.4)	24.6 (16.3 – 32.9
Stage 2 hypertension ^f (n=517)	10.3 (8.9 – 11.7)	36.6 (27.64 5.5) 15.3 (8.3 5.5) 48.1 (38.65 5.4) 37.0 (285 6 5.4) 11.1 (6.2 - 16.1)	8.5 (3.3 – 13.7)	24.0 (12.6 – 35.4) 11.3 (4.0 – 18.5)	10.1 (5.5 – 14.6
Hypertension Diagnosis	10.3 (0.9 - 11.7)	<u> </u>	0.0(3.3 - 13.7)	11.3 (4.0 – 10.3)	10.1 (5.5 - 14.0
Previously diagnosed hypertension ^g (n=1,496/4,266)	30.9 (27.5 – 34.3)	35.8 (27 5 – 4 4.0)	29.4 (17.9 – 40.8)	37.1 (25.9 – 48.4)	33.8 (27.0 – 40.6
Self-reported current use of anti-hypertension medication ^h (n=1,292/1,496)	86.0 (82.2 - 89.9)	90.2(79.7 - 100)	81.5 (65.8 – 97.1)	98.6 (96.0 – 100.0)	92.5 (87.4 – 97.5
Undiagnosed hypertension ⁱ ($n=754/4,266$)	18.7 (16.4 – 21.0)	25.2 (18. – 10.0) 25.2 (18. – 22.3)	21.4 (12.2 – 30.6)	17.3 (6.1 – 28.5)	19.1 (12.2 – 25.9
Hypertension Control (n=1,496)	10.7 (10.4 - 21.0)		21.4 (12.2 - 30.0)	17.3 (0.1 – 20.3)	19.1 (12.2 - 25.3
Controlled hypertension without medications ⁱ (n=1,286)	11.8 (9.6, 13.9)	6.9 (0.9, 150)	13.5 (1.6, 25.4)	5.4 (1.0, 9.8)	8.4 (3.5, 13.3)
Controlled hypertension with medications $(n=7,200)$	34.8 (29.2, 40.4)	28.9 (1822, 42.6)	43.6 (20.8, 66.4)	46.1 (34.0, 58.2)	45.2 (35.4, 55.0
Uncontrolled hypertension without medications ¹ (n=51)	15.0 (11.5, 18.4)	17.2 (57, 29.7)	18.9 (6.1, 29.7)	5.4 (0.3, 10.5)	10.1 (5.5, 14.7)
Uncontrolled hypertension with medications ^m (n=80)	38.5 (34.7, 42.2)	47.0 (3622, 57.8)	25.0 (12.3, 37.7)	43.1 (28.9, 57.3)	36.3 (26.4, 46.2
Abbreviations:		(0 <u>(0 <u>(0 </u>))</u>	20.0 (12.0, 01.17)	1011 (2010; 0110)	00.0 (20.1, 10.2
CI – confidence interval; QFT – QuantiFERON-TB Gold In-Tube; TST – tubercu	ılin skin test	iii 8 🗸			
		ila 🎈			
TST positive was defined as skin induration ≥5mm among HIV-positive individu	als or >10mm among H	IIV negative (foelowing	NHANES analytical	notes). Induration <5m	m (for HIV-positive
ndividuals) or ≤10mm (for HIV-negative individuals) was considered negative		Č S		,	· ·
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Systolic ≥130mmHg and/or diastolic ≥80mmHg or any previous diagnosis of hi	gh blood pressure by he	ealth providers 🗠			
Systolic <120 mmHg and diastolic <80 mmHg		· (Q -			
Systolic 120-129 mmHg and diastolic <80 mmHg		2025 jies.			
Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmHg or diastolic ≥8	0mmHg)	С Т 0)			
Systolic 130-139 mmHg or diastolic 80-89 mmHg		Ē			
Systolic ≥140 mmHg or diastolic ≥90 mmHg		Dep			
Survey participants answered "yes" to the question "(Have you/has SP) ever be pressure?"	een told by a doctor or o	other health provession	nal that (you/s/he) had	hypertension, also ca	alled high blood
Among those who answered "yes" to "Because of (your/SP's) (high blood press	sure/hypertension), (ha	ve you, has s/h🗿) ever	been told to take pre	scribed medicine?", su	urvey participants
also answered "yes" to the question "(Are you/Is SP) now taking prescribed med					
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Elevated blood pressure levels (Systolic ≥130mmHg or diastolic ≥80mmHg) with no prior diagnosis of hypertension by health care providers Having systolic blood pressure <130 mmHg and a diastolic blood pressure <80 mmHg without a record of taking hedeations to lower blood pressure levels 'Having systolic blood pressure <130 mmHg and a diastolic blood pressure <80 mmHg with a record of taking matic 'Having systolic blood pressure ≥130 mmHg and a diastolic blood pressure <80 mmHg with a record of taking matic 'Having systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg without a record of taking matic 'Having systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg without a record of taking matic
Bold indicates that the finding is significant at α =0.05
Prefare and data mining. Al training, and similar technologies.
GEZ-LTA
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 Table S7. Crude and adjusted associations between confirmed tuberculosis infection status and hyperternsion among representative of civilian, non-institutionalized US adult population, NHANES 2011 – 2012

Hypertension Measures Prevalence Difference (95%CI) Adjusted* PR (95%CI) Confirmed TBI vs. non-TBI Any Discordance vs. non-TBI Confirmed TBI vs. non-TBI Any Discordance vs. non-TBI Confirmed TBI vs. vs. non-TBI					of Association		
Confirmed TBI vs. Any Discordance rom-TBI Confirmed TBI vs. Any Discordance vs. non-TBI Confirmed TBI vs. Any Discordance vs. non-TBI Primary study outcome 11.3 (1.0, 21.5) 3.2 (-5.1 - 11.5) 1.23 (195 - 24.6) 1.06 (0.91 - 1.25) 1.08 (0.90 - 1.30) 0.98 (0.84 - 1.12) More structure categories -10.5 (-19.4, -1.6) 3.0 (+25.6) 0.78 (0.68 (0.55 - 3.6) 1.08 (0.99 - 1.30) 0.98 (0.84 - 1.12) More structure categories -10.5 (-19.4, -1.6) 3.0 (+25.6) 0.78 (0.68 (0.55 - 3.6) 1.20 (0.84 - 1.71) 0.88 (0.85 - 1.15) 1.03 (0.84 - 1.25) Braderline hypertension ² -24 (-9.5, 4.6) 3.5 (+4.1, 11) 0.86 (0.55 - 3.6) 1.20 (0.84 - 1.71) 0.28 (0.56 - 1.32) 1.15 (0.75 - 1.16) Stage 1 hypertension ² 2.9 (2.8, 7.30) -0.5 (-7.1, 6.1) 1.37 (1.69 - 7.0) 9.98 (0.60 - 1.59) 0.88 (0.53 - 1.48) 0.98 (0.65 - 1.42) Hypertension Indication ⁸ 0.8 (-4.1, 5.7) -0.3 (-5.2, 4.7) 1.08 (0.69 - 1.26) 1.09 (0.86 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.25) Undiagnosed hypertension medication ⁸ 4.9 (-3.0, 1.27) 2.9 (-5.0, 1.7) 1.16 (0.5 - 3.2) 1.07 (1.		Drevelance Diff.		on : for u	Prevalenc	e Ratios (PR)	
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Any hypertension indication* 11.3 (1, 0, 21.5) 3.2 (-5.1 - 11.5) 1.23 (1, 662 - 264) 1.06 (0, 91 - 1.25) 1.08 (0, 90 - 1.30) 0.98 (0.84 - 1.14) Measured blood pressure categories 10.5 (-19, 4, -1.6) 3.0 (-12.5, 6.4) 0.78 (0, 682 - 9.3) 0.94 (0, 76 - 1.16) 0.89 (0, 69 - 1.15) 1.03 (0.84 - 1.25) Borderline hypertension* 2.24 (-9.5, 4.6) 3.5 (-4, 1, 11.1) 0.86 (0, 59 - 1.9) 1.21 (0.84 - 1.71) 0.82 (0.65 - 1.13) 1.37 (1, 69 - 27.1) 0.83 (0.65 - 1.43) 0.91 (0.75 - 1.16) 0.89 (0.67 - 1.16) 0.89 (0.67 - 1.16) 0.89 (0.65 - 1.43) 0.91 (0.75 - 1.16) 0.89 (0.65 - 1.43) 0.91 (0.75 - 1.16) 0.83 (0.66 - 1.33) 0.99 (0.77 - 1.28) 0.81 (0.65 - 1.44) 0.81 (0.65 - 1.43) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.22) 0.86 (0.65 - 1.44) 0.96 (0.65 - 1.44) 0.96 (0.65 - 1.44) 0.96 (0.65 - 1.44) 0.96 (0.65 - 1.44) 0.96 (0.65 - 1.44) 0.96 (0.65 - 1.44) 0.96 (0.65 - 1.45) 0.99 (0.77 - 1.28) 1.00 (0.86 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.22) 1.02 (0.70 - 1.50) 1.26 (0.97 - 1.64) 0.86 (0.65 - 1.44) 0.96 (0.65 - 1.44) 0.96 (0.65 - 1.44) 0.96 (0.65 - 1.44) 0.96 (0.65 - 1.44) 0.96 (0.65 - 1.44) 0.96 (0.65 - 1.44) 0.96 (0.65 - 1.42) 0.96 (Confirmed TSI vs. non FBL			
Measure ablood pressure Categories -10.5 (-13.4, -1.6) 3.0 (-12.5, 6.4) 0.78 (b 0.5 - 1.6) 0.89 (0.69 - 1.16) 0.89 (0.69 - 1.16) 0.38 (0.61 - 1.32) 1.15 (0.81 - 1.62) Borderline hypertension ⁶ 12.9 (2.8, 23.0) -0.5 (-71, 6.1) 1.37 (1.69 - 3.70) 0.99 (0.82 - 1.19) 1.21 (0.98 - 1.42) 1.15 (0.81 - 1.62) Stage 1 hypertension ⁶ 12.9 (2.8, 23.0) -0.2 (-8.5, 8.0) 1.49 (1.56 - 3.3) 0.99 (0.77 - 1.28) 1.00 (0.84 - 1.77) 0.93 (0.85 - 1.32) 0.88 (0.63 - 1.32) 0.99 (0.77 - 1.28) 1.00 (0.86 - 1.33) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.22) 0.86 (0.63 - 1.42) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.22) 1.16 (0.59 - 3.44) 1.09 (0.86 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.22) 1.16 (0.59 - 3.44) 1.09 (0.86 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.22) 1.16 (0.59 - 3.44) 1.09 (0.86 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.22) 1.26 (0.97 - 1.64) 0.96 (0.65 - 1.47) Hypertension Diagnosed hypertension without medications ¹ 4.9 (-14.2, 4.4) -3.3 (-8.6, 2.0) 0.59 (0.59 - 3.22) 0.85 (0.27 - 2.70) 0.85 (0.48 - 1.52) 0.80 (0.53 - 1.22) 1.26 (0.97 - 1.64) 0.96 (0.65 - 1.47)	Primary study outcome			20 ted			
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Hypertension ⁴ 12.9 (2.8, 23.0) -0.5 (7.1, 6.1) 1.37 (1.993, 8.70) 0.99 (0.82 - 1.19) 1.21 (0.96 - 1.79) 0.93 (0.66 - 1.33) Stage 1 hypertension ⁹ 12.1 (2.8, 21.5) -0.2 (-8.5, 8.0) 1.49 (1.853, 8.40) 0.99 (0.71 - 1.38) 1.37 (1.06 - 1.77) 0.93 (0.66 - 1.37) 0.93 (0.66 - 1.37) 0.93 (0.66 - 1.37) 0.93 (0.66 - 1.37) 0.98 (0.52 - 1.48) 0.98 (0.52 - 1.48) 0.98 (0.52 - 1.48) 0.98 (0.52 - 1.48) 0.98 (0.52 - 1.48) 0.98 (0.52 - 1.48) 0.98 (0.52 - 1.48) 0.98 (0.52 - 1.48) 0.98 (0.52 - 1.48) 0.98 (0.52 - 1.48) 0.98 (0.51 - 1.28) 0.98 (0.51 - 1.28) 0.98 (0.51 - 1.28) 0.98 (0.52 - 1.48) 0.98 (0.51 - 1.28) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.27) 1.90 (0.85 - 1.48) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.27) 0.95 (0.58 - 1.48) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.27) 0.98 (0.65 - 1.43) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.27) 0.95 (0.58 - 1.48) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.27) 0.95 (0.58 - 1.48) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.27) 0.95 (0.58 - 1.48) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.27) 0.96 (0.65 - 1.43) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.27) 1.26 (0.97 - 1.64) 0.96 (0.65 - 1.43) 0.95 (0.18 - 1.57) 0.59 (0.18 - 1.57) <				0.86 (0. ∰5<mark>%</mark> <u>≸</u>.36)			
Stage 1 hypertension ⁶ 12.1 (2.8, 21.5) -0.2 (-8.5, 8.0) 1.49 (1.615 § 9.4) 0.99 (0.71 - 1.38) 1.37 (1.06 - 1.77) 0.93 (0.66 - 1.37) Ypertension Diagnosis -0.3 (-5.2, 4.7) 1.08 (0.69 - 9.68) 0.98 (0.60 - 1.59) 0.88 (0.53 - 1.48) 0.99 (0.77 - 1.28) 1.08 (0.69 - 1.59) 0.88 (0.53 - 1.48) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.2 Self-reported current use of anti-hypertension medication ¹⁰ 4.9 (-3.0, 12.7) 2.9 (-5.0, 10.7) 1.16 (0.97 - 1.50) 1.26 (0.97 - 1.64) 0.96 (0.65 - 1.4) Ypertension Currol ¹ 6.5 (-0.3, 13.3) 0.4 (-6.9, 7.7) 1.35 (1.08 - 7.7) 1.02 (0.70 - 1.50) 1.26 (0.97 - 1.64) 0.96 (0.65 - 1.4) Ypertension Currol ¹ -5.9 (-18.6, 6.8) 10.4 (-0.6, 21.4) 0.83 (0.55 - 4.2) 1.30 (1.00 - 1.69) 0.81 (0.53 - 1.22) 1.26 (0.97 - 1.64) 0.96 (0.65 - 1.4) Uncontrolled hypertension without medications ⁴ -5.9 (-18.6, 6.8) 10.4 (-0.6, 21.4) 0.83 (0.55 - 4.2) 1.30 (1.00 - 1.69) 0.81 (0.53 - 1.22) 1.26 (0.97 - 1.50) 0.26 (0.65 - 1.4) Uncontrolled hypertension with medications ⁴ 2.3 (-9.7, 14.2) -4.9 (-10.3, 5.4) 1.15 (0.87 - 2.2) 1.30 (1.00 - 1.69) 0.81 (0.53 - 0.2) 0.70 (0.41 - 1.1) <td< td=""><td></td><td>12.9 (2.8, 23.0)</td><td></td><td>1.37 (1.109 9.70)</td><td>0.99 (0.82 – 1.19)</td><td></td><td>0.91 (0.75 – 1.1</td></td<>		12.9 (2.8, 23.0)		1.37 (1.109 9.70)	0.99 (0.82 – 1.19)		0.91 (0.75 – 1.1
Stage 2 hypertension ¹ 0.8 (4.1, 5.7) -0.3 (-5.2, 4.7) 1.08 (0.40 ² + 6.8) 0.98 (0.60 - 1.59) 0.88 (0.53 - 1.48) 0.86 (0.52 - 1.4 Previously diagnosed hypertension ⁹ 4.9 (-3.0, 12.7) 2.9 (-5.0, 10.7) 1.16 (0.89 - 3.44) 1.09 (0.86 - 1.38) 0.99 (0.77 - 1.28) 1.00 (0.81 - 1.2 Self-reported current use of anti-hypertension medication ¹⁰ 4.2 (-8.1, 16.5) 6.4 (0.6, 12.3) 1.05 (0.49 - 7.20) 1.07 (1.01 - 1.15) 1.03 (0.91 - 1.18) 1.08 (1.01 - 1.1) Undiagnosed hypertension ¹¹ 6.5 (-0.3, 1.3.3) 0.4 (-6.9, 7.7) 1.35 (1.08 - 7.73) 1.02 (0.70 - 1.50) 1.26 (0.97 - 1.64) 0.98 (0.65 - 1.44) Undiagnosed hypertension without medications ¹¹ -4.9 (-14.2, 4.4) -3.3 (-8.6, 2.0) 0.59 (0.85 - 7.20) 0.85 (0.27 - 2.70) 0.85 (0.48 - 1.50) Controlled hypertension without medications ¹¹ 2.3 (-9, 7, 14.2) -4.9 (-10.3, 5.4) 1.15 (0.87 - 9.33) 0.68 (0.42 - 1.10) 1.32 (0.68 - 2.58) 0.70 (0.41 - 1.1 Uncontrolled hypertension with medications ¹¹ 2.3 (-9, 7, 14.2) -4.9 (-10.3, 5.4) 1.15 (0.87 - 9.33) 0.68 (0.42 - 1.10) 1.32 (0.68 - 2.58) 0.70 (0.41 - 1.1) 1.20 (0.91 - 1.58) 1.27 (1.05 - 1				1.49 (1. 🔂 🦉 🖗 94)	0.99 (0.71 – 1.38)		
Hypertension Diagnosis Previously diagnosed hypertension ⁹ Self-reported current use of anti-hypertension medication ^h 4.2 (-8.1, 16.5) 6.4 (0.6, 12.3) Undiagnosed hypertension without medications ¹ Controlled hypertension without medications ² Systolic 120				1.08 (0. 69 – 4 .68)			
Previously diagnosed hypertension [®] 4.9 (-3.0, 12.7) 2.9 (-5, 0, 10.7) 1.16 (0, \$\$ = -3, 44) 1.09 (0.86 - 1.38) 0.99 (0,77 - 1.28) 1.00 (0.81 - 1.2) Self-reported current use of anti-hypertension 4.2 (-8.1, 16.5) 6.4 (0.6, 12.3) 1.05 (0, \$\$ = -3, 24) 1.07 (1.01 - 1.15) 1.03 (0.91 - 1.28) 1.08 (1.01 - 1.1 Undiagnosed hypertension 6.5 (-0.3, 13.3) 0.4 (-6.9, 7.7) 1.02 (0.70 - 1.50) 1.26 (0.97 - 1.64) 0.99 (0.77 - 1.28) 1.08 (0.85 - 1.42) Undiagnosed hypertension 4.9 (-14.2, 4.4) -3.3 (-8.6, 2.0) 0.59 (0.58 - 3, 10) 0.72 (0.39 - 1.32) 0.85 (0.27 - 2.70) 0.85 (0.48 - 1.5 Controlled hypertension with medications ¹ 2.3 (-9.7, 14.2) -4.9 (-10.3, 5.4) 1.15 (0.97 - 5.3) 0.68 (0.42 - 1.10) 1.32 (0.68 - 2.58) 0.70 (0.41 - 1.1 Uncontrolled hypertension with medications ^m 8.5 (-3.4, 20.4) -2.2 (-12.4, 8.1) 1.22 (0.98 - 558) 0.94 (0.71 - 1.25) 1.20 (0.91 - 1.58) 1.27 (1.05 - 1.5 Abbreviations: Calculated among those with a previous diagnosis of high blood pressure by health providers 9.94 (0.71 - 1.25) 1.20 (0.91 - 1.58) 1.27 (1.05 - 1.5 Systolic 120-129 mmHg and diastolic <80 mmHg						· · · · · · · · · · · · · · · · · · ·	,
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Undiagnosed hypertension 6.5 (-0.3, 13.3) 0.4 (-6.9, 7.7) 1.35 (1.09 - ₹.77) 1.02 (0.70 - 1.50) 1.26 (0.97 - 1.64) 0.96 (0.65 - 1.4) Hypertension Control* -4.9 (-14.2, 4.4) -3.3 (-8.6, 2.0) 0.59 (0.57 - 1.60) 0.72 (0.39 - 1.32) 0.85 (0.27 - 2.70) 0.85 (0.48 - 1.5) Controlled hypertension without medications ^k -5.9 (-18.6, 6.8) 10.4 (-0.6, 21.4) 0.83 (0.57 - 2.8) 1.30 (1.00 - 1.69) 0.81 (0.53 - 1.22) 1.26 (0.97 - 1.64) Uncontrolled hypertension without medications ^k 2.3 (-9.7, 14.2) -4.9 (-10.3, 5.4) 1.15 (0.97 - 5.8) 0.94 (0.71 - 1.25) 1.20 (0.91 - 1.58) 1.27 (1.05 - 1.57) Abbreviations: Confidence interval; PR – prevalence ratio; TBI – tuberculosis infection 1.22 (-2.4, 8.1) 1.22 (0.97 - 1.60) 0.94 (0.71 - 1.25) 1.20 (0.91 - 1.58) 1.27 (1.05 - 1.57) Models adjusted for age and gender 'Calculated among those with a previous diagnosis of high blood pressure by health providers "Systolic 120-129 mmHg and diastolic >80 mmHg "Systolic 120-129 mmHg and diastolic >80 mmHg "Systolic 2130 mmHg or diastolic ≥80 mmHg "Systolic 2130 mmHg or diastolic ≥80 mmHg "Systolic 210 mmHg or diastolic 290 mmHg Systolic 2130							
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Controlled hypertension with medications ^k -5.9 (-18.6, 6.8) 10.4 (-0.6, 21.4) 0.83 (0.51 - 3.28) 1.30 (1.00 - 1.69) 0.81 (0.53 - 1.22) 1.26 (0.97 - 1.6) Uncontrolled hypertension with medications ^m 2.3 (-9.7, 14.2) -4.9 (-10.3, 5.4) 1.15 (0.97 - 1.6) 0.68 (0.42 - 1.10) 1.32 (0.68 - 2.58) 0.70 (0.41 - 1.1) Uncontrolled hypertension with medications ^m 8.5 (-3.4, 20.4) -2.2 (-12.4, 8.1) 1.22 (0.51 - 5.58) 0.94 (0.71 - 1.25) 1.20 (0.91 - 1.58) 1.27 (1.05 - 1.5) Abbreviations: C1 - confidence interval; PR – prevalence ratio; TBI – tuberculosis infection 1.22 (0.51 - 5.58) 0.94 (0.71 - 1.25) 1.20 (0.91 - 1.58) 1.27 (1.05 - 1.5) Systolic ≥130 mmHg and/ic algonosis of hypertension by healthcare providers (n=1,496) 5.95 (0.21 - 2.58) 0.94 (0.71 - 1.25) 1.20 (0.91 - 1.58) 1.27 (1.05 - 1.5) Systolic ≥120 mmHg and diastolic ≥80 mmHg systolic ≥130 mmHg or diastolic ≥80 mmHg more than mHg 5.95 (0.21 - 2.58) 0.94 (0.71 - 1.25) 1.20 (0.91 - 1.58) 1.27 (1.05 - 1.58) Systolic ≥102 mmHg and diastolic ≥80 mmHg systolic ≥130 mmHg or diastolic ≥80 mmHg systolic ≥130 mmHg or diastolic ≥80 mmHg systolic ≥130 mmHg or diastolic ≥90 mmHg 5.55 (0.21 - 2.56) 5.55 (0.21 - 2.56) 5.55 (0.21 - 2.56) 5.55 (0.21 - 2.56) </td <td></td> <td>-49(-14244)</td> <td>-33(-8620)</td> <td>$0.59 (0 \frac{3}{10} - \frac{3}{10} 10)$</td> <td>0.72(0.39 - 1.32)</td> <td>0 85 (0 27 – 2 70)</td> <td>0 85 (0 48 – 1 5</td>		-49(-14244)	-33(-8620)	$0.59 (0 \frac{3}{10} - \frac{3}{10} 10)$	0.72(0.39 - 1.32)	0 85 (0 27 – 2 70)	0 85 (0 48 – 1 5
Uncontrolled hypertension without medications ¹ Uncontrolled hypertension with medications ^m Abbreviations: CI – confidence interval; PR – prevalence ratio; TBI – tuberculosis infection Models adjusted for age and gender Calculated among those with a previous diagnosis of hypertension by healthcare providers (n=1,496) Systolic 2130mmHg and/or diastolic ≥80mmHg Systolic 120-129 mmHg and diastolic <80 mmHg Systolic 130-139 mmHg or diastolic ≥80 mmHg Systolic 2140 mmHg or diastolic ≥80 mmHg Systolic 2140 mmHg or diastolic ≥80 mmHg Systolic 2140 mmHg or diastolic ≥80 mmHg Systolic 130-139 mmHg or diastolic ≥80 mmHg Systolic 130-139 mmHg or diastolic ≥80 mmHg Systolic 2140 mmHg or diastolic ≥80 mmHg Systolic 2140 mmHg or diastolic ≥80 mmHg Systolic 130-139 mmHg or diastolic ≥80 mmHg Systolic 130-139 mmHg or diastolic ≥80 mmHg Systolic 2140 mmHg or diastolic ≥80 mmHg Systolic 130-139 mmHg or diastolic ≥80 mmHg Systolic 2140 mmHg or diastolic 290 mmHg Systolic 2140 mmHg or diastolic 290 mmHg Systolic 2140 mmHg or diastolic 280 mmHg Systolic 2140 mmHg or diastolic 280 mmHg Systolic 2140 mmHg or diastolic 280 mmHg Syst				0.83(0.54 - 3.28)			
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Abbreviations: CI – confidence interval; PR – prevalence ratio; TBI – tuberculosis infection Models adjusted for age and gender 'Calculated among those with a previous diagnosis of hypertension by healthcare providers (n=1,496) 'Systolic ≥130mmHg and/or diastolic ≥80mmHg or any previous diagnosis of high blood pressure by health providers 'Systolic 120 nmHg and diastolic <80 mmHg 'Systolic 120-129 mmHg and diastolic <80 mmHg 'Systolic 120-129 mmHg or diastolic <80 mmHg 'Systolic 130-139 mmHg or diastolic ≥80 mmHg Systolic ≥140 mmHg or diastolic ≥90 mmHg 'Systolic ≥140 mmHg or diastolic ≥90 mmHg 'Systolic ≥140 mmHg or diastolic ≥90 mmHg 'Survey participants answered "yes" to the question "(Have you/has SP) ever been told by a doctor or other health professional 'Among those who answered "yes" to "Because of (your/SP's) (high blood pressure/hypertension), (have you, has s/he) ever the told to take prescribed medicine?", survey participants also answered " 'Among those who answered "yes" to "Because of (your/SP's) (high blood pressure/hypertension), (have you, has s/he) ever the not to to take prescribed medicine?", survey participants also answered " 'Among those who answered "yes" to "Because of (your/SP's) (high blood pressure/hypertension)?" Elevated blood pressure levels (Systolic ≥130mmHg or diastolic ≥80mmHg) with no prior diagnosis of hypertension by health far re providers				1 22 (0 24 - 758)			
	¹ Calculated among those with a previous diagnosis of hyperten ² Systolic ≥130mmHg and/or diastolic ≥80mmHg or any previou ² Systolic <120 mmHg and diastolic <80 mmHg ² Systolic 120-129 mmHg and diastolic <80 mmHg ³ Including stage 1 and 2 hypertensions (i.e., Systolic ≥130mmH ² Systolic 130-139 mmHg or diastolic 80-89 mmHg Systolic ≥140 mmHg or diastolic ≥90 mmHg ³ Survey participants answered "yes" to the question "(Have you ³ Among those who answered "yes" to "Because of (your/SP's) to the question "(Are you/Is SP) now taking prescribed medicine Elevated blood pressure levels (Systolic ≥130mmHg or diastolic	s diagnosis of high blood Ig or diastolic ≥80mmHg I/has SP) ever been told (high blood pressure/hyp e (for high blood pressur c ≥80mmHg) with no pri	d pressure by health pro by a doctor or other he pertension), (have you, re/hypertension)?" or diagnosis of hyperte	oviders May 21, 2025 at alth professiona Uthat (yo has s/he) ever Deen told rtm nsion by health @are prov	I to take prescribed me		
	Having systolic blood pressure <130 mmHg and a diastolic blo			Z-LTA			

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^I Having systolic blood pressure \geq 130 mmHg or diasto ^m Having systolic blood pressure \geq 130 mmHg or diast Bold indicates that the finding is significant at α =0.05	olic blood pressure ≥80 mmHg without a record of taking medications to loger blood pressure levels tolic blood pressure ≥80 mmHg with a record of taking medications to dower blood pressure levels 5	
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BMJ Open Table S8. Sensitivity analysis to account for misclassification of covariates and different ways to handle ages confounder) included in the multivariable survey-weighted robust Poisson models to estimate the association between tuberculosis infection and hypertension among representative of civilian, non-institutionalized US adult population, NHANES 2011-2012

			9 0	Adjusted Prevalence Ratios		
Models	Covariate(s) included in the model	for us		A (Age, continuous)	B (Age Group - Quartiles)	
		uses	∾ Result ≰	aPR (95%CI)	aPR (95%CI)	
Model 1	Age	rela	a Negative	Reference	Reference	
		ras	Positive	1.02 (0.93 – 1.13)	1.03 (0.93 – 1.14)	
Model 2	Age, sex	u to	Negative	Reference	Reference	
		sho te	 Positive 	1.01 (0.92 – 1.10)	1.01 (0.91 – 1.13)	
Model 3	Age, sex, BMI	xt a	Negative	Reference	Reference	
			d Positive	1.02 (0.92 – 1.13)	1.03 (0.93 – 1.15)	
Model 4	Age, sex, income to poverty ratio	nool data	Negative	Reference	Reference	
		<u>a</u> -	Positive	1.00 (0.91 – 1.09)	1.01 (0.91 – 1.12)	
Model 5	Age, sex, country of birth	nining	Segative	Reference	Reference	
		ing	Positive	1.05 (0.96 – 1.14)	1.07 (0.97 – 1.19)	
Model 6	Age, sex, income to poverty ratio, country of birth, BMI	, ≥ `	Negative	Reference	Reference	
		=	Positive	1.05 (0.95 – 1.17)	1.08 (0.97 – 1.21)	
Model 7	Age, sex, income to poverty ratio, country of birth, BMI, current smoking status	aining	Negative	Reference	Reference	
			Positive	1.05 (0.93 – 1.17)	1.07 (0.93- 1.24)	
Model 8	Age, sex, income to poverty ratio, country of birth, BMI, current smoking status, type-2	and	Negative	Reference	Reference	
	diabetes mellitus status, HIV status	`	Positive	1.03 (0.99 – 1.08)	1.04 (0.99 – 1.08)	
Model 9	Age, sex, income to poverty ratio, country of birth, BMI, type-2 diabetes mellitus status,	H≣IV		Reference	Reference	
	status	lar	Positive	1.04 (0.90 – 1.20)	1.05 (1.00 – 1.09)	
Model 10*	Age, sex, race, education attainment level, country of birth, type-2 diabetes mellitus, BM	៸៲ត្ត	Negative	Reference	Reference	
	smoking	h,	Positive	1.01 (0.97 – 1.06)	1.04 (0.99 – 1.09)	
Model 11	Age, sex, race, education attainment level, country of birth, type-2 diabetes mellitus sta	tu∰s,	Negative	Reference	Reference	
	self-reported previous diagnosis of coronary heart disease, heart attack, and stroke	gie	Positive	1.00 (0.96 – 1.05)	1.03 (0.98 – 1.08)	
Model 12	Age, sex, race, education attainment level, country of birth, type-2 diabetes mellitus sta	-	Negative	Reference	Reference	
	self-reported previous diagnosis of coronary heart disease, heart attack, and stroke, BN smoking	<i>/</i> II,	ម្ម Positive ក្ត	1.01 (0.96 – 1.05)	1.04 (0.99 – 1.08)	
Model 13	Age, sex, race education attainment level, country of birth, type-2 diabetes mellitus stat	us, [.]	Negative	Reference	Reference	
	self-reported previous diagnosis of coronary heart disease, heart attack, stroke, BMI,		Positive	1.07 (0.97 – 1.18)	1.09 (1.00 – 1.18)	
	current smoking status, heavy alcohol consumption, any dyslipidemia, statin prescriptic	n,	ent			
	HIV status		d			

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Table S9. Sample analytical codes		t, inc	
SAS MACRO PROGRAM			
********* LTBI - HYPERTENSION MACRO STATEMENTS *********		176 on 12	
Frequency Table; %MACRO SURVEYFREQF (data=, outcome=, select=, weight=); proc surveyfreq data=&data cluster SDMVPSU; strata SDMVSTRA; tables &select&outcome/nostd column row cl chisq; weight &weight run; %MEND SURVEYFREQF; *Bivariate Association; %MACRO SURVEYFREQ (data=, exp=, outcome=, select=, weight=) proc surveyfreq data=&data cluster SDMVPSU; strata SDMVPSU; strata SDMVSTRA; tables &select*&exp*&outcome/nostd column row cl chisq; weight &weight run; %MEND SURVEYFREQ;		March 2024. Downloaded from http://bmjopen.bmj.com/ on May 21, Erasmushogeschool . es related to text and data mining, Al training, and similar technolog	
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cluster SDMVPSU; class &exp (ref="0") age_group (ref="1") RIAGENDR (ref="2") cob	9 (ref="1") bmicat99 (ref="1")/param	
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run; %MEND SURVEYLOGAD;	illar v	
	n Ma	
*Adjsuted for age and gender;		
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cluster SDMVPSU; class &exp (ref="0") age_group (ref="1") RIAGENDR (ref="2")/para	am-ref:	
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R – Robust Poisson with quasi distribution logit21 <- (svyglm(htn~factor(qft), family=quasipoisson(lo	a a a a a a a a a a a a a a a a a a a	06.
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logit28 <- (svyglm(mhtn2~factor(qft), family=quasipoissor tidy(logit28, conf.int = TRUE, conf.level = 0.95, exponent	tiate = TRUE)	
logit26 <- (svyglm(htn4_2~factor(qft), family=quasipoissc tidy(logit26, conf.int = TRUE, conf.level = 0.95, exponent		
	on(log), design=NHANES))	

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1 2	copyrigh
3	tidy(logit_27a, conf.int = TRUE, conf.level = 0.95, exponentiate = TRUE)
4 5 6 7 8 9	tidy(logit_27a, conf.int = TRUE, conf.level = 0.95, exponentiate = TRUE) logit_215a <- (svyglm(htq~factor(qft)+RIDAGEYR+factor(RIAGENDR)+factor(race5)+factor(edu9)+ factor(cob9)+factor(dmcat)+factor(bmicat9)+factor(csmk29), family=quasipoisson(log), design=NHANES)) summary(logit_215a, df=degf(NHANES))
10	tidy(logit_215a, conf.int = TRUE, conf.level = 0.95, exponentiate = TRUE)
11 12 13 14	tidy(logit_215a, conf.int = TRUE, conf.level = 0.95, exponentiate = TRUE) logit_217a <- (svyglm(on_htmeds~factor(qft)+RIDAGEYR+factor(RIAGENDR)+factor(race5)+factor(edeby+ factor(cob9)+factor(dmcat)+factor(bmicat9)+factor(csmk29), family=quasipoisson(log), design=NHANES))
15 16	summary(logit_217a, df=degf(NHANES)) tidy(logit_217a, conf.int = TRUE, conf.level = 0.95, exponentiate = TRUE)
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STROBE Statement—Checklist of items that should be included in reports of cross-sectional studies	

	Item No	Recommendation	Page No
Title and abstract	1	(<i>a</i>) Indicate the study's design with a commonly used term in the title or the abstract	1
		(b) Provide in the abstract an informative and balanced summary of	3
		what was done and what was found	5
.		what was done and what was found	
Introduction	2	Euclain the action tills had some and nationals for the investigation	5.6
Background/rationale	2	Explain the scientific background and rationale for the investigation	5-6
Objectives	3	being reported State specific objectives, including any prespecified hypotheses	6
	3	State specific objectives, including any prespecified hypotheses	0
Methods			(
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection	6
		of participants	
Variables	7	Clearly define all outcomes, exposures, predictors, potential	7-8
		confounders, and effect modifiers. Give diagnostic criteria, if applicable	
Data sources/	8*	For each variable of interest, give sources of data and details of	7-8
measurement		methods of assessment (measurement). Describe comparability of	
		assessment methods if there is more than one group	
Bias	9	Describe any efforts to address potential sources of bias	9
Study size	10	Explain how the study size was arrived at	Figure
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If	8-9
		applicable, describe which groupings were chosen and why	
Statistical methods	12	(<i>a</i>) Describe all statistical methods, including those used to control for	8-9
		confounding	
		(b) Describe any methods used to examine subgroups and interactions	9
		(c) Explain how missing data were addressed	9
		(d) If applicable, describe analytical methods taking account of	8-9
		sampling strategy	
		(<u>e</u>) Describe any sensitivity analyses	9
Results			1
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers	9
i unicipanto	15	potentially eligible, examined for eligibility, confirmed eligible,	
		included in the study, completing follow-up, and analysed	
		(b) Give reasons for non-participation at each stage	9
		(c) Consider use of a flow diagram	22
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical,	9
Descriptive dudu		social) and information on exposures and potential confounders	
		(b) Indicate number of participants with missing data for each variable	9
		of interest	
Outcome data	15*	Report numbers of outcome events or summary measures	9
Main results	16	(<i>a</i>) Give unadjusted estimates and, if applicable, confounder-adjusted	10
	10		
		estimates and their precision (eg, 95% confidence interval). Make clear	

	(b) Report category boundaries when continuous variables were	7-8
	categorized	
	(c) If relevant, consider translating estimates of relative risk into	NA
	absolute risk for a meaningful time period	
17	Report other analyses done-eg analyses of subgroups and interactions,	10-1
	and sensitivity analyses	
18	Summarise key results with reference to study objectives	12
19	Discuss limitations of the study, taking into account sources of potential	14-1
	bias or imprecision. Discuss both direction and magnitude of any	
	potential bias	
20	Give a cautious overall interpretation of results considering objectives,	15
	limitations, multiplicity of analyses, results from similar studies, and	
	other relevant evidence	
21	Discuss the generalisability (external validity) of the study results	15
22	Give the source of funding and the role of the funders for the present	16
	study and, if applicable, for the original study on which the present	
	article is based	
	18 19 20 21	categorized (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period 17 Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses 18 Summarise key results with reference to study objectives 19 Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias 20 Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence 21 Discuss the generalisability (external validity) of the study results 22 Give the source of funding and the role of the funders for the present

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Table A1. PRICSSA document for the US National Health and Nutrition Examination Surve	уy
(NHANES) 2011 - 2012	-

Design: multistage, stratified cluster sample

Variance estimation: Taylor Series Linearization

Weight and design variables (primarily used in our manuscript)

Weight: WTMEC2YR

Cluster: SDMVPSU

Stratum: SDMVSTRA

Unweighted **total** sample size: 9,338 Unweighted total sample included in the primary analyses: 4,989

Weighted total sample size: 306,590,681 Weighted total sample included in the primary analyses: 210,906,894

Unweighted Response rate: 72.6% (Interviewed Sample), 69.5% (Examined Sample)

Location of example code: <u>https://wwwn.cdc.gov/nchs/nhanes/tutorials/samplecode.aspx</u>

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ound	PRICSSA item, a detailed description of each item, and where in manu	in 23 use iptue 5175 176
PRICSSA item	Description	ବି Page(s)/section in the ଜୁ ରି manuscript
1.1 Data collection dates	Describe the survey's data collection dates (e.g., range) to provide historical context that could affect survey responses and nonresponse.	March 2 S related Erass
1.2 Data collection mode(s)	Describe the survey's data collection mode(s). Data collection mode can affect survey responses (e.g., to sensitive questions), including nonresponse, and a survey's data collection mode may change over time (e.g., during the COVID-19 pandemic).	to text and control to tex
1.3 Target population	State the target population the survey was designed to represent and describe all weighted estimates with respect to this target population.	and Methods (page 6)
1.4 Sample design	Describe the survey's sample design, including information about stratification, cluster sampling, and unequal probabilities of selection.	ng, Al tra
1.5 Survey response rate(s)	State the survey's response rate and how it was calculated.	🚊 👼 Results (page 10)
2.1 Missingness rates	Report rates of missingness for variables of interest and models, and describe any methods (if any) for dealing with missing data (e.g., multiple imputation).	Results (Methods, pages 8 –
2.2 Observation deletion	State whether any observations were deleted from the dataset. If observations were deleted, provide a justification. Note: It is best practice to avoid deleting cases and use available subpopulation analysis commands no matter what variance estimation method is used.	milar technolo 21
2.3 Sample sizes	Include unweighted sample sizes for all weighted estimates.	Results (Tables, pages 25, 2
2.4 Confidence intervals/ standard errors	Include confidence intervals or standard errors when reporting all estimates to inform the reliability/precision of each estimate.	Results (pages 10 – 12, table a≇d figures pages 24 – 28)
2.5 Weighting	State which analyses were weighted and specify which weight variables were used in analysis.	Methods (Page 9)
2.6 Variance estimation	Describe the variance estimation method used in the analysis and specify which design variables (e.g., PSU/stratum, replicate weights) were used.	Methods (page 9)

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2.7 Subpopulation analysis	Describe the procedures used for conducting subpopulation analyses (e.g., Stata's "subpop" command, SAS's "domain" command).	lgh	023-075 en-	Methods (page 9)
2.8 Suppression rules	State whether or not a suppression rule was followed (e.g., minimum sample size or relative standard error).	ling for	76 or	N/A
2.9 Software and code	Report which statistical software was used, comprehensively describe data management and analysis in the manuscript, and provide all statistical software code.	usu	12 Marc	Methods (page 7)
2.10 Singleton problem (as needed)	Taylor Series Linearization requires at least two PSUs per stratum for variance estimation. Sometimes an analysis is being performed and there is only a single PSU in a stratum. There are several possible fixes to this problem, which should be detailed if the single- ton problem is encountered.	Erasmushogesc es related to text and	h 2024. Downlo	N/A
2.11 Public/restricted	If applicable, state whether the public use or restricted version of		۱å	This manuscript only used ublicly available data)
data (as needed) 2.12 Embedded experiments (as needed)	the dataset was analyzed.If applicable, provide information about split sample embedded experiments (e.g., mode of data collection or varying participant incentives) and detail whether experimental factors were accounted for in the analyses.	mining, Al tra	from http://b	N/A
		gi	mjopen.bmj.com/ on May 21, 2025 at Department GEZ-LTA	