Shapes of distributions

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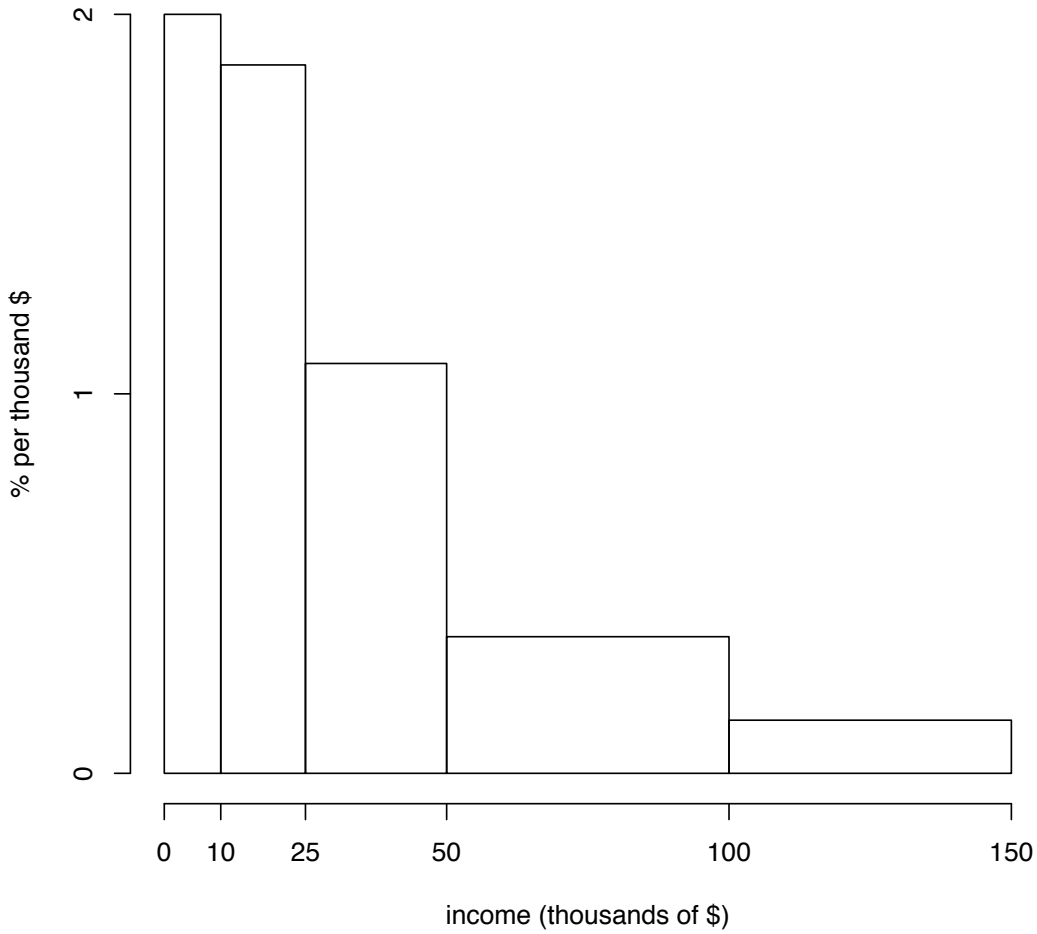
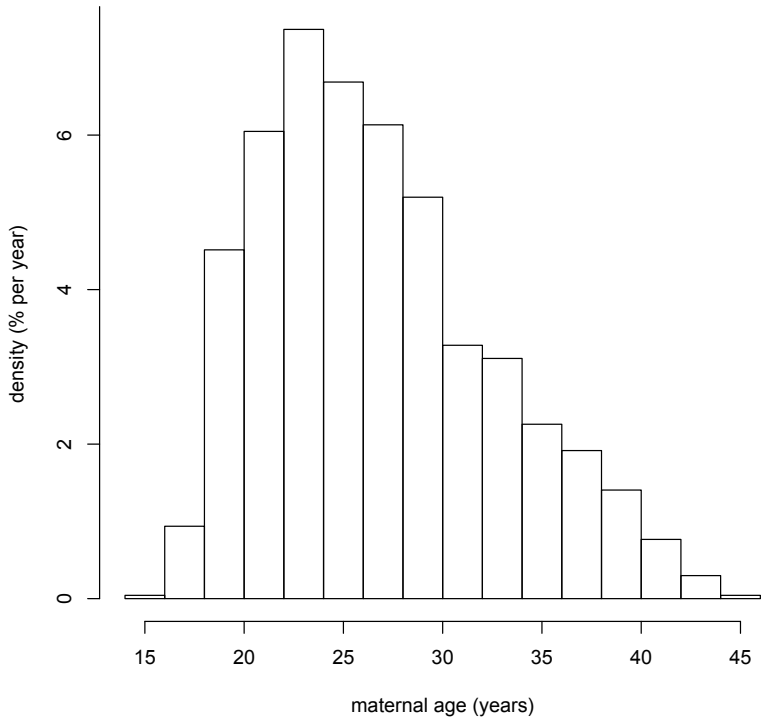
Annual income of U.S. adults in 2010



A bell shaped distribution

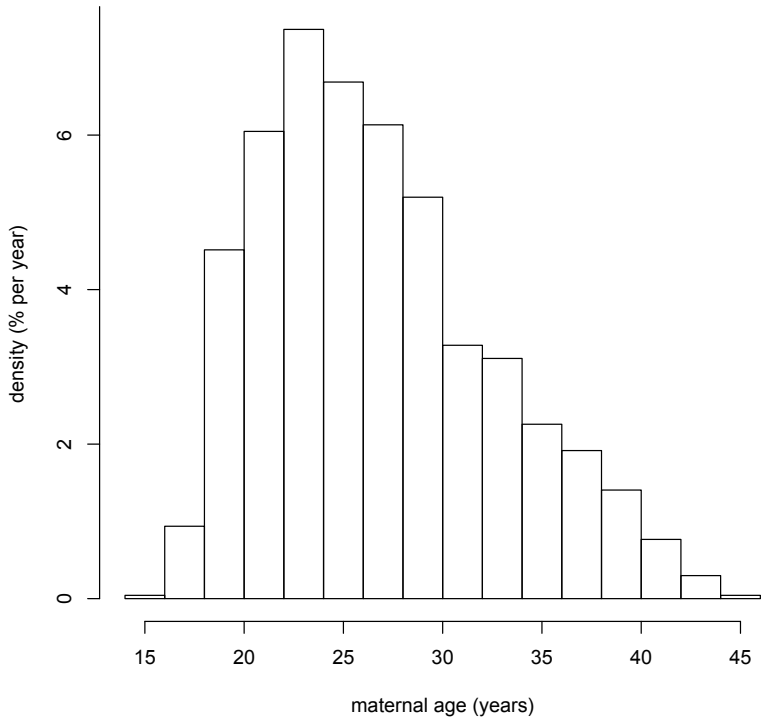
Ages of mothers who gave birth at a local hospital



A bell shaped distribution

Ages of mothers who gave birth at a local hospital

Birthweights of their babies



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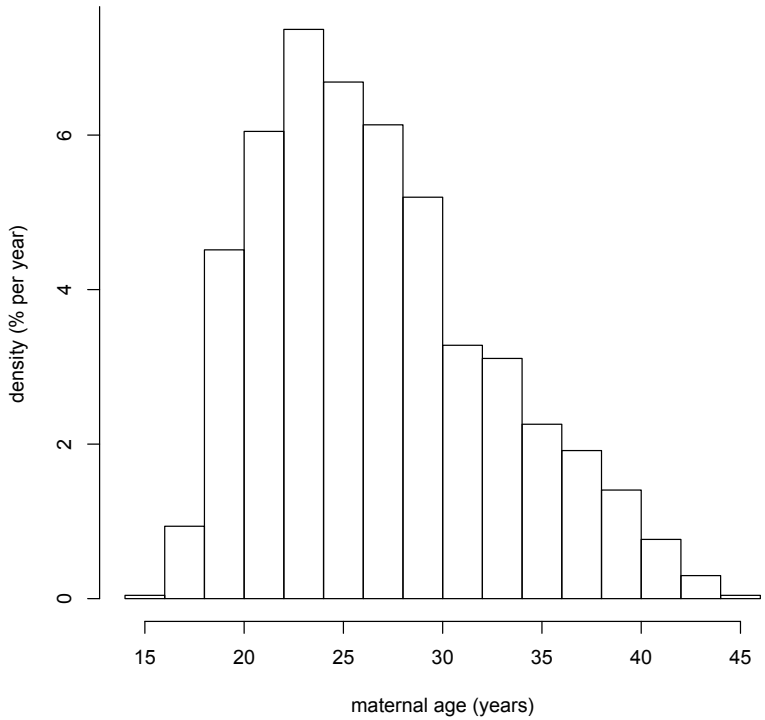

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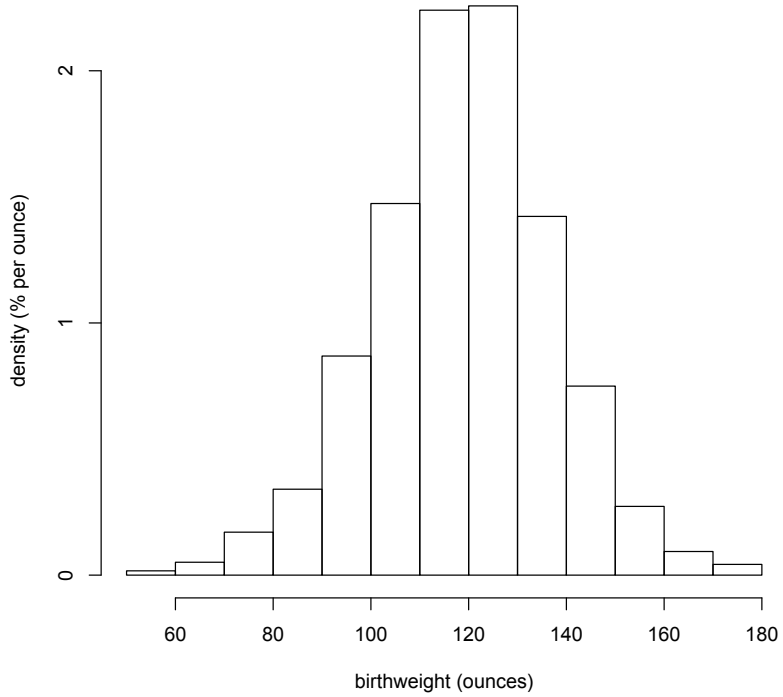

The standard normal curve

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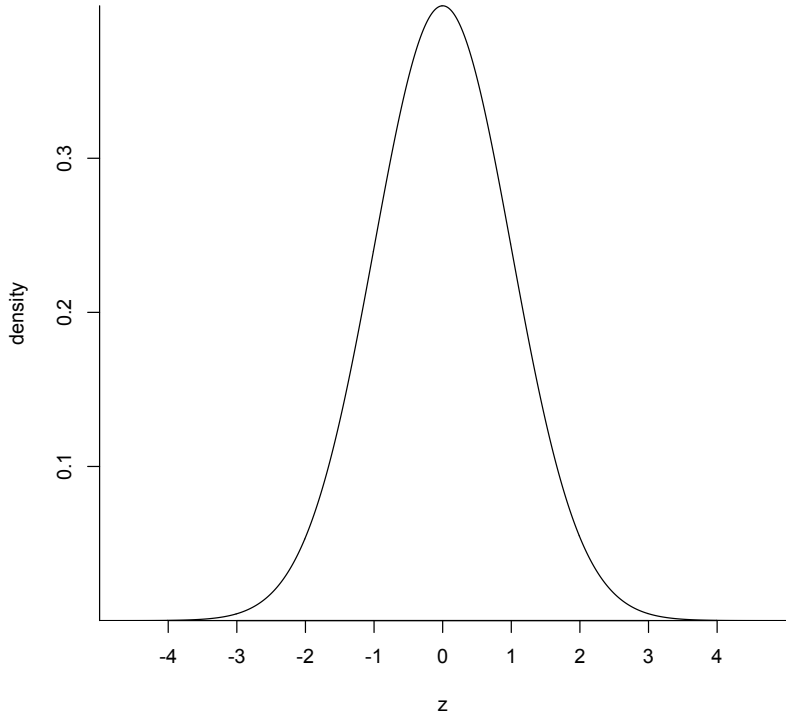

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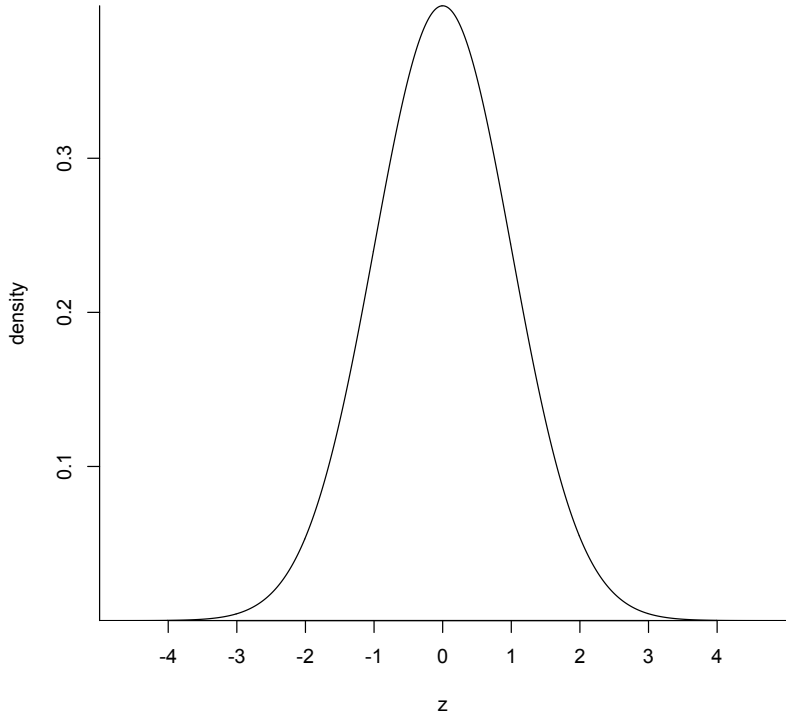

density at z

$$= \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}z^2}, \quad -\infty < z < \infty$$

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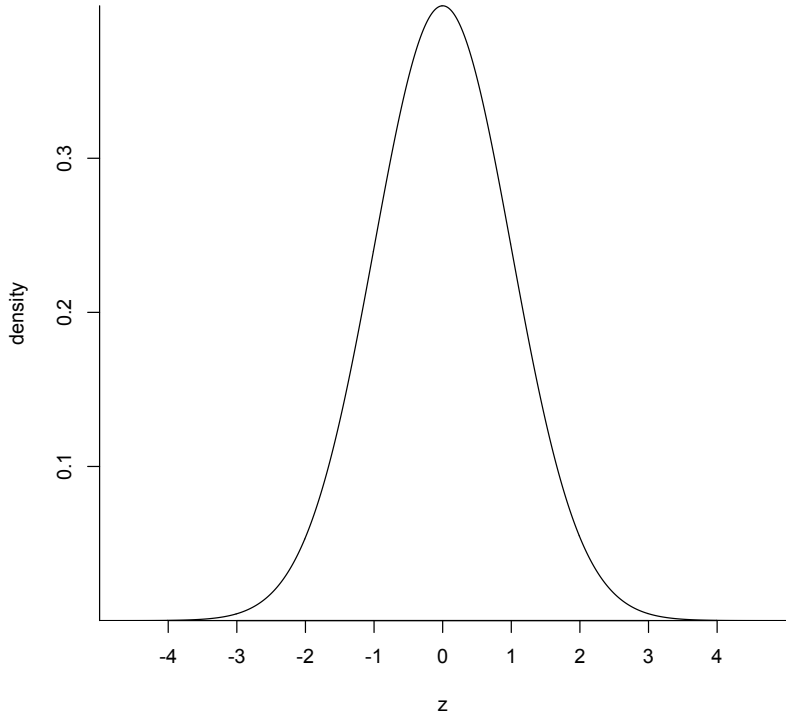

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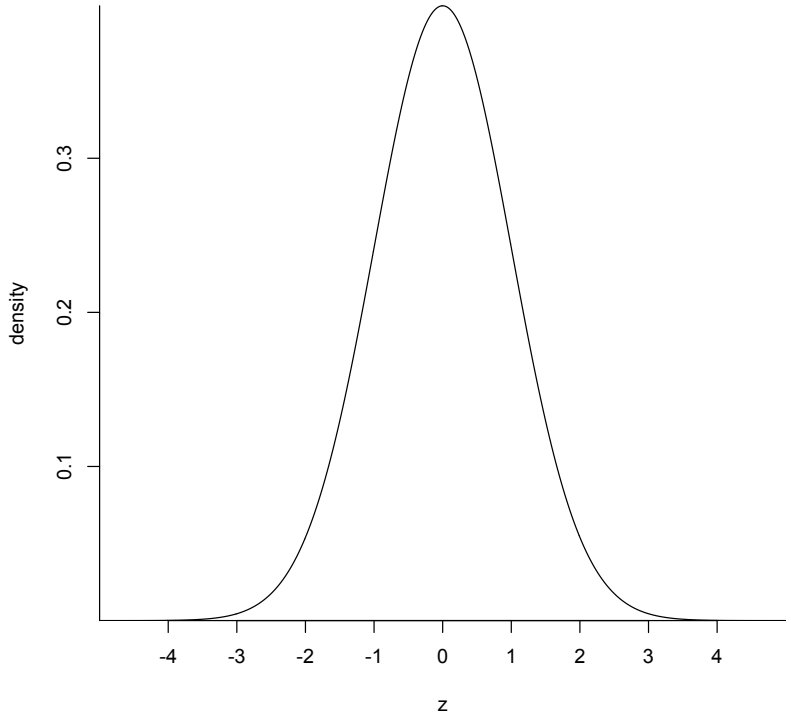
The standard normal curve



density at z

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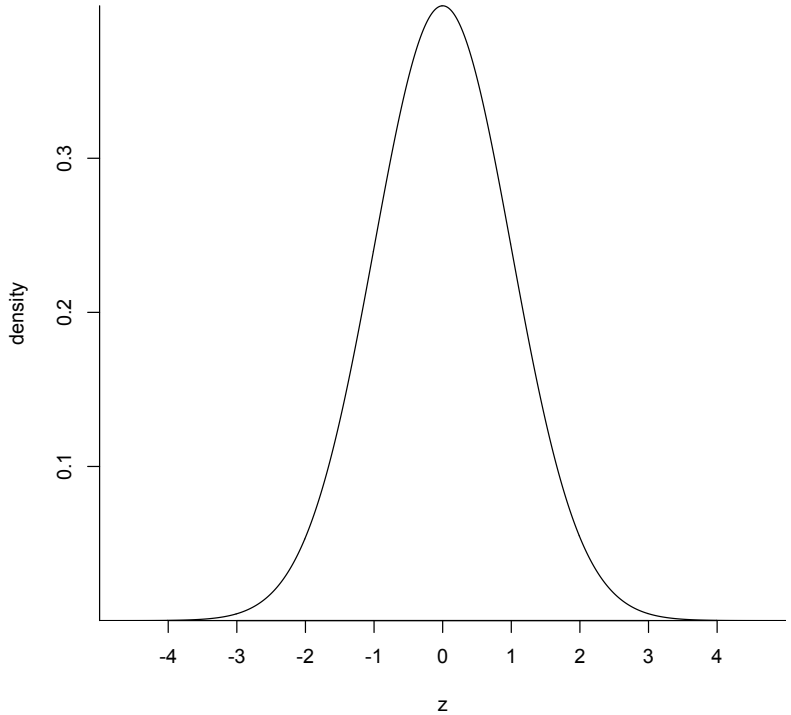
- total area $= 1$
- balance point: $z = 0$

The standard normal curve



density at z

$$= \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}z^2}, \quad -\infty < z < \infty$$

- total area $= 1$
- balance point: $z = 0$
- points of inflection: $z = -1$, $z = 1$

Useful to remember

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Central areas:

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- between $z = -1$ and $z = 1$: about 68%

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Tail areas:

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Central areas:

- between $z = -1$ and $z = 1$: about 68%
- between $z = -2$ and $z = 2$: about 95%

Tail areas:

- to the left of -1: about 16%
- to the right of 1: about 16%

Useful to remember

Central areas:

- between $z = -1$ and $z = 1$: about 68%
- between $z = -2$ and $z = 2$: about 95%

Tail areas:

- to the left of -1: about 16%
- to the right of 1: about 16%
- to the left of -2: about 2.5%
- to the right of 2: about 2.5%

Useful to remember

Central areas:

- between $z = -1$ and $z = 1$: about 68%
- between $z = -2$ and $z = 2$: about 95%

Tail areas:

- to the left of -1: about 16%
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Percentiles:

Useful to remember

Central areas:

- between $z = -1$ and $z = 1$: about 68%
- between $z = -2$ and $z = 2$: about 95%

Tail areas:

- to the left of -1: about 16%
- to the right of 1: about 16%
- to the left of -2: about 2.5%
- to the right of 2: about 2.5%

Percentiles:

- 95th percentile: $z = 1.65$, roughly
- 5th percentile: $z = -1.65$, roughly