ECG Changes in Diabetes while Driving

INITIAL RESULTS – 12 PATIENTS

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Study Design

- Study parameters:
- Glycemic status
  - Euglycemic
  - Hyperglycemic
- Driving protocol
  - Urban (5 scenarios)
  - Highway (4 scenarios)
- Different driving scenarios in each setting
- Each subject is compared to his-/herself in the same setting & analyzed with the same mathematical parameters

Hypotheses

- We can detect acute minor changes in HR in correlation to stressful events during driving.
- A hyperglycemic state will effect the CV response to these events.
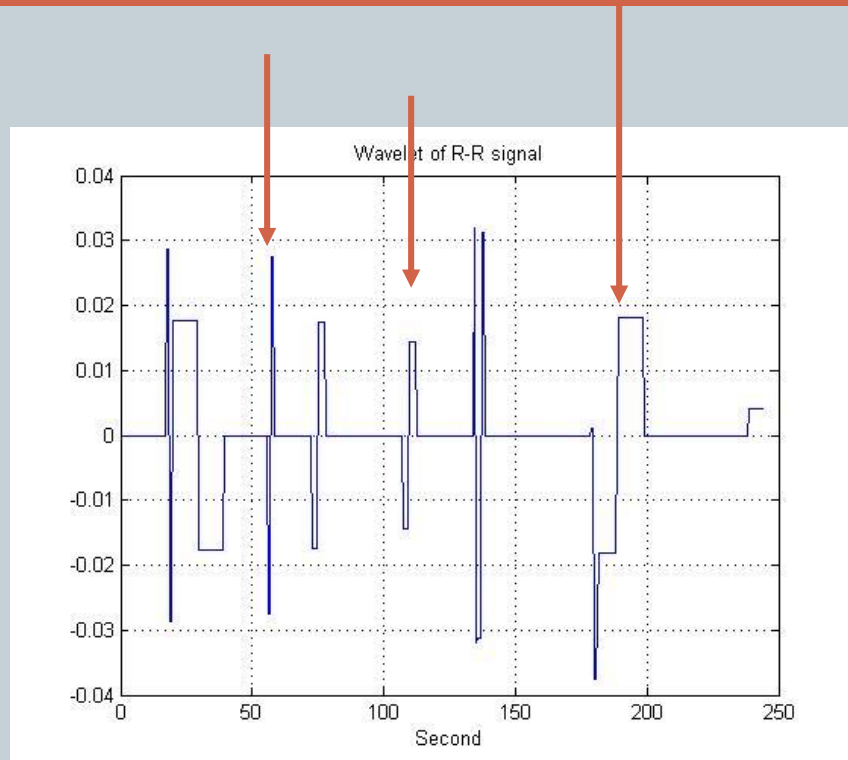
Results

- No change
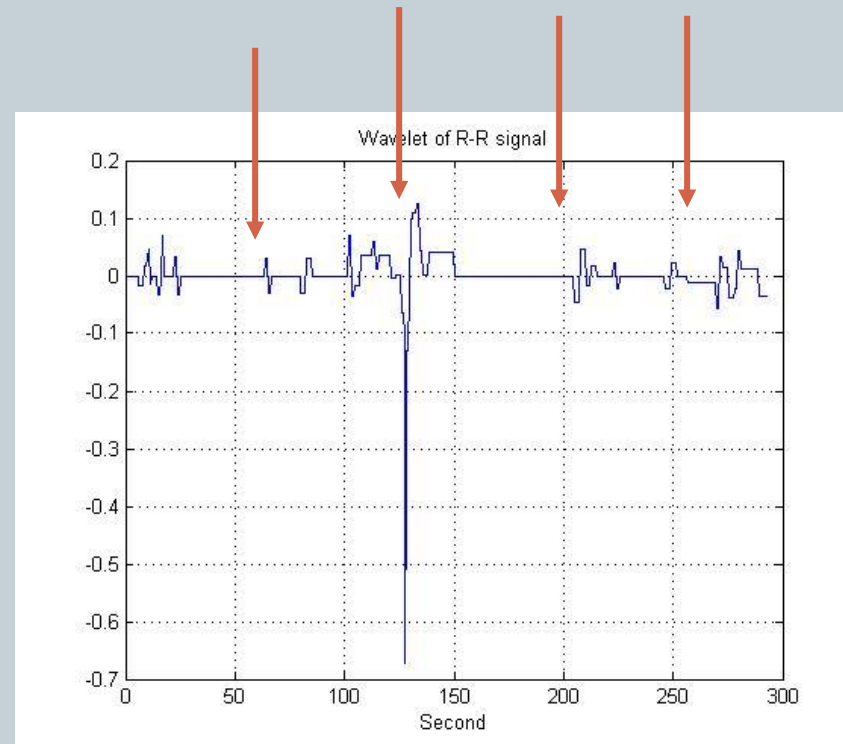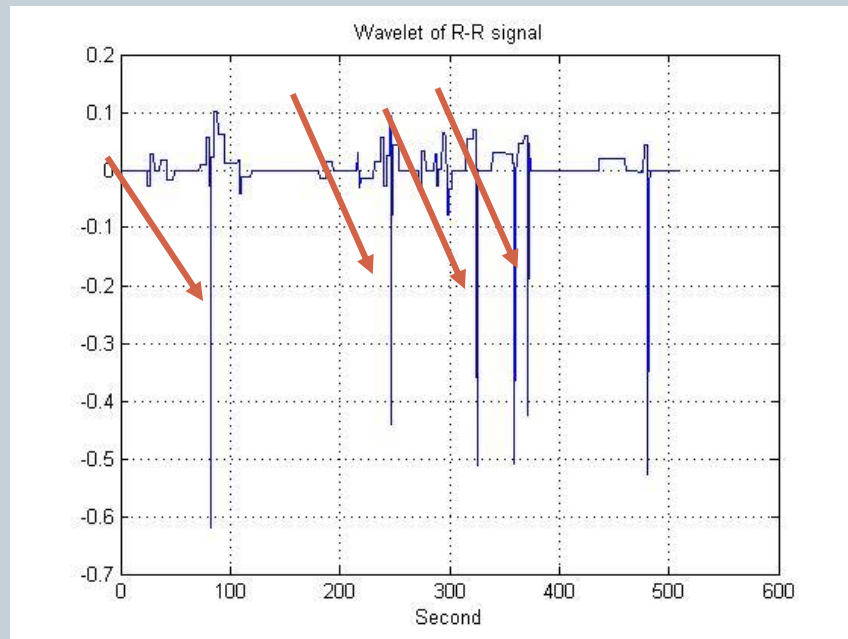- Hypersensitive
- Non-responsive
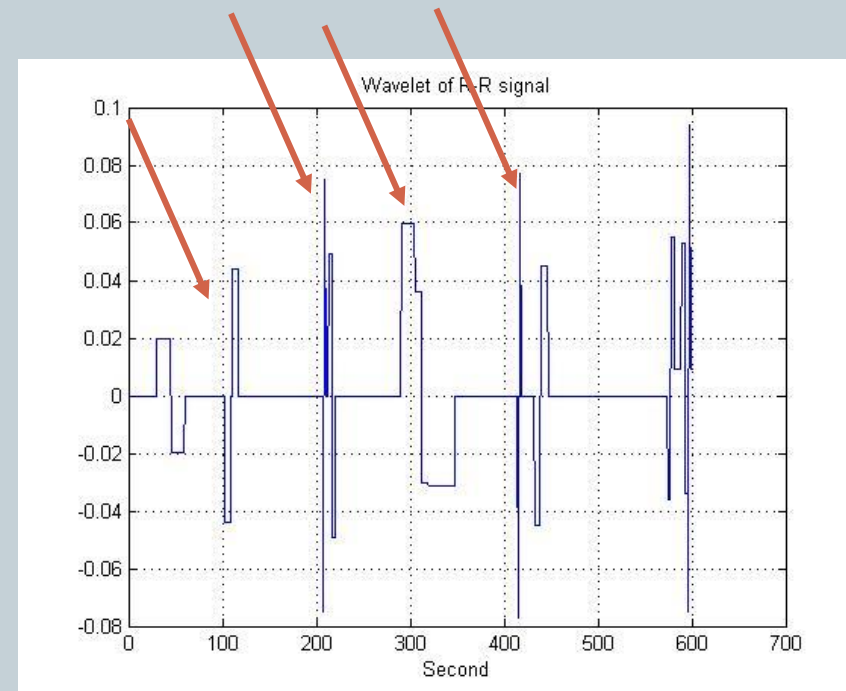
No change

BGU4 – HIGHWAY

Euglycemic

Wavelet of R-R signal

Hyperglycemic

Wavelet of R-R signal

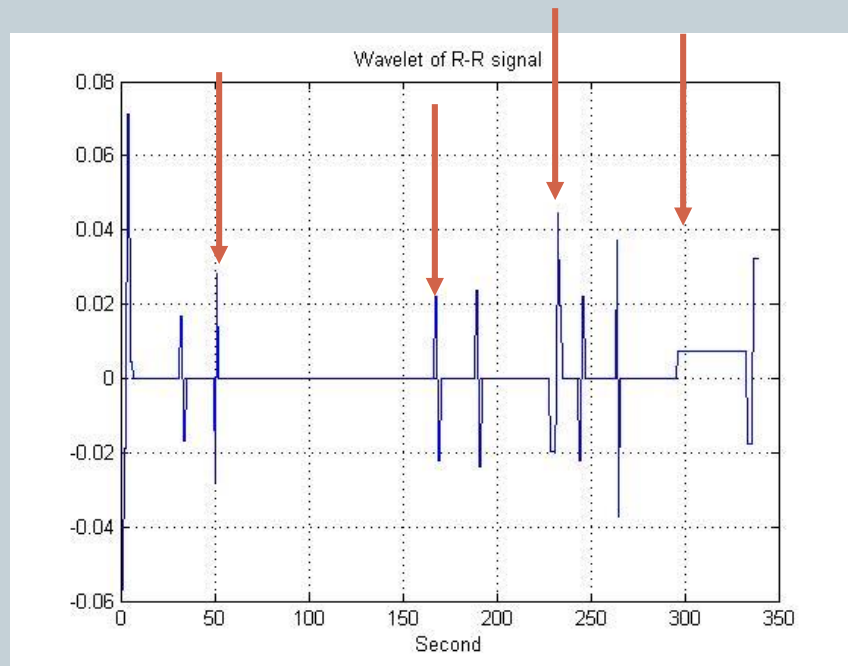# BGU5 - URBAN

Euglycemic

Hyperglycemic

BGU5 – HIGHWAY

Euglycemic
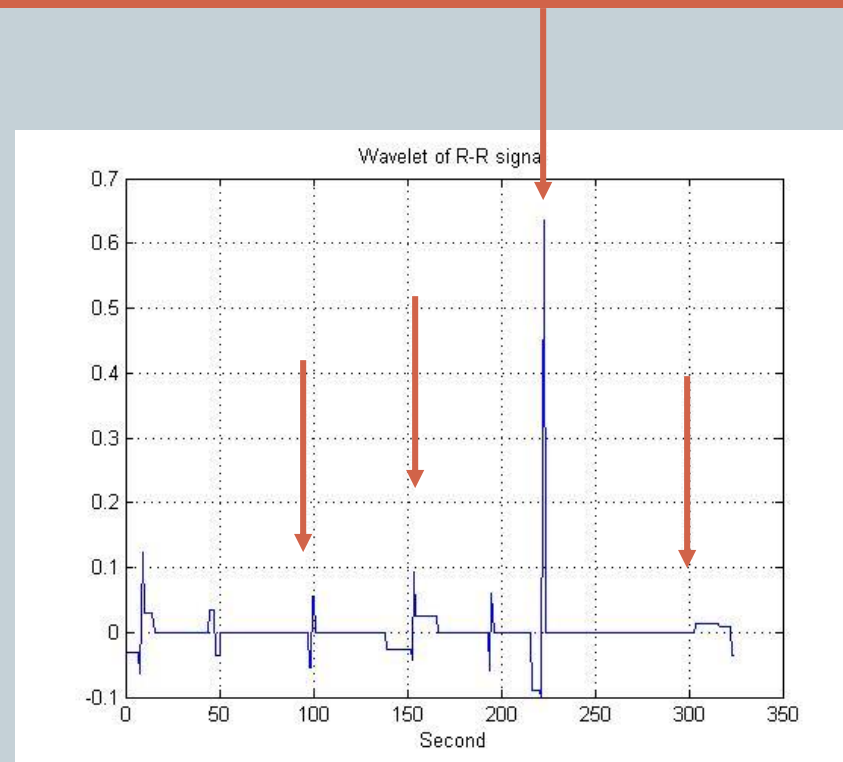
Hyperglycemic

BGU6 – HIGHWAY
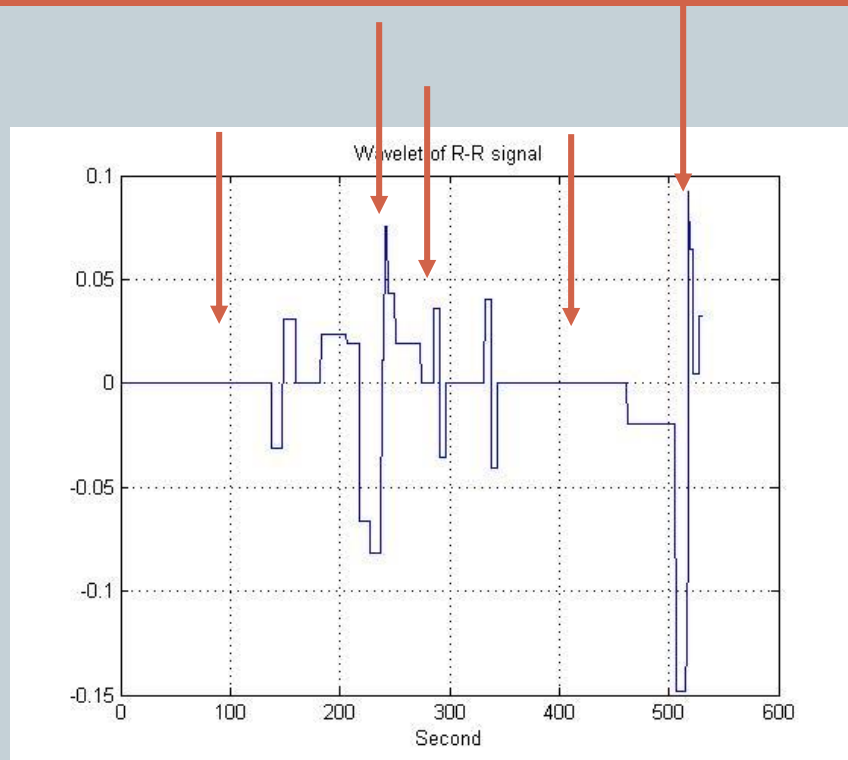
Euglycemic
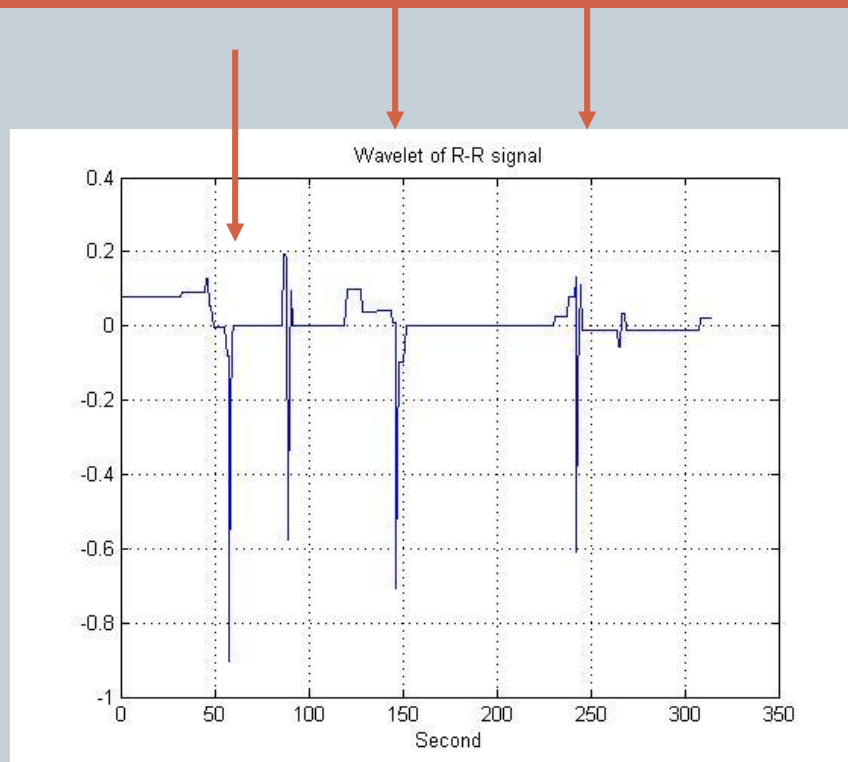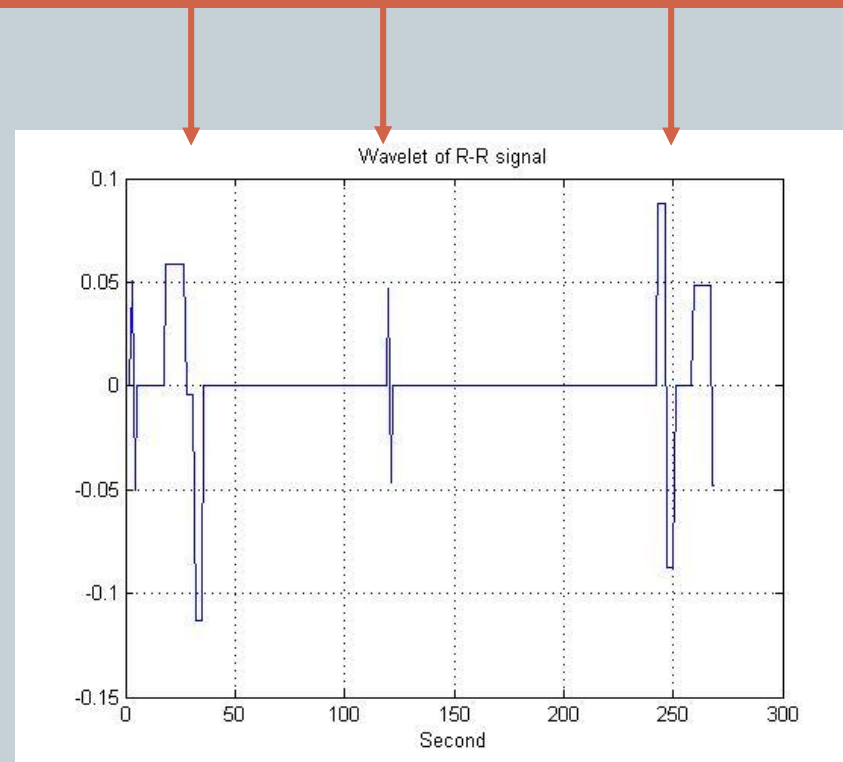
Hyperglycemic

Hypersensitive

BGU3 – URBAN

Euglycemic
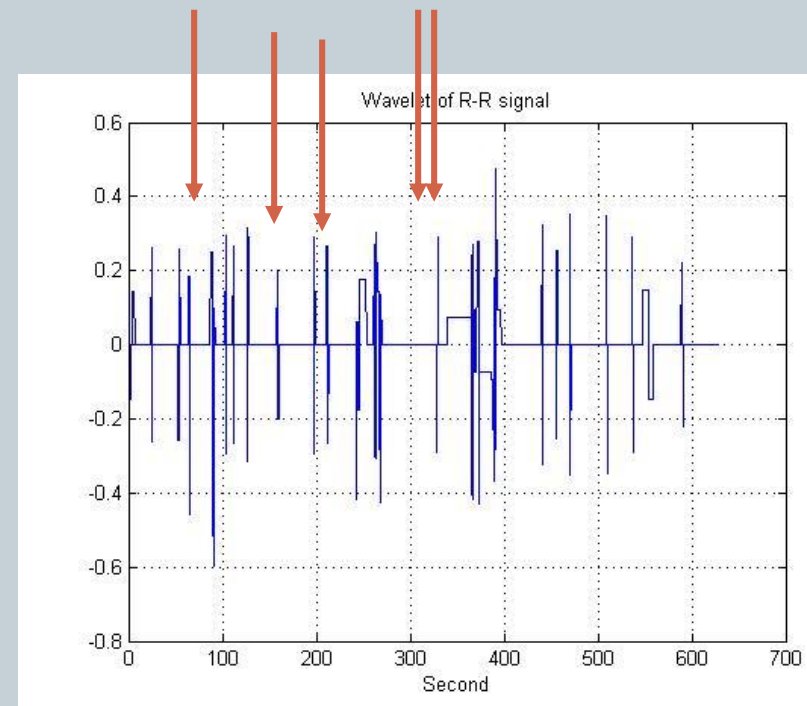
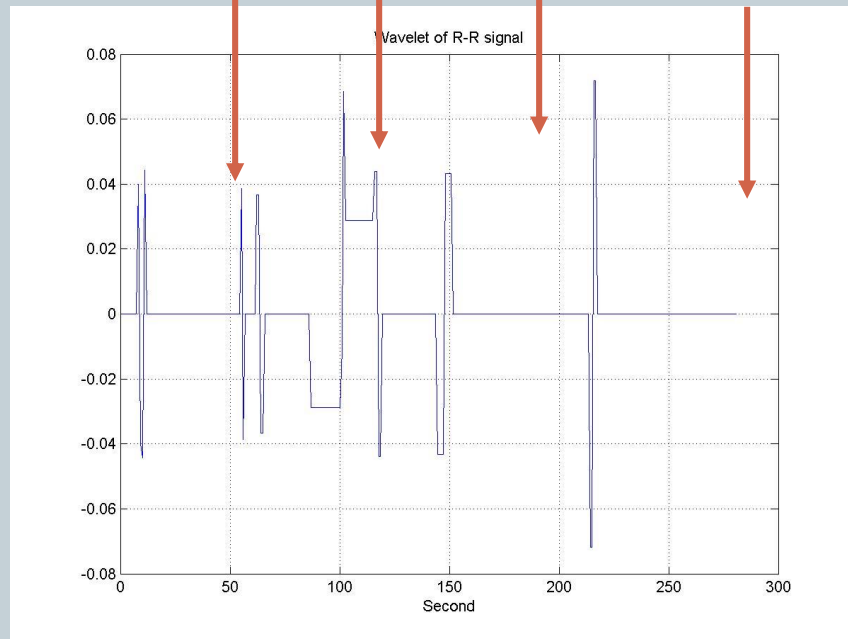## Hyperglycemic

BGU10 - URBAN

Euglycemic
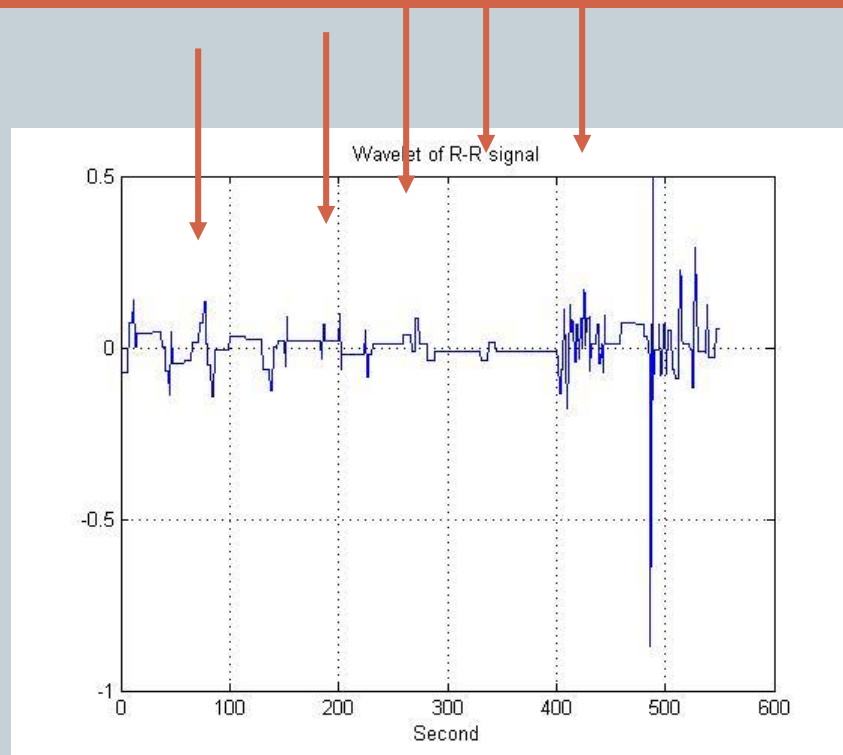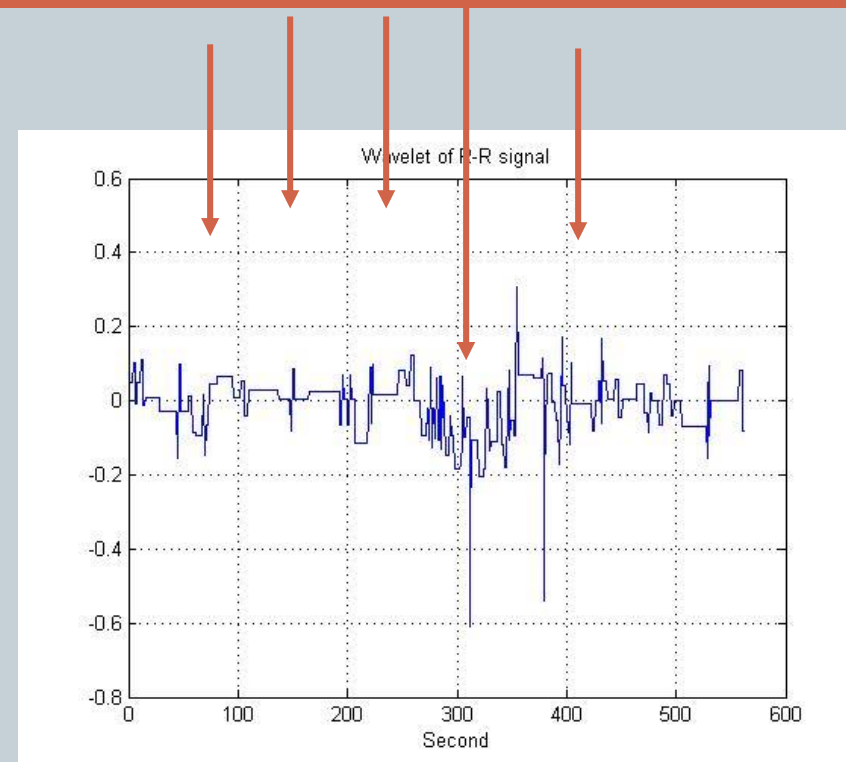
Hyperglycemic

BGU10 – HIGHWAY

Euglycemic
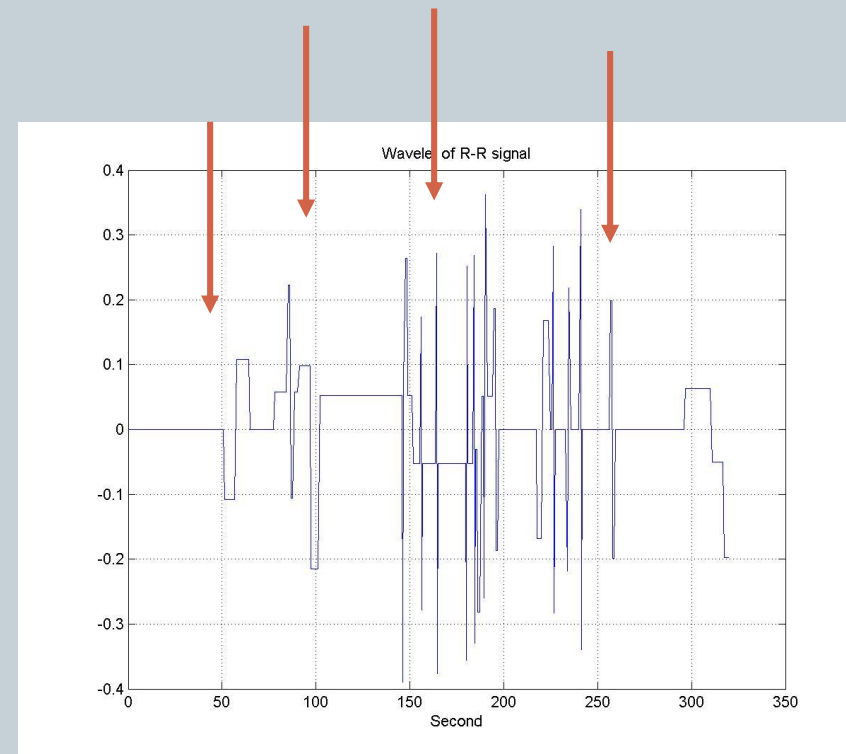
Hyperglycemic

BGU14 - URBAN

Euglycemic
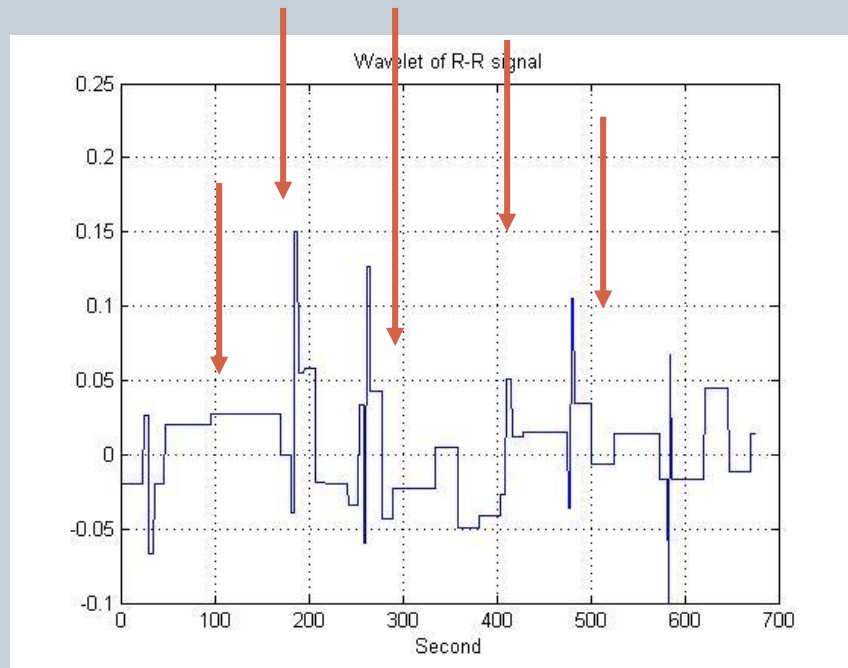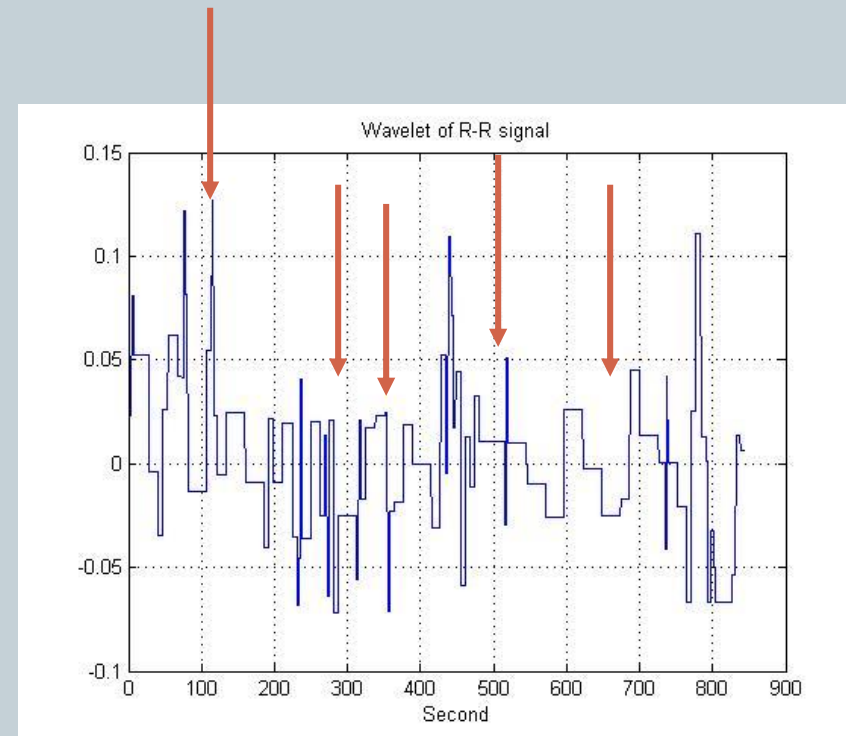
Hyperglycemic

BGU14 – HIGHWAY

Euglycemic
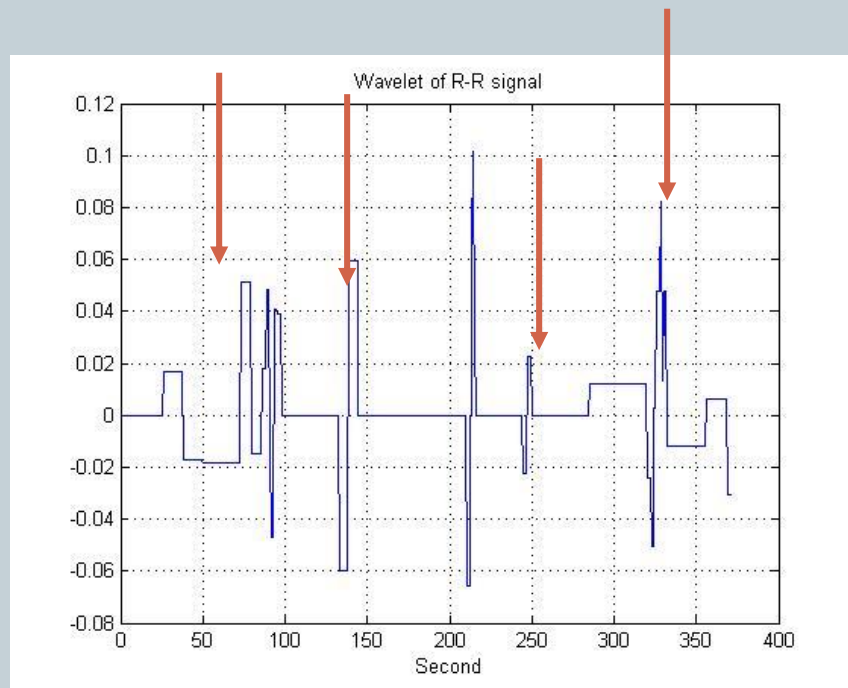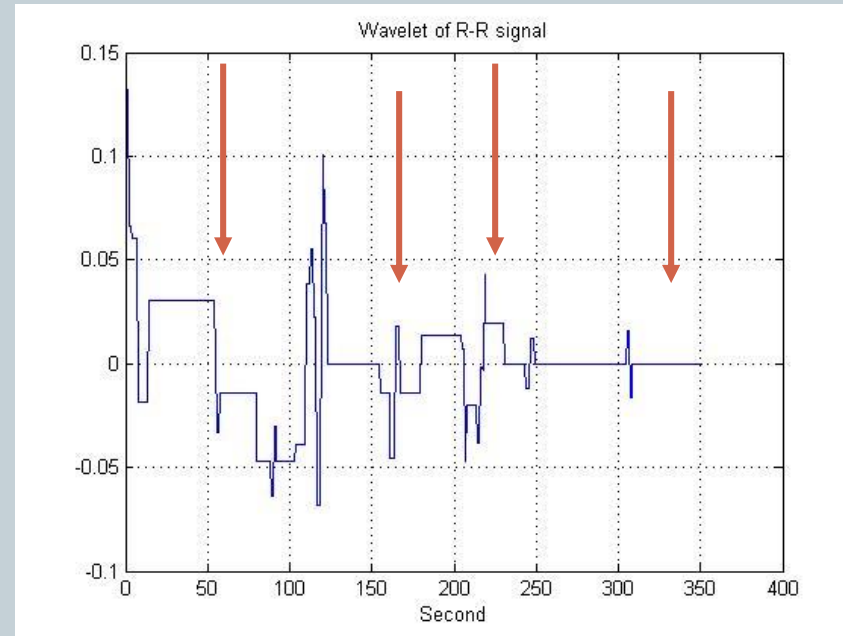
Hyperglycemic

Non-responsive

BGU11 - URBAN

Euglycemic

Hyperglycemic

Wavelet of R-R signal

No response

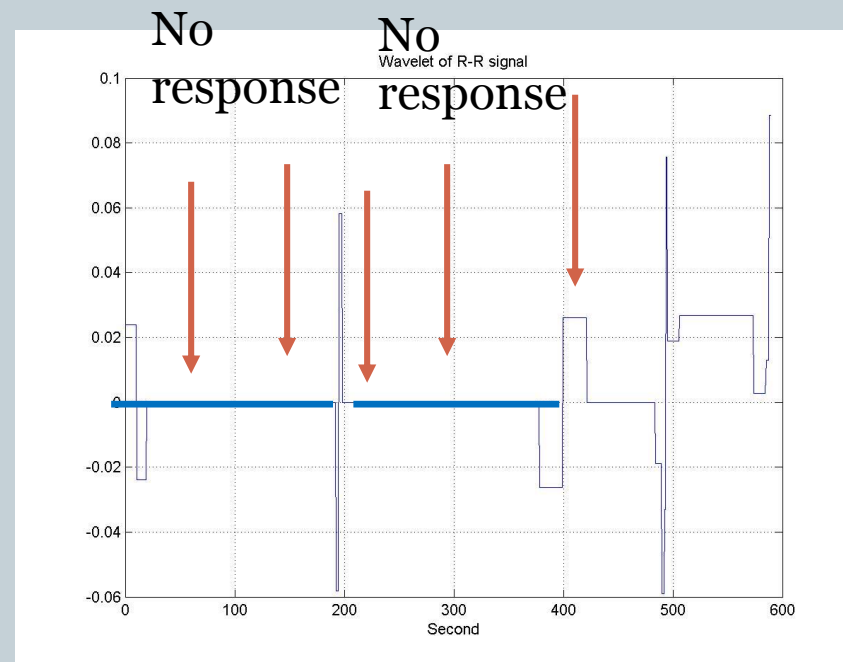Wavelet of R-R signal
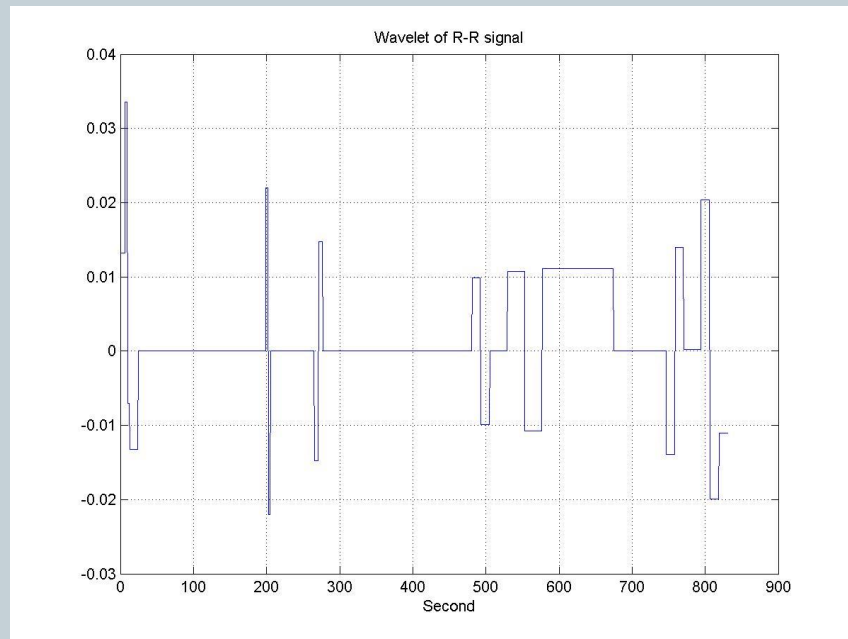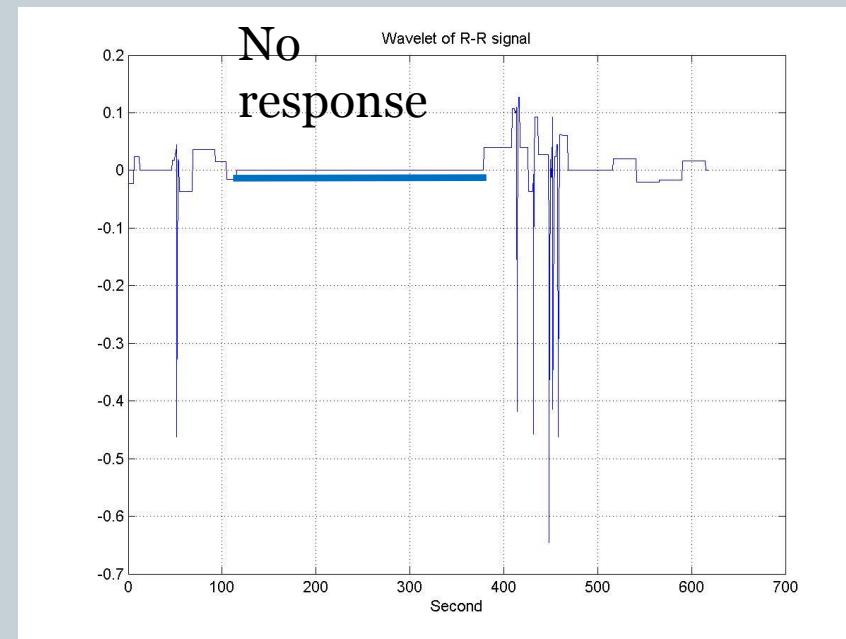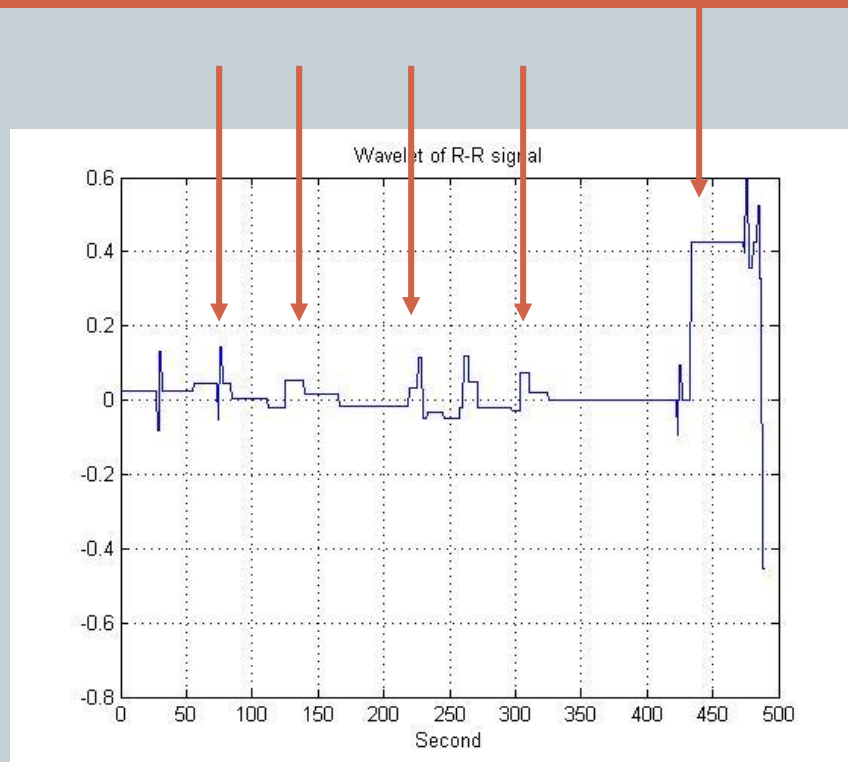
BGU12 - URBAN
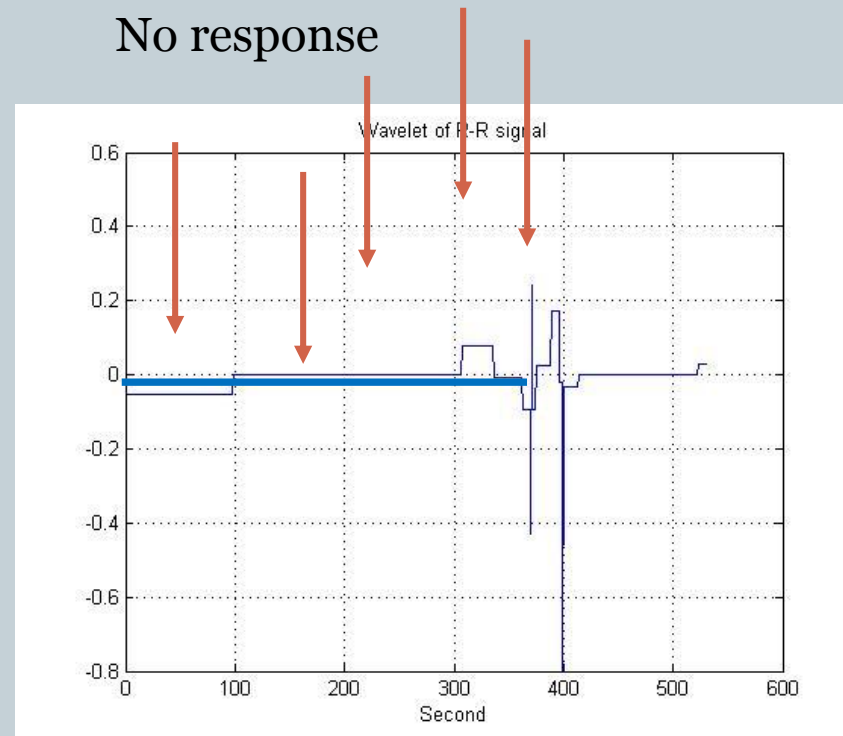

Euglycemic
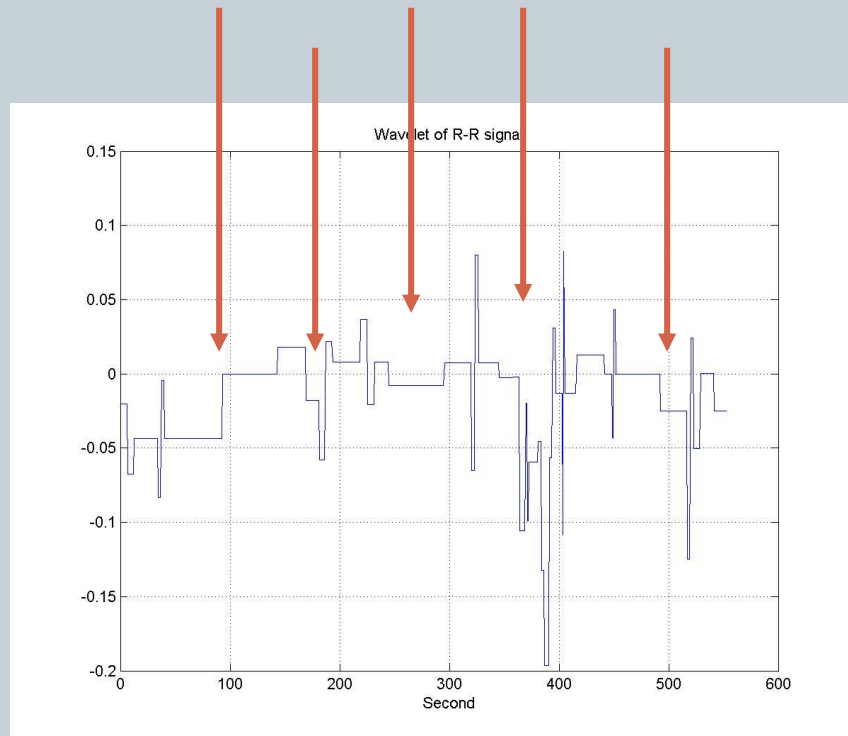
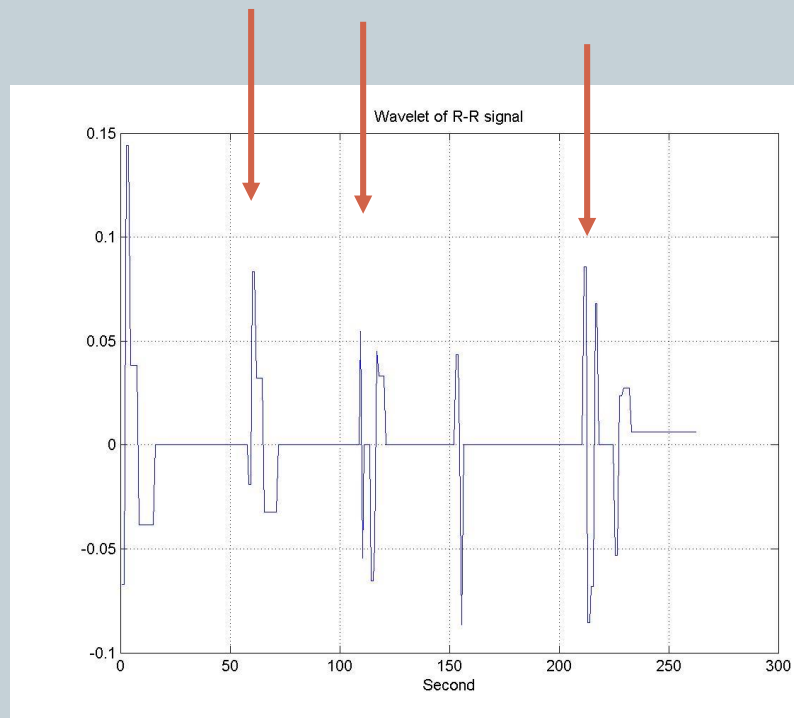## Hyperglycemic

BGU13 - URBAN
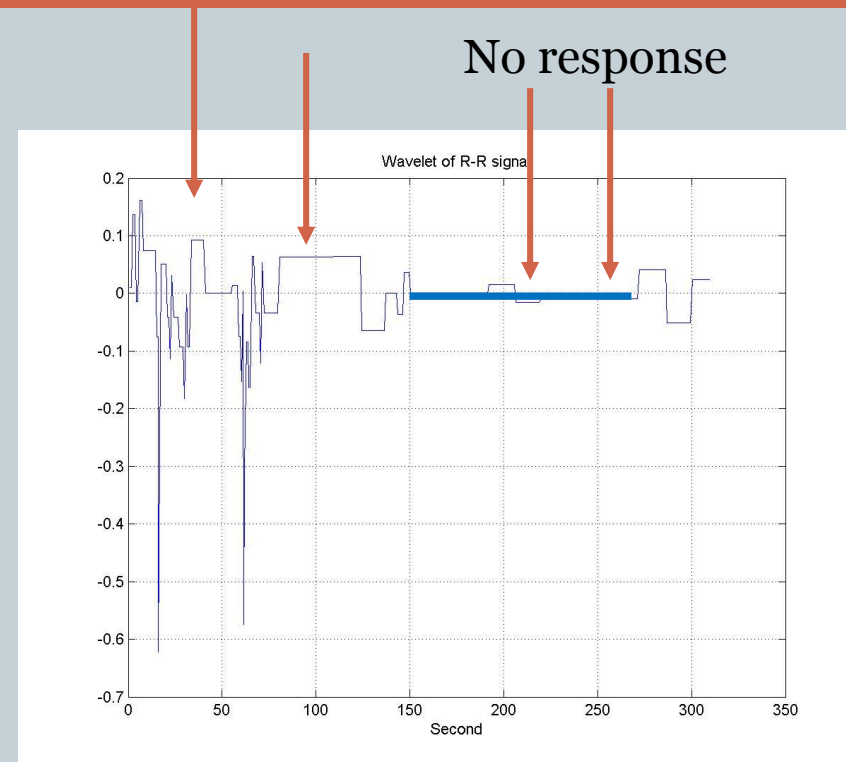
Euglycemic

Hyperglycemic
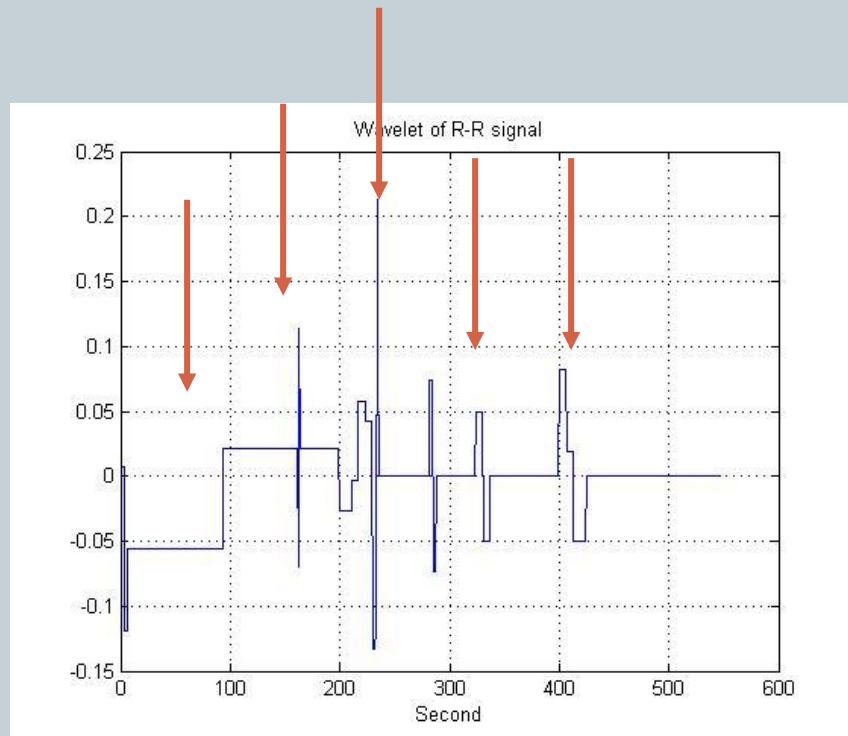
No response

BGU13 – HIGHWAY

Euglycemic

Hyperglycemic

BGU16 - URBAN

Euglycemic

Hyperglycemic

No response

BGU16 – HIGHWAY
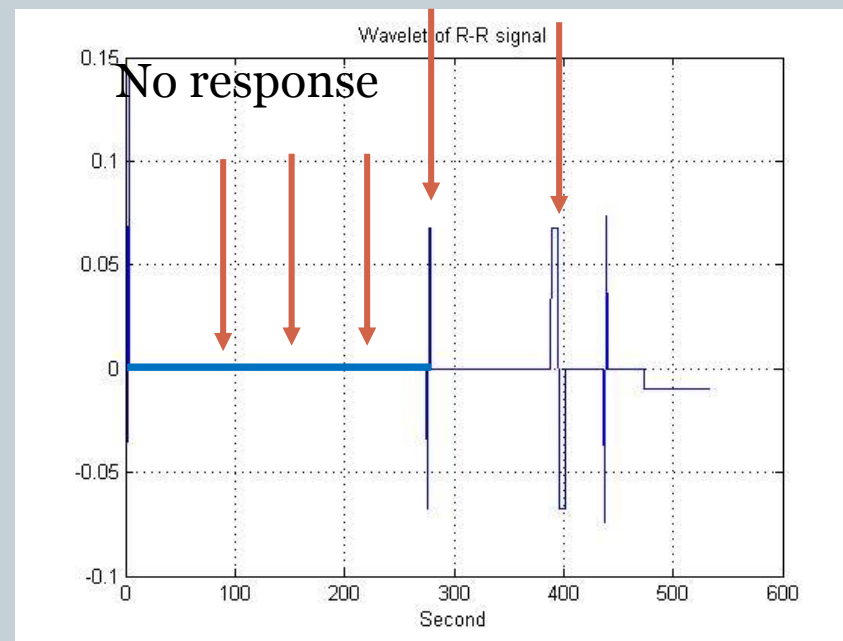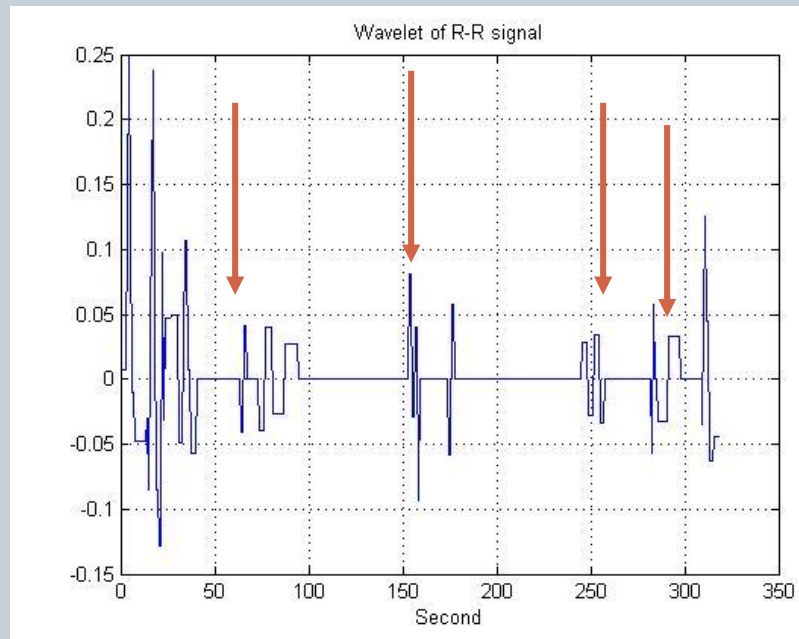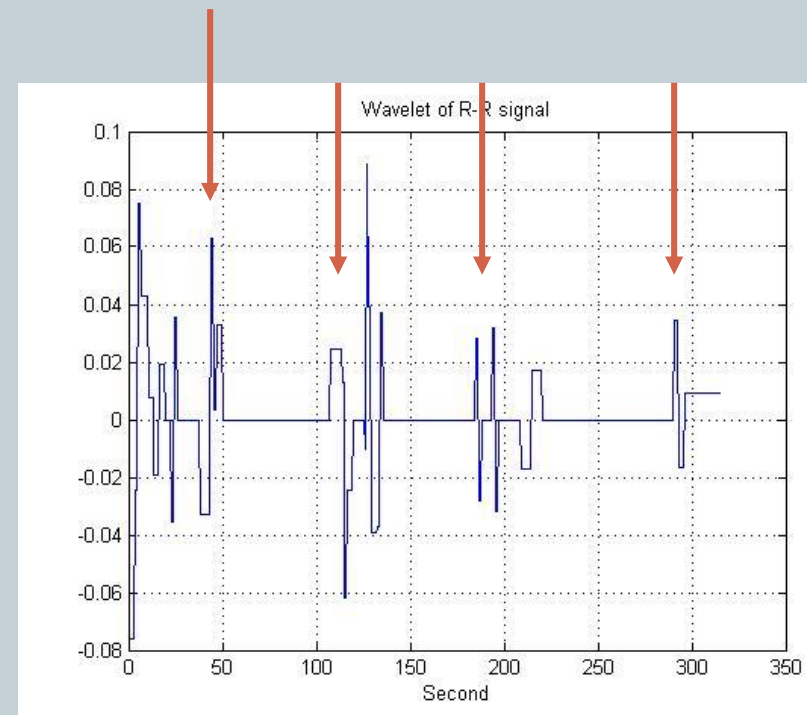
Euglycemic

Hyperglycemic

Conclusions

- The individual CV response to the road may be influenced by the levels of glucose in one's blood.

- Some subjects had a similar response in both euglycemic and hyperglycemic states (no change).

- 2 distinct types of change in HR response were observed:
  - Non–responsiveness
  - Hypersensitivity

- These changes were significant.

- These changes varied with setting (e.g. BGU14, BGU16).

Thank you!