

Supplementary figures

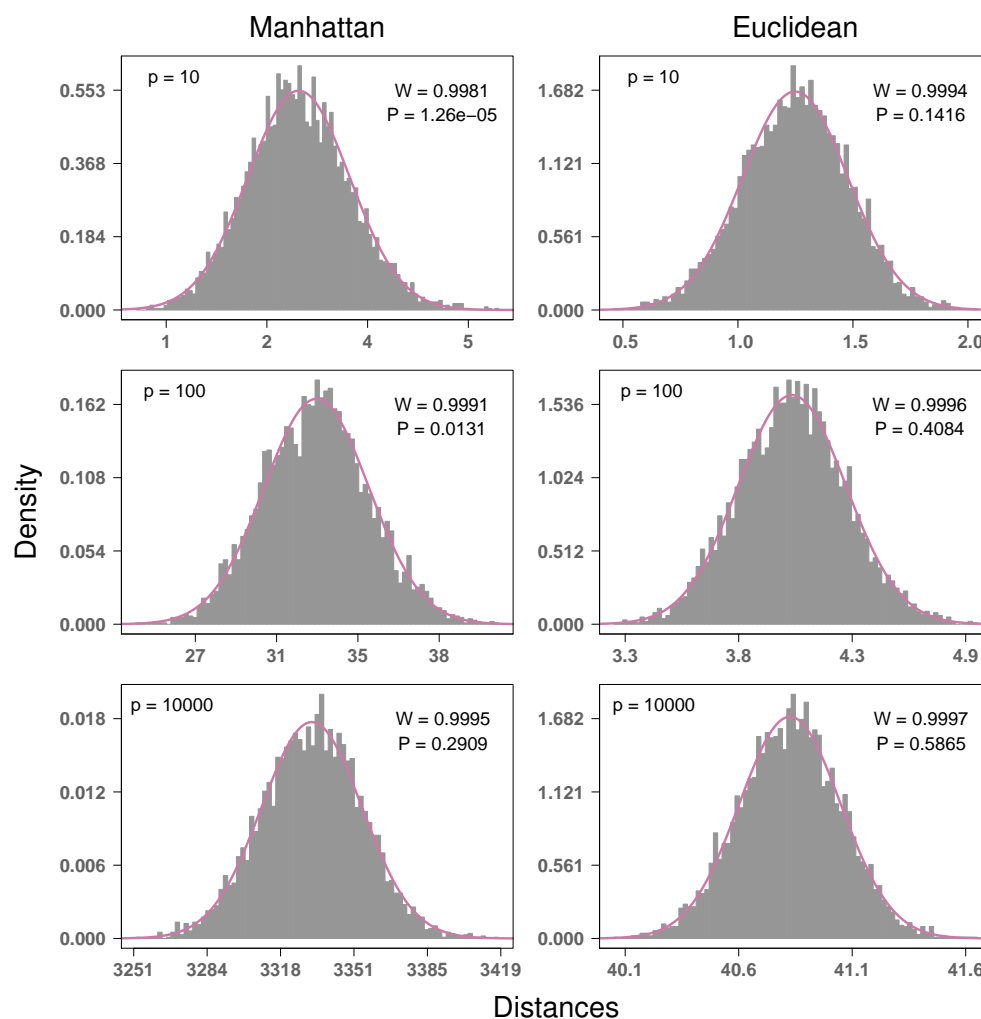
[illegible]

Figure 2 displays four histograms showing the distribution of distances between pairs of nodes for different values of p (10, 100, 1000, and 10000). The x-axis represents 'Distances' and the y-axis represents 'Density'. Each plot includes a pink curve representing a normal distribution fit. The distributions become more centered and narrower as p increases, with the peak density increasing significantly.

p	W	P
10	0.9551	2.2×10^{-16}
100	0.9956	4.3×10^{-11}
1000	0.9994	0.0761
10000	0.9997	0.6533

October 15, 2019

Figure 2 displays four histograms showing the distribution of distances between the first and second nearest neighbors for different sample sizes p . The plots are arranged in a 2x2 grid. The x-axis is labeled "Distances" and the y-axis is labeled "Density".

- Top-left plot ($p = 10$):** The distribution is highly skewed to the right. The histogram bars are sparse, with a peak around distance 1.5. The red curve is also skewed. Statistics: $W = 0.9637$, $P = 2.2e-16$.
- Top-right plot ($p = 100$):** The distribution is more symmetric and centered around distance 25. The histogram bars are more numerous. The red curve is a smooth, symmetric bell shape. Statistics: $W = 0.9971$, $P = 4.0e-11$.
- Bottom-left plot ($p = 1000$):** The distribution is very symmetric and centered around distance 245. The histogram bars are very numerous and closely follow the red curve. Statistics: $W = 0.9995$, $P = 0.2096$.
- Bottom-right plot ($p = 10000$):** The distribution is extremely symmetric and centered around distance 245. The histogram bars are very numerous and closely follow the red curve. Statistics: $W = 0.9998$, $P = 0.8876$.

[illegible]

Figure 1 displays four histograms showing the distribution of distances between pairs of nodes for different values of p (10, 100, 1000, and 10000). The x-axis represents 'Distances' and the y-axis represents 'Density'. Each plot includes a pink curve representing a normal distribution fit. The statistics W and P are provided for each distribution.

p	W	P
10	0.9790	$2.2e-16$
100	0.9986	0.0002
1000	0.9996	0.3184
10000	0.9997	0.6069

[illegible]

Figure 1 displays four histograms showing the distribution of distances for different sample sizes (p), with a normal distribution fit curve overlaid on each. The x-axis represents Distances, and the y-axis represents Density.

- Top Left ($p = 10$):** The distribution is centered around 105. The fit curve is a pink line. The statistics are $W = 0.9985$ and $P = 0.0001$.
- Top Right ($p = 50$):** The distribution is centered around 2784. The fit curve is a pink line. The statistics are $W = 0.9996$ and $P = 0.4214$.
- Bottom Left ($p = 150$):** The distribution is centered around 25304. The fit curve is a pink line. The statistics are $W = 0.9996$ and $P = 0.3407$.
- Bottom Right ($p = 300$):** The distribution is centered around 101150. The fit curve is a pink line. The statistics are $W = 0.9997$ and $P = 0.5533$.

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Figure 1 displays four histograms showing the distribution of distances for different values of p (10, 50, 150, and 300). Each plot includes a grey histogram, a pink normal distribution curve, and statistical values W and P .

- Top Left ($p = 10$):** The x-axis ranges from 11 to 19. The y-axis (Density) ranges from 0.000 to 0.287. $W = 0.9985$, $P = 0.0001$.
- Top Right ($p = 50$):** The x-axis ranges from 350 to 395. The y-axis (Density) ranges from 0.000 to 0.061. $W = 0.9996$, $P = 0.5309$.
- Bottom Left ($p = 150$):** The x-axis ranges from 3113 to 3231. The y-axis (Density) ranges from 0.000 to 0.024. $W = 0.9996$, $P = 0.4321$.
- Bottom Right ($p = 300$):** The x-axis ranges from 12067 to 12305. The y-axis (Density) ranges from 0.000 to 0.012. $W = 0.9997$, $P = 0.4653$.

The x-axis for all plots is labeled "Distances" and the y-axis is labeled "Density".

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A

Theoretical Mean

Simulated Mean

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

B

Theoretical SD

Simulated SD

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

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A

Theoretical Mean

Simulated Mean

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

B

Theoretical SD

Simulated SD

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

10/20

A

Theoretical Mean

Simulated Mean

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

B

Theoretical SD

Simulated SD

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

October 15, 2019

A

Theoretical Mean

Simulated Mean

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

B

Theoretical SD

Simulated SD

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

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Figure 1 consists of two scatter plots, A and B, showing the relationship between simulated and theoretical values for different p-values.

Plot A: Theoretical Mean vs. Simulated Mean

The x-axis is labeled "Simulated Mean" and ranges from 300 to 1800. The y-axis is labeled "Theoretical Mean" and ranges from 300 to 1800. A dashed purple line represents the identity line (y=x). Five data points are plotted, each labeled with its corresponding p-value:

- $p = 1000$ (purple dot at approximately 300, 300)
- $p = 2000$ (dark blue dot at approximately 675, 675)
- $p = 3000$ (teal dot at approximately 1050, 1050)
- $p = 4000$ (green dot at approximately 1425, 1425)
- $p = 5000$ (light green dot at approximately 1800, 1800)

Plot B: Theoretical SD vs. Simulated SD

The x-axis is labeled "Simulated SD" and ranges from 8 to 20. The y-axis is labeled "Theoretical SD" and ranges from 6 to 18. A dashed purple line represents the identity line (y=x). Five data points are plotted, each labeled with its corresponding p-value:

- $p = 1000$ (purple dot at approximately 7.5, 7.5)
- $p = 2000$ (dark blue dot at approximately 10.5, 10.5)
- $p = 3000$ (teal dot at approximately 13.5, 13.5)
- $p = 4000$ (green dot at approximately 15.5, 15.5)
- $p = 5000$ (light green dot at approximately 17.5, 17.5)

October 15, 2019

A

Theoretical Mean

Simulated Mean

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

B

Theoretical SD

Simulated SD

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

October 15, 2019

A

Theoretical Mean

Simulated Mean

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

B

Theoretical SD

Simulated SD

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

October 15, 2019

A

Theoretical Mean

Simulated Mean

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

B

Theoretical SD

Simulated SD

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

[illegible]

Moments of AM Distances in GWAS Data

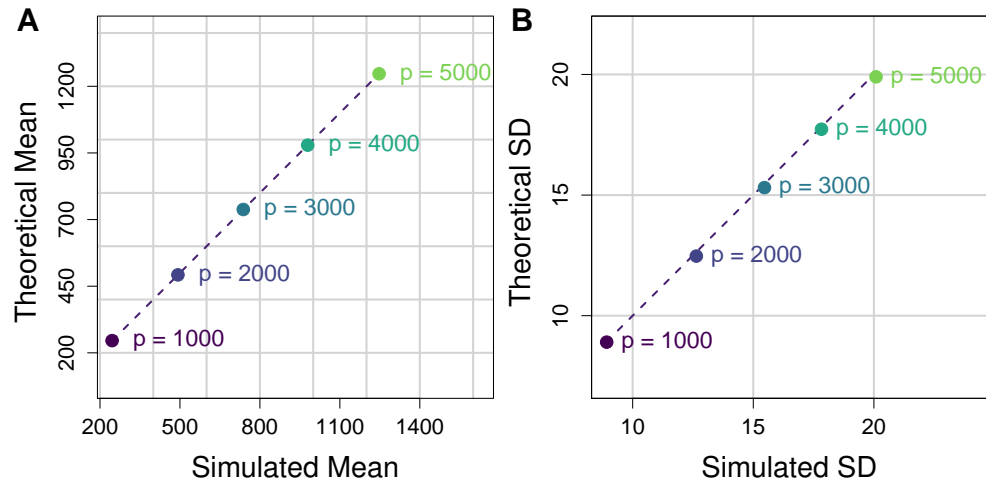


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A

Theoretical Mean

Simulated Mean

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

B

Theoretical SD

Simulated SD

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

October 15, 2019

A

Theoretical Mean

Simulated Mean

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

B

Theoretical SD

Simulated SD

$p = 1000$

$p = 2000$

$p = 3000$

$p = 4000$

$p = 5000$

October 15, 2019

Moments of max-min Normalized rs-fMRI Distances

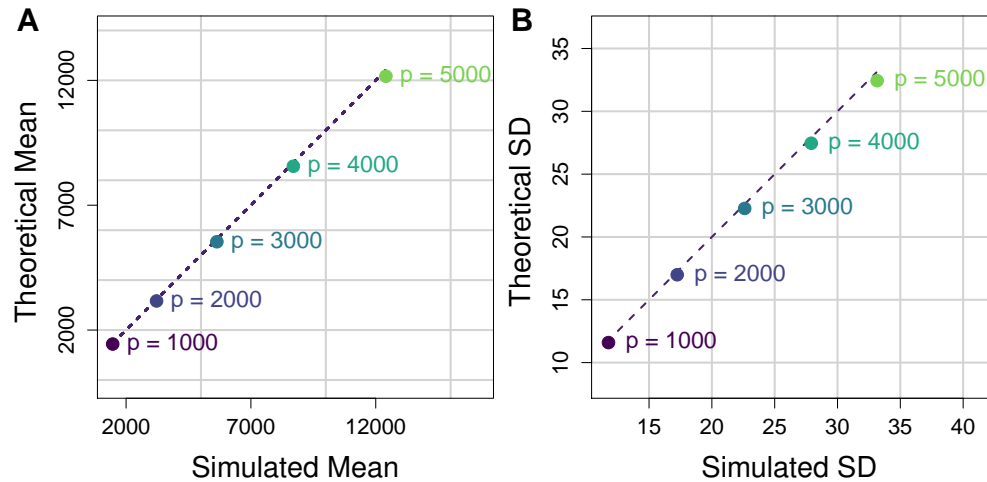


Figure S20. This will be a caption. This will be a caption. This will be a caption.
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