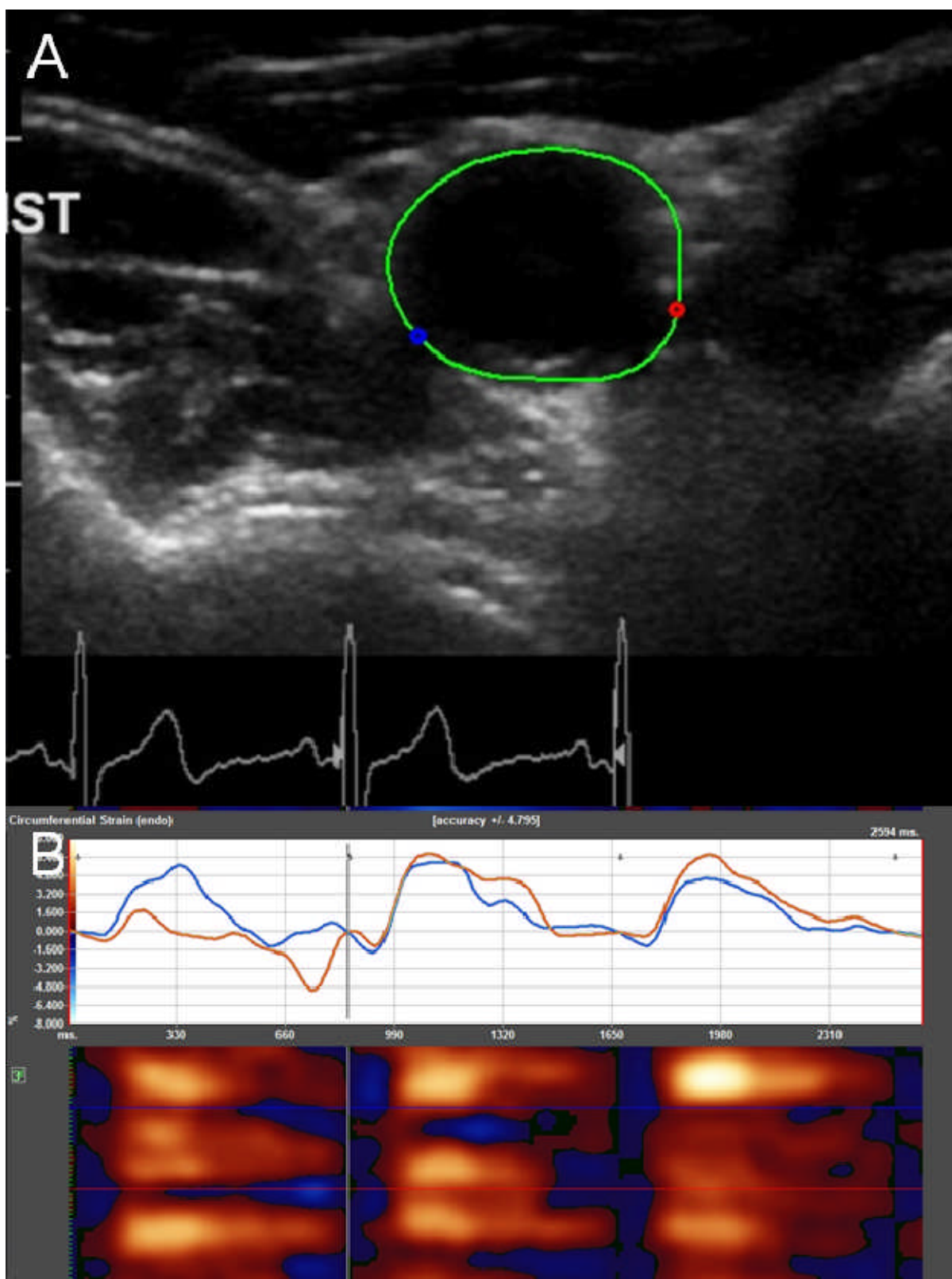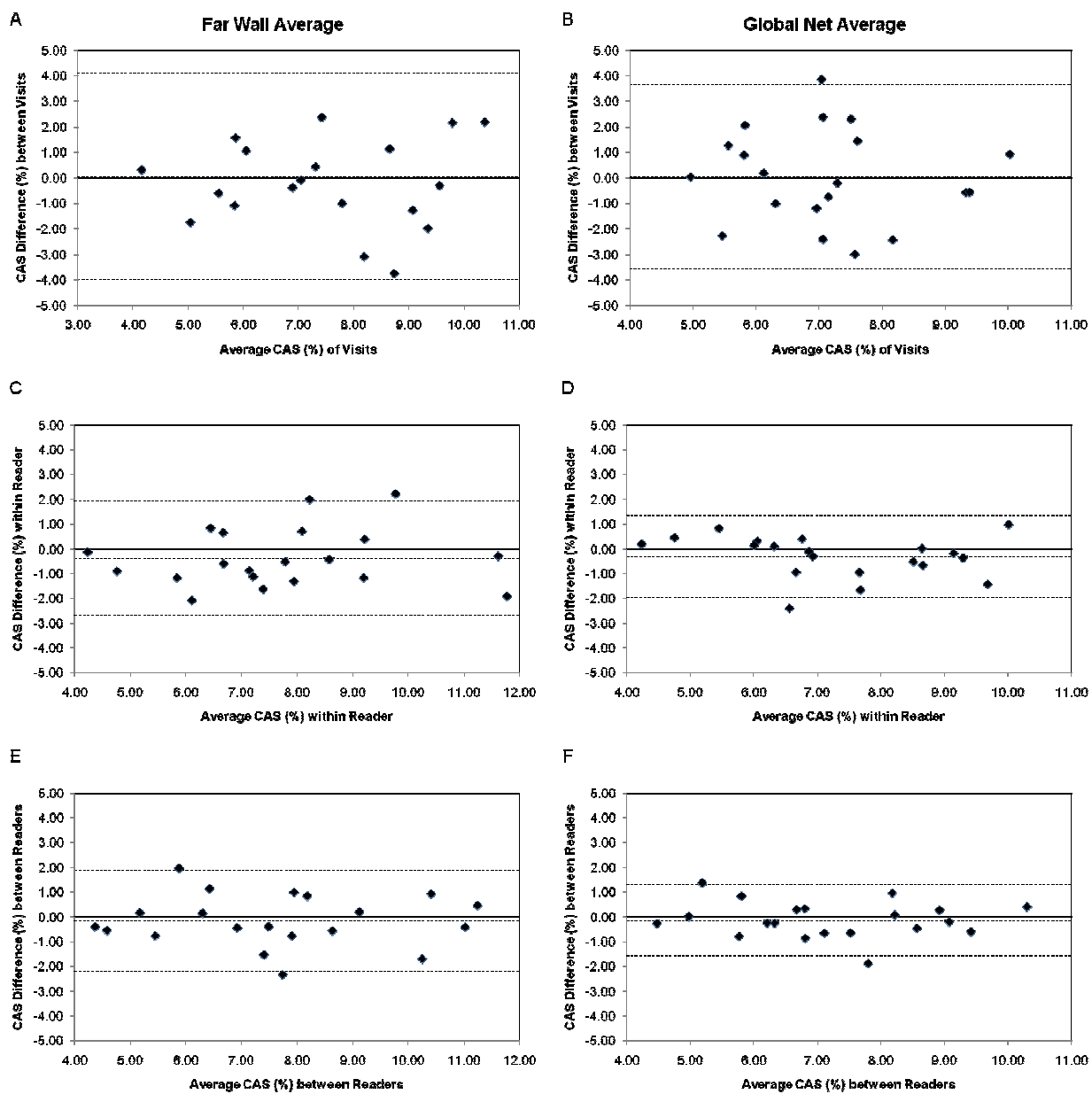**Supplemental Figures/Tables**

Supplemental Figure 1. Title: Medial-lateral wall segment drop-out in a left common carotid artery. Caption: Points corresponding to the medial (red) and lateral (blue) carotid wall segments are shown (A). The same colors are marked as lines on the color map at the bottom showing discordance in the wave form with the surrounding wall segments (B).

Supplemental Figure 2. Title: Bland-Altman plots of carotid arterial strain (CAS) reproducibility measurements. Caption: Low mean difference, and thus low systematic bias, can be seen for the far wall average (left 3 plots) and the global net average CAS measurements (right 3 plots). Inter-visit (A, B), intra-reader (C, D), and inter-reader (E, F) comparisons show reasonable limits of agreement (LOA) with no points (A), 1 point (B, D) and 2 points (C, E, F) lying outside the LOA.
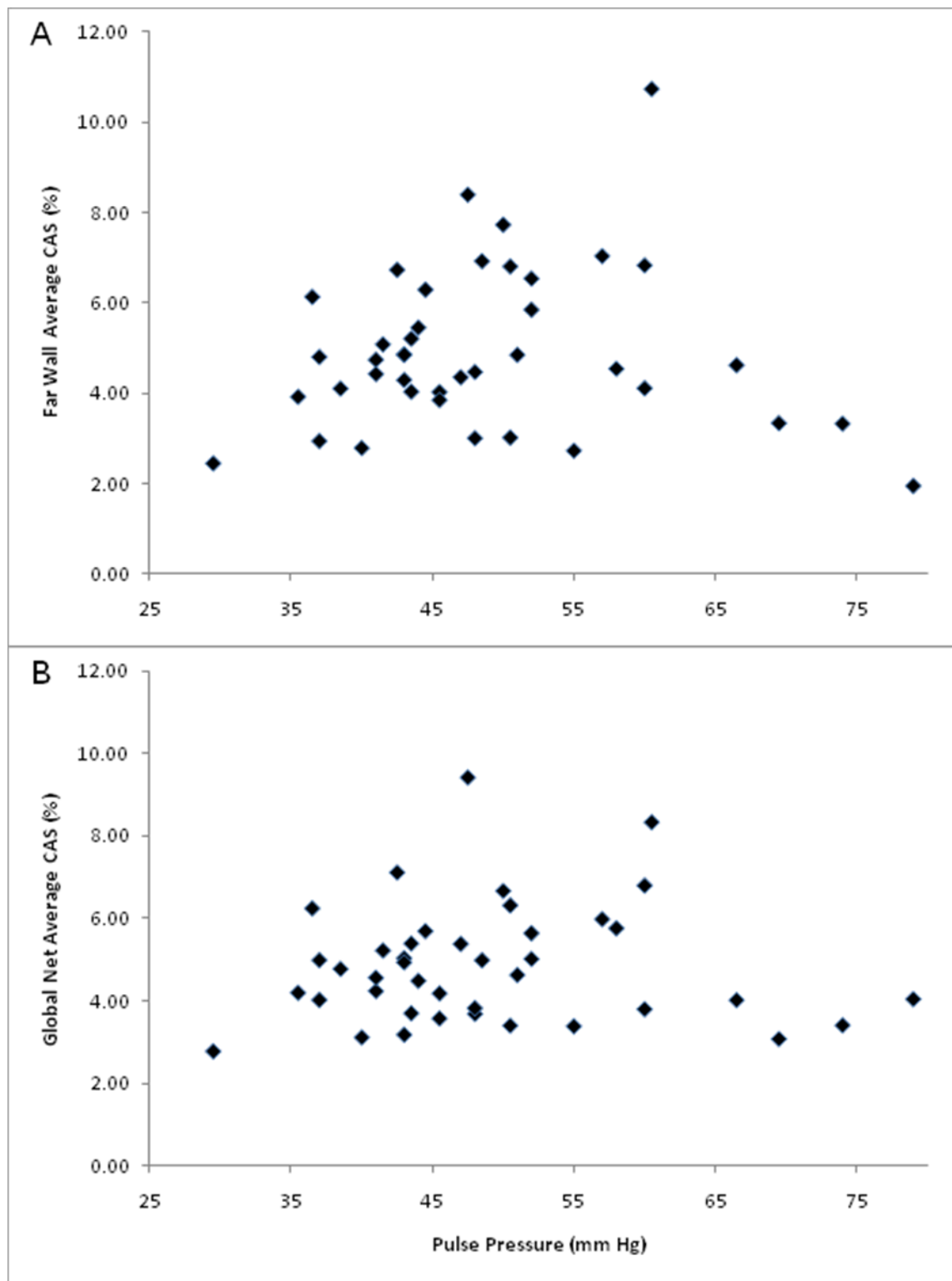

Supplemental Figure 3. Title: Scatter plots of carotid arterial strain (CAS) vs. pulse pressure. Caption: Scatter plots for the far wall (A) and global net average (B) CAS vs. pulse pressure are shown. No significant correlation was found between either CAS measure and pulse pressure.

Supplemental Figure 1.

Supplemental Figure 2.

Supplemental Figure 3.

Supplemental Table 1. Inter-visit differences in segmental carotid arterial wall strain values and their ratios to heart rate and pulse pressure for 10 healthy volunteers (20 carotid measurements per visit).***** **The ratio of carotid arterial strain (CAS) to heart rate, pulse pressure, or the product of both was calculated for each visit (i.e., CAS for visit 1 divided by heart rate and/or pulse pressure at visit 1). Then the difference between the two visit for the ratio was determined (i.e., CAS to heart rate ratio for visit 1 minus the CAS to heart rate ratio for visit 2).**

Wall Segment	V1-V2 Difference in CAS (%)	V1-V2 Difference (CAS to HR ratio of each visit) (%/bpm)	V1-V2 Difference (CAS to PP ratio of each visit) (%/mm Hg)	V1-V2 Difference (CAS to HR x PP ratio of each visit) (%/[bpm x mm Hg])
Near Wall Medial	0.07 (0.82)	−0.001 (0.012)	−0.004 (0.020)	−0.0001 (0.0003)
Near Wall Mid	−0.26 (0.76)	−0.008 (0.013)	−0.009 (0.020)	−0.0002 (0.0003)
Near Wall Lateral	0.32 (0.52)	0.003 (0.009)	0.006 (0.015)	0.0001 (0.003)
Near Wall Average	0.45 (0.55)	−0.002 (0.009)	−0.002 (0.014)	−0.0001 (0.0003)
Far Wall Medial	−1.24 (0.93)	−0.020 (0.013)	−0.032 (0.025)	−0.0005 (0.0004)
Far Wall Mid	0.08 (0.65)	−0.003 (0.010)	−0.002 (0.020)	−0.0001 (0.0003)
Far Wall Lateral	1.32 (0.71)	0.018 (0.012)	0.029 (0.021)	0.0004 (0.0004)
Far Wall Average	0.05 (0.46)	−0.002 (0.008)	−0.002 (0.014)	−0.0001

				(0.0011)
Global Net Average	0.05 (0.41)	−0.002 (0.007)	−0.002 (0.012)	−0.0001
				(0.0002)

BP = blood pressure

CAS = carotid arterial strain

Supplemental Table 2. Inter-visit repeatability of image acquisition, intra-reader repeatability, and inter-reader reproducibility by intraclass correlation coefficients (ICC) type (2,1) of carotid arterial strain measures by arterial wall segments on a separate set of volunteers (n=10, 20 carotid scans). Analyses were conducted with averaging of sides.[*]

Arterial Wall Segment	Inter-Visit			Intra-Reader			Inter-Reader		
	Strain to HR ratio	Strain to PP ratio	Strain to HR x PP ratio	Strain to HR ratio	Strain to PP ratio	Strain to HR x PP ratio	Strain to HR ratio	Strain to PP ratio	Strain to HR x PP ratio
Near Wall, Medial	-0.27	-0.20	-0.17	0.70	0.57	0.68	0.82	0.73	0.79
Near Wall, Mid	-0.10	0.04	-0.05	0.80	0.79	0.78	0.92	0.90	0.91
Near Wall, Lateral	0.43	0.63	0.56	0.79	0.85	0.73	0.86	0.90	0.81
Near Wall Average	-0.06	0.22	0.14	0.87	0.86	0.85	0.96	0.96	0.95
Far Wall, Medial	0.01	0.11	0.24	0.82	0.87	0.81	0.88	0.90	0.89
Far Wall, Mid	0.33	0.41	0.36	0.76	0.82	0.76	0.84	0.89	0.84

Far Wall, Lateral	0.37	0.50	0.40	0.90	0.91	0.85	0.64	0.72	0.57
Far Wall Average	0.63	0.64	0.59	0.94	0.96	0.92	0.98	0.99	0.97
Net Average	0.33	0.54	0.43	0.93	0.94	0.91	0.97	0.98	0.96

*All values are intraclass correlation coefficients type (2,1)

PP = pulse pressure

HR = heart rate

Supplemental Table 3. The averages (i.e., composite average) and differences (i.e., mean difference or bias) between paired sets of readings performed to evaluate intra-/inter-reader reproducibility and inter-visit repeatability of speckle-tracking based carotid arterial strain.

Arterial Wall Segment	Inter-Visit		Intra-Reader		Inter-Reader	
	Average	Difference	Average	Difference	Average	Difference
Near Wall, Medial	6.31 (1.96)	0.07 (3.66)	6.21 (2.52)	0.38 (2.07)	6.46 (2.32)	−0.12 (1.96)
Near Wall, Mid	7.15 (1.88)	−0.26 (3.40)	7.12 (2.51)	−0.19 (1.91)	7.03 (2.09)	−0.01 (1.05)
Near Wall, Lateral	6.57 (2.03)	0.32 (2.31)	7.24 (2.67)	−0.91 (2.21)	6.86 (2.40)	−0.15 (2.13)
Near Wall Average	6.68 (1.35)	0.05 (2.47)	6.86 (1.94)	−0.24 (1.28)	6.78 (1.69)	−0.10 (0.68)
Far Wall, Medial	7.38 (1.86)	−1.24 (4.16)	6.78 (2.87)	−0.52 (1.97)	6.92 (3.06)	−0.80 (1.73)
Far Wall, Mid	7.73 (2.05)	0.08 (2.92)	8.04 (2.53)	−0.61 (2.38)	7.95 (2.25)	−0.44 (1.64)
Far Wall, Lateral	7.53 (2.40)	1.32 (3.16)	8.38 (2.51)	0.01 (2.18)	8.00 (2.64)	0.78 (2.43)
Far Wall Average	7.54 (1.73)	0.05 (2.05)	7.73 (1.96)	−0.37 (1.19)	7.62 (2.06)	−0.15 (1.04)
Net Average	7.11 (1.36)	0.05 (1.84)	7.29 (1.63)	−0.31 (0.84)	7.20 (1.59)	−0.12 (0.73)

Supplemental Table 4. Mean difference (standard deviation) between left and right sides of the control-diabetic comparison group (n=41).

Arterial Wall Segment	Difference (Left – Right)
Far Wall, Medial	−0.69 (3.75)
Far Wall, Mid	−1.31 (2.24)
Far Wall, Lateral	−1.60 (3.47)
Far Wall Average	−1.20 (1.93)
Net Average	−0.74 (1.34)

Supplemental Table **5**. Univariate analysis of far wall average and global net average carotid arterial strain (CAS).

	Without Motion Artifact Exclusions				With Motion Artifact Exclusions			
	Log-transformed Far Wall Average CAS		Log-transformed Global Net Average CAS		Log-transformed Far Wall Average CAS		Log-transformed Global Net Average CAS	
Variable	R^2	p-value	R^2	p-value	R^2	p-value	R^2	p-value
Diabetic	0.1993	0.003	0.2210	0.002	0.3834	<0.0001	0.3846	<0.0001
Age	0.0137	0.47	0.0592	0.13	0.0627	0.12	0.0121	0.51
Gender	0.0101	0.53	0.0003	0.92	0.0058	0.64	0.0000	0.97
Non-white	0.0688	0.10	0.0777	0.08	0.0601	0.13	0.0498	0.17
Inverse SBP	0.0243	0.33	0.0136	0.47	0.0171	0.43	0.0318	0.28
Inverse DBP	0.0908	0.06	0.0553	0.14	0.0267	0.32	0.0532	0.16
Inverse PP	0.0086	0.56	0.0108	0.52	0.0013	0.83	0.0002	0.93
HR	0.2594	0.0007	0.2842	0.0003	0.3160	0.0002	0.2995	0.0003
Current Smoker	**0.1020**	**0.04**	**0.0778**	**0.08**	**0.1005**	**0.049**	**0.0725**	**0.10**
Past Smoker	**0.0002**	**0.94**	**0.0012**	**0.83**	**0.0064**	**0.63**	**0.0091**	**0.56**

SBP = systolic blood pressure

DBP = diastolic blood pressure

PP = pulse pressure

HR = heart rate